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Charles Yang,
President, Huawei Middle East

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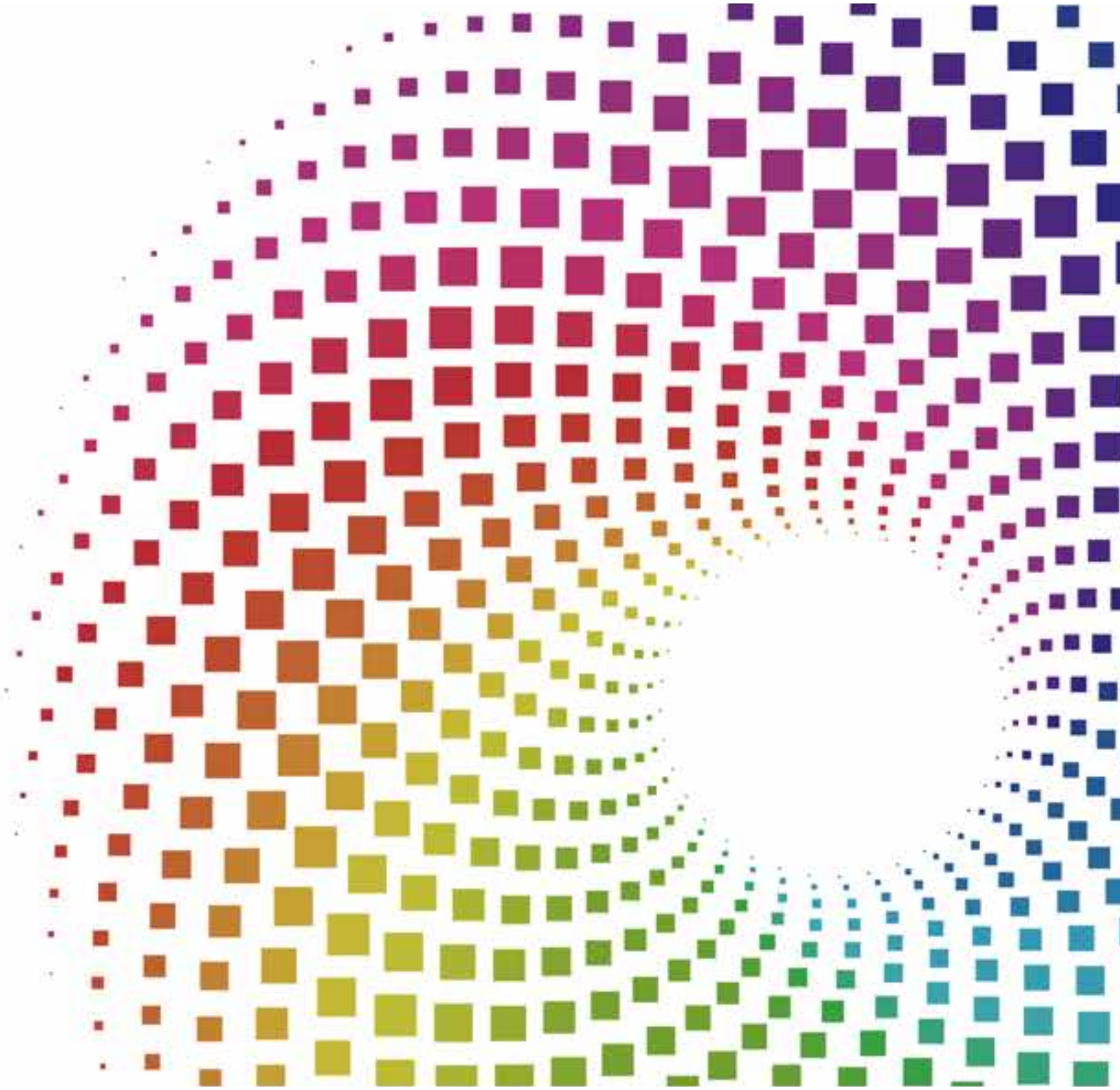

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Toni Eid,
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The race for connectivity – Submarine and transoceanic cables

For the last 4 years, the deployment of subsea and marine cables has been faster and more agile.

The Covid-19 pandemic pushed this race forward and the cloud providers who are looking to secure their data and clouds services to the public and private sectors, and the increase of demand on cloud services are also great contributors.

Amazon, Microsoft and Google are on top of CAPEX spenders on cables, but some deals are also signed in partnership with telecom providers as OTTs or the big players are looking to secure their connectivity and make sure they can have an edge over others.

Google is partnering in a huge cable connection project in USA and with India, choosing Reliance as its strategic partner. Sparkle Telecom Italia is still investing in a subsea cable for Transatlantic. In order to diversify its connectivity after BREXIT, Microsoft s AMITIE cable is connecting now USA with Europe with 2 landing points in UK and France.

The race is mainly fierce in both Pacific and Atlantic oceans, in what we are calling the transoceanic cable, but it is also connecting Asia to the Middle East or African shores. Africa and the Middle East are now points for 464 cables and 1245 landing stations (some are still under construction).

Africa is now home to one of the longest cables ever planned. The 37,000 kilometer cable will connect 16 countries in Africa and 23 countries overall. Besides the extreme length, the cable also features a massive potential capacity of over 180 Tbps over 16 fiber pairs.

The members of the cable consortium include China Mobile, Facebook, MTN, Orange, stc, Telecom Egypt, Vodafone and WIOCC.

In addition, Maroc Telecom s new West Africa Cable will head south from Casablanca linking Cote d Ivoire, Togo, Benin, and Gabon later this year.

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Charles Yang, President, Huawei Middle East

Creating value with open innovation and inclusive development

In an exclusive interview with Charles Yang, President of Huawei Middle East, the leading telecom vendor s role, priorities, strategies, and outlooks have been put into detail with relation to the ongoing digital transformation in the region and the COVID-19 pandemic s massive influence to the fourth industrial revolution.

Mr. Yang rationalized how Huawei s unwavering commitment to innovation brings value and results to the society and its ecosystem partners. With initiatives on 5G, cybersecurity, ICT talent, and other products and solutions, Huawei is ready and willing to work across the entire ICT value chain to make the future a more prosperous and sustainable one for all.

Ongoing digital innovation in the Middle East is lighting up every industry s future. What do you think makes Huawei stand out in its role as a strategic ICT partner to governments and organizations in the region today?

At Huawei, we see enormous opportunities to help support the digital transformation of the region, and in turn build the digital economy of the future. To do that, I think it all starts with having a customer-centric mindset. We must always create results for our customers. We can only do this by striving and delivering the best possible user experience whether that is for a government entity, a multinational enterprise, a telecom operator, or an individual consumer. We continue to

invest strongly in technology, human resources, and our physical footprint in the Middle East. We have large, locally-based teams dedicated to everything from solution design to deployment, standardization, technical support, and much more.

Closely tied to this theme is an unwavering commitment to innovation. Huawei s R&D investments over the past decade have exceeded USD110 billion. As just one example of technology innovation, we can look at the area of 5G. Huawei began 5G research as early as 2009, has invested USD4 billion in 5G so far, and has the highest number of 5G patents of any company globally. The result is that we have worked on many of the signature 5G network rollouts in the Middle East to date.

All of this is based on open collaboration. We have continuously advocated for an open approach to innovation, focusing on constructive dialogue, cross-industry cooperation, and exchanging expertise with different countries in the Middle East and worldwide. Working together within an ecosystem allows for shared success for individuals, businesses, and governments. In fact, Huawei has established 13 Open Labs around the world including in the Middle East to support open collaboration for shared success.

I would also add that bridging the digital skills gap is another important objective and differentiator of Huawei in the Middle East. We are supporting the region s digital future through various education and training-oriented CSR initiatives. Programs like our Seeds for the Future initiative and Huawei ICT Competition are just a few that have had tremendous success in the Middle East, promoting a greater understanding of and interest in the technology field while encouraging participation in the region s growing digital economy.

How do you see the role of ICT having evolved as a result of the pandemic this year, and is there a roadmap now for boosting economic recovery?

We have all witnessed the role that technology can play in societal transformation, especially over the last

“Huawei began 5G research as early as 2009, has invested USD4 billion in 5G so far, and has the highest number of 5G patents of any company globally”

year. Applications based on 5G, AI, cloud, and big data have been vital to helping organizations and individuals navigate the challenges of the COVID-19 pandemic. New applications are enabling remote education, telework, entertainment, and much more. Moreover, these technologies have been utilized by healthcare organizations in applications such as digital temperature checks, pandemic tracking, and so on, effectively helping to contain the pandemic where possible.

We can build on this template as an ICT industry and as a society to boost economic recovery. While COVID-19 is our priority for today, the post-pandemic world will need an innovative approach towards economic recovery and improving quality of life; making businesses smarter and creating a more inclusive world in which everyone has the opportunity to thrive. It is not about one specific solution or initiation. To create the most value in a society empowered by connectivity, we must ultimately focus on open innovation and inclusive development.

The development of 5G in the region, particularly the Gulf, is truly world-leading. What is Huawei s plan to keep up with the demands and opportunities this innovation brings?

Let me start by saying that Huawei is proud that many of the leading telecom operators in the region have chosen the company as a 5G technology partner of choice. We were part of many of the first-phase 5G commercial rollouts in the Middle East, and have continued to expand those networks with our partners. We believe that whatever geography or industry you re looking at, 5G success first requires a 5G network that provides the best user experience. This guides how we innovate at Huawei around 5G.

In countries where 5G is developing faster, operators have seen faster revenue growth, and been able to open up new revenue streams. To build an effective 5G-led business cycle, we believe more resources should be invested in four aspects: unifying 5G standards, technology readiness, ecosystem support, and exploring business models that can benefit all industry partners.

In particular, we see an opportunity to advance the 5G value proposition for businesses. The real value of 5G now transcends the telecoms industry and has transformative implications for the economy as a whole. We refer to this as 5GtoB applications. Today, the Huawei 5GtoB Suite provides industry networks with intelligent and precise planning, simplified on-demand provisioning, and proactive network O&M for the planning, construction, maintenance, and optimization phases of business networks.

In selecting suitable industries for 5G deployments, operators should choose target industries by looking at four factors: demand, affordability, replicability, and technical feasibility. They should also define the scope of their offerings to serve local needs. Operators can act as network providers that offer connectivity services, but they can also serve as cloud service providers, or even system integrators that provide end-to-end integration services.

Such use cases require ongoing innovation. In 5GtoB, for example, 5G

> Huawei recently launched several 5G products and solutions oriented to "1+N" 5G target networks

standards need to be coordinated with industry standards faster, and enterprises should look to integrate 5G into their core production processes to help them go digital and intelligent. With this in mind, Huawei recently launched several 5G products and solutions oriented to 1+N 5G target networks. Supercharged by industry-leading innovation, these products and solutions will help promote multi-antenna technology to all bands and all scenarios to build leading 5G networks.

Underpinning all of this 5G development is cooperation with the public sector. Governments in the Middle East especially have set very ambitious agendas that have digital transformation as a cornerstone of success. Some of these programs look 10, 20, or 50 years into the future. By engaging public leaders today, we can innovate to support the businesses of tomorrow, and assist nations in achieving their national development visions.

Looking to other areas, Huawei s global revenues from its Enterprise Business Group grew substantially this year. What do you attribute this to, and what is your outlook for the rest of 2021 for this group?
Allow me to first say that, at Huawei, we believe enterprises must work together to embrace the era of digital transformation, of which Huawei can be a leading partner. Digital transformation has never been more in the spotlight as a result of the events of the past year, with the pandemic affecting all industries around the world. In this era of rapid digitalization, we aspire to create the most value for our enterprise customers and our ecosystem partners.

That ethos is reflected in the revenue trends you have mentioned. The revenues from our enterprise business globally in H1 2021 were approximately USD6.6 billion. We had also achieved robust growth throughout 2020, with a year-on-year revenue increase of 23%. Over 700 cities and 253 Fortune Global 500 companies worldwide have chosen Huawei as their partner for digital transformation.

Again, part of this comes down to customer-centric innovation. We have developed more than 100 scenario-based solutions that cover over 10 industries including smart cities, finance, energy, transportation, and manufacturing. Our products and solutions, such as HUAWEI CLOUD, intelligent IP networks, Intelligent OptiX Network, as well as others in computing, data centers, and data storage, have become increasingly competitive within the market. We have combined a number of our cutting-edge products in order to meet customers differentiated needs.

In particular, the HUAWEI CLOUD has developed rapidly. The company has already been placed in Gartner s famed Magic Quadrant for cloud database management. Gartner now ranks Huawei at the fifth position globally in the IaaS market, with over 200% growth year on year in 2020. HUAWEI CLOUD works with more than 20,000 partners, including more than 14,000 consulting and over 6,000 technology partners, and has brought together 1.8 million developers. To date, over 4,500 applications have been launched on the HUAWEI CLOUD Marketplace.

Naturally, we recognize that our achievements are made possible only by the hard work and dedication from ecosystem partners across all industries and domains. Earlier this year, for example, we announced a new channel strategy that embraces a collaborative, win-win approach for distributors, resellers, system integrators and alliances. This new direction stems from the belief that the company s long-term success is dependent on the success of the ecosystem it operates in. The company s channel architecture and channel policies are thus based on four key measures – profitability, simplicity, enablement, and ecosystem.

With robust ICT standardizations and cybersecurity benchmarks crucial to expanding the region s digital economy, how have you approached these priorities to date in 2021, and what priorities does the industry need to address in the near future?
As the importance of digital technology

continues to rise, so too are the requirements of cybersecurity. With increasing cyberattacks, all industries are taking cybersecurity more seriously. Cyber defense thus requires strengthened global cooperation. It is not the responsibility of one company or country; governments, technology companies, and other stakeholders need to cooperate on unified laws and regulations to protect the digital economy and ensure fair access to innovations that can serve future generations. A safer network is our common obligation.

At Huawei, we feel it s essential to engage the entire digital ecosystem through openness and collaboration to harness unified international standards that mitigate challenges in the cyber ecosystem. We have time and again emphasized the need to work within a standards-based framework. Our actions speak even louder than our words. Huawei has participated in more than 360 industry standards organizations, held more than 300 important positions in these industry standards organizations, and actively submits proposals to industry standards organizations, making significant contributions to the development of these standards.

Today, Huawei s top-down cybersecurity governance structure supports the success of its business in the Middle East and around the world. The Global Cyber Security and User Privacy Protection Committee (GSPC), headed by Huawei s Global Rotating Chairman Mr. Ken Hu, is Huawei s highest cybersecurity management body. The GSPC is in charge of developing Huawei s security strategy and plans, as well as manages and oversees how departments such as R&D, supply chain, marketing, sales, and so on structure their security teams and ensure security in their business activities. Along the way, we adopt an ABC principle Assume nothing, Believe nobody, and Check everything based on open and verifiable technical standards.

Looking outwards, we are encouraged to see a growing desire from stakeholders in the region to work

> At Huawei, we feel it's essential to engage the entire digital ecosystem through openness and collaboration to harness unified international standards that mitigate challenges in the cyber ecosystem

together to build this heightened level of security. For example, national cybersecurity strategies being drawn up by governments now incorporate contributions from security experts in the private sector, technology companies, and academia, in addition to policymakers. Huawei has been part of numerous national and regional panels, action groups, and think tanks working to contribute to various cybersecurity initiatives. We are eager to support and encourage such initiatives.

What other factors could significantly affect the fourth industrial revolution in the years to come, and how should organizations prepare for these future trends?

Once again, the COVID-19 pandemic showed us just how quickly today s global economy can shift. The technologies that underpin the fourth industrial revolution must ultimately be built with resilience in mind. That means being able to scale when needed to solve business questions and human challenges, whether it is delivering healthcare solutions, remote education, or emergency connectivity to a world in need.

In addition to the idea of resilience, there s a pressing need to ensure that we increase access to technology. Technology is too important to be left in the hands of technologists alone; end-users must be empowered to access and consume these solutions to ensure digital transformation benefits all.

During the pandemic, for example, parents and teachers have had to turn into unwitting experts on remote education to ensure that children can continue their education. Remote workers have had to navigate unfamiliar teleconference apps. As an ICT industry, we must help ensure that the public is digitally empowered

to use the platforms available to them today. Simplifying the user experience with real people in mind, and availing easily accessible training modules, are excellent places to start.

In building more sustainable ICT ecosystems in the region, what lessons have you taken away from 2021 already, and how has that influenced the company s future outlook?

It s a good question. It really comes back to our vision and mission. We want to bring digital to every person, home, and organization for a fully connected, intelligent world. Based on this, we have developed our sustainability strategy, incorporating it into the company s overall development roadmap.

In particular, we are focusing on four priorities for sustainability: Digital inclusion, security and trustworthiness, environmental protection, and healthy and harmonious ecosystems. Nearly all of these contribute to the UN SDGs.

There is a lot to unpack in each of these four areas. So for now, allow me to examine environmental protection in specific, as this is certainly an important consideration for all our partners in the Middle East.

Following a study released by Analysys Mason and commissioned by Huawei, we lay in stark terms the environmental challenge facing the world, and envision a technology-led pursuit of a more sustainable future. It notes that technologies like 5G are being rolled out at a time when energy efficiency is sometimes a matter of life or death, but that technology can play a significant role in helping every industry to hit sustainability goals by enabling them to transform their processes and behavior. While the rising use of technology has brought numerous new experiences to every aspect of business and personal life, these benefits must be delivered without any more detrimental impact on the environment.

I think the telecoms industry has taken a leading role in addressing its own energy efficiency. The cellular industry was the world's first, in 2016, to commit to achieving the UN Sustainable Development Goals (SDGs), setting an industry goal of net-zero emissions by 2050. Operators' energy efficiency is now one of the primary considerations when planning and optimizing new mobile networks. Many techniques from innovative power for base stations to AI-enabled preventive maintenance can be applied.

Whether in the area of environmental protection or another sustainability field, we are ready and willing to work with partners across the entire value chain to make the future a more prosperous one for all. TR

CITC publishes consultation on spectrum light licensing

Saudi communications authority the Communications and Information Technology Commission (CITC), has published a consultation on spectrum light licensing .

The public consultation aims to provide interested parties with an opportunity to submit their views on the introduction of the light licensing regime and its various aspects.

As part of CITC s mission to ensure reliable communications services and innovative digital technologies in the Kingdom, CITC previously launched its Spectrum Outlook for Commercial and Innovative Use 2021-2023 , which includes the commission's first step towards improving access to spectrum through a light licensing regime.

The new consultation document outlines CITC s plans to improve access to more than 13 GHz of spectrum, through light licensing regimes that cater for specific usage categories. The publication also includes an implementation plan for the introduction of the licensing process which commences in early 2022.

The main objective of this ambitious approach is to facilitate using the spectrum on a shared basis among various users and services. This will promote competition and enable innovation, by allowing flexible licensing methods to meet the spectrum needs of the market through pioneering methods of spectrum management.

CITC is inviting all parties, both nationally and internationally, to provide their feedback and comments by 30th September 2021. CITC welcomes submissions from all stakeholders, including users, ICT providers, investors, industrial and public entities.

Light licensing has been used in various guises in the UK, USA, Australia, Japan and many other countries for many years, including use for services such as high power outdoor Wi-Fi, business radio (PMR) and fixed links. Spectrum users are keen on light licensing as it typically reduces the administrative burden when applying to use spectrum, and speeds up the process such that transmitters can be put into service more quickly. At the same time, governments and regulatory bodies find a light licensing structure, when used in conjunction with a database to allocate spectrum according to demand, more efficient in utilizing scarce spectrum resources between different usage types and users. The reduction in administrative burden does not, however, mean that there is a lack of regulatory certainty as a number of factors including the frequency and location of use have to be recorded.

Views/comments can be submitted to one or more of the following addresses:

By email to (Spectrum.Strategy@citc.gov.sa).
Hand-delivered (paper and electronic) at the CITC premises.
By mail (paper copy and electronic) to the following postal address: Communications and Information Technology Commission, Al-Nakheel District- Prince Turki Bin Abdul Aziz I Street intersection with Imam Saud Bin Abdul Aziz Road, PO Box 75606, Riyadh 11588, Saudi Arabia.

Shutdown of 2G networks in UAE proceeds as scheduled

The Telecommunications and Digital Government Regulatory Authority (TDRA) affirmed that the 2G (GSM) shutdown process in the UAE is proceeding according to plan. Scheduled for the end of 2022, service providers (Etisalat and du) will discontinue support for 2G networks completely.

Following this, the sale of 2G-only supported devices will be stopped in June 2022 across UAE markets. TDRA confirmed that this process would redirect the allocated 2G resources in supporting new generations of mobile networks (4G and 5G). In cooperation with service providers, TDRA is focused on building modern and advanced networks that meet the users current and future requirements.

TDRA drew the customers attention to stop using 2G-only supported devices by the announced date. Instead, devices that support the newer generations of telecom networks should be used to access the best telecom services.

TDRA indicated that this step comes in light of the rapid development of telecom technologies within the ICT sector. Hence, the need to direct all capabilities towards adopting and using the latest and best technologies arises. Overall, this will contribute to achieving a comprehensive digital transformation that ensures the provision of the best smart services.

Dating back to 1994, UAE was a pioneer in implementing 2G. Today, it is a leader in 5G innovation, aiming to meet the needs for a modern and more capable network to communicate between a huge number of devices (IoT).

This step also reflects the rapid development of the ICT sector, in which mobile networks play a major role. The Emirates comprehensive strategy and clear roadmap secure its position at the top of network connectivity. In fact, the UAE ranked 1st on mobile and top 20 in fixed broadband speeds globally.

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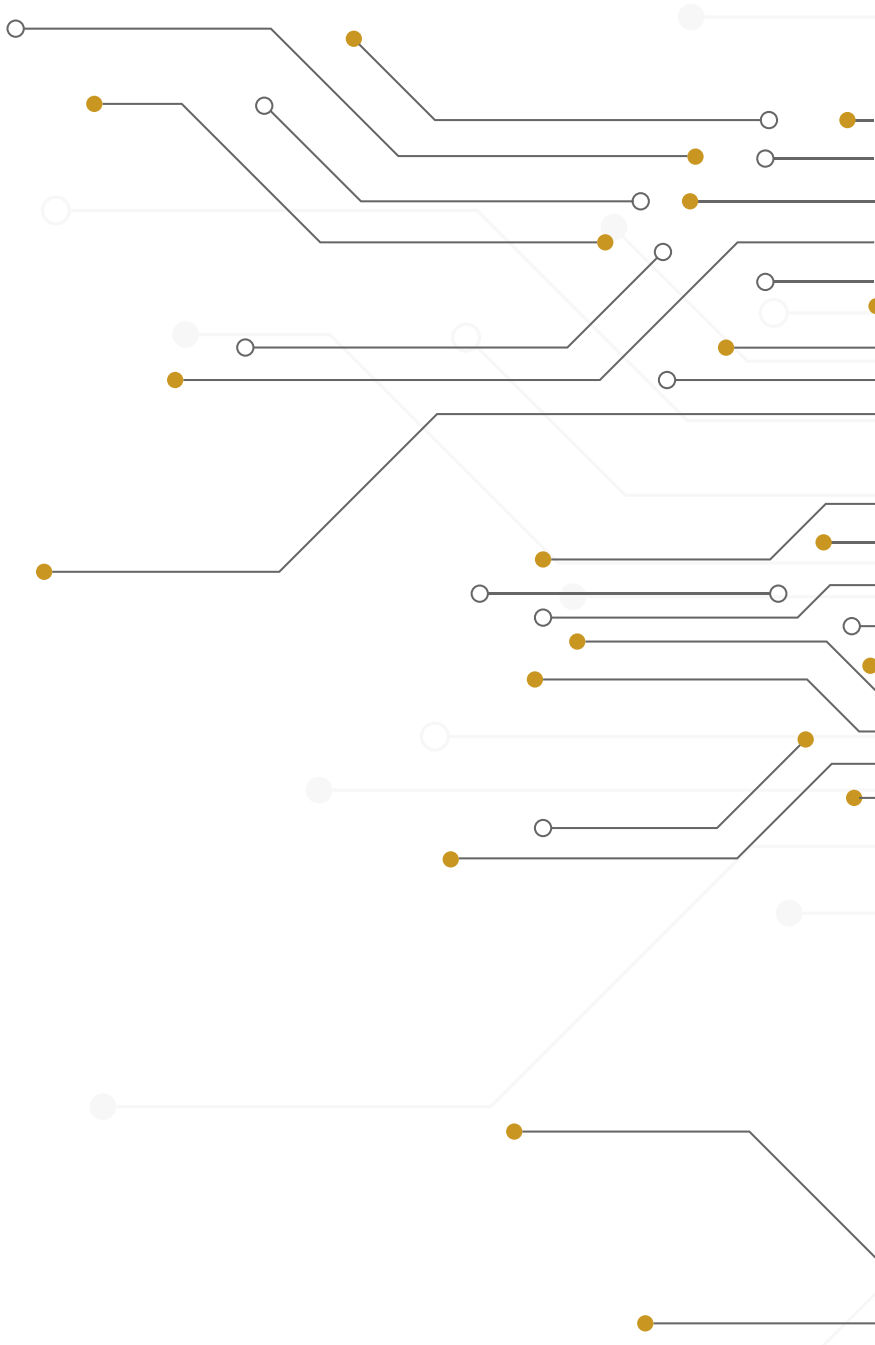

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KSA sets aside SR4 bn to upskill digital talents, unveils home-grown smart chips

Saudi Arabia launched a host of technology initiatives worth SR4 billion ($1.06 billion) directed at upskilling the 100,000 Saudi digital talents in line with Saudi Vision 2030, according to state news agency report.

The announcement was made at the Launch event organized by the Saudi Federation for Cybersecurity, Programming and Drones (SAFCSP) along with the Ministry of Communications and Information Technology (MCIT), and the Saudi Data and Artificial Intelligence Authority (SDAIA).

Several multinational corporations have announced their interest to partner with the Kingdom to create digital capability centers and innovation hubs for tech startups.

Minister of Communications and Information Technology Eng. Abdullah Al-Sawaha unveiled the first Saudi-made smart chip to be used in military, civil and commercial applications.

The report quoted the head of the Saudi Data and Artificial Intelligence Authority Abdullah Al-Ghamdi as saying that Saudi Arabia aims to be one of the top 5 countries globally in AI and requires 25,000 specialists jobs in data science and AI before 2030.

MCIT has established the National Technology Development Program with a budget of SR2.5 billion with the goal of making the Kingdom the world s leading technology country.

The program launched its early products, Financial Security, to strengthen trust between tech companies and financial entities, as well as the SME loan guarantee program, Kafalah, which aims to provide up to 90 percent insurance of the financing value and with a volume of SR15million.

Meanwhile, the Saudi Chinese eWTP Arabia Capital fund with $400m capital, which seeks to support technology startups in the Kingdom, was also unveiled at the Launch event. This investment came along after Alibaba Cloud chose Riyadh as its regional center for management and training, with investments amounting to $500m over five years in the region.

Abu Dhabi starts development of region's first-ever quantum computer

To set the stage ready for the operation of the region's first quantum computer, the Abu Dhabi s Technology Innovation Institute (TII) unveiled the cryostat - the initial frame of its quantum computer that is being assembled in the UAE capital.

Two helium dilution refrigerators imported from Finland will supply the helium isotopes that essential to keep the quantum chips or the brain of the computer cool and maintain the quantum information.

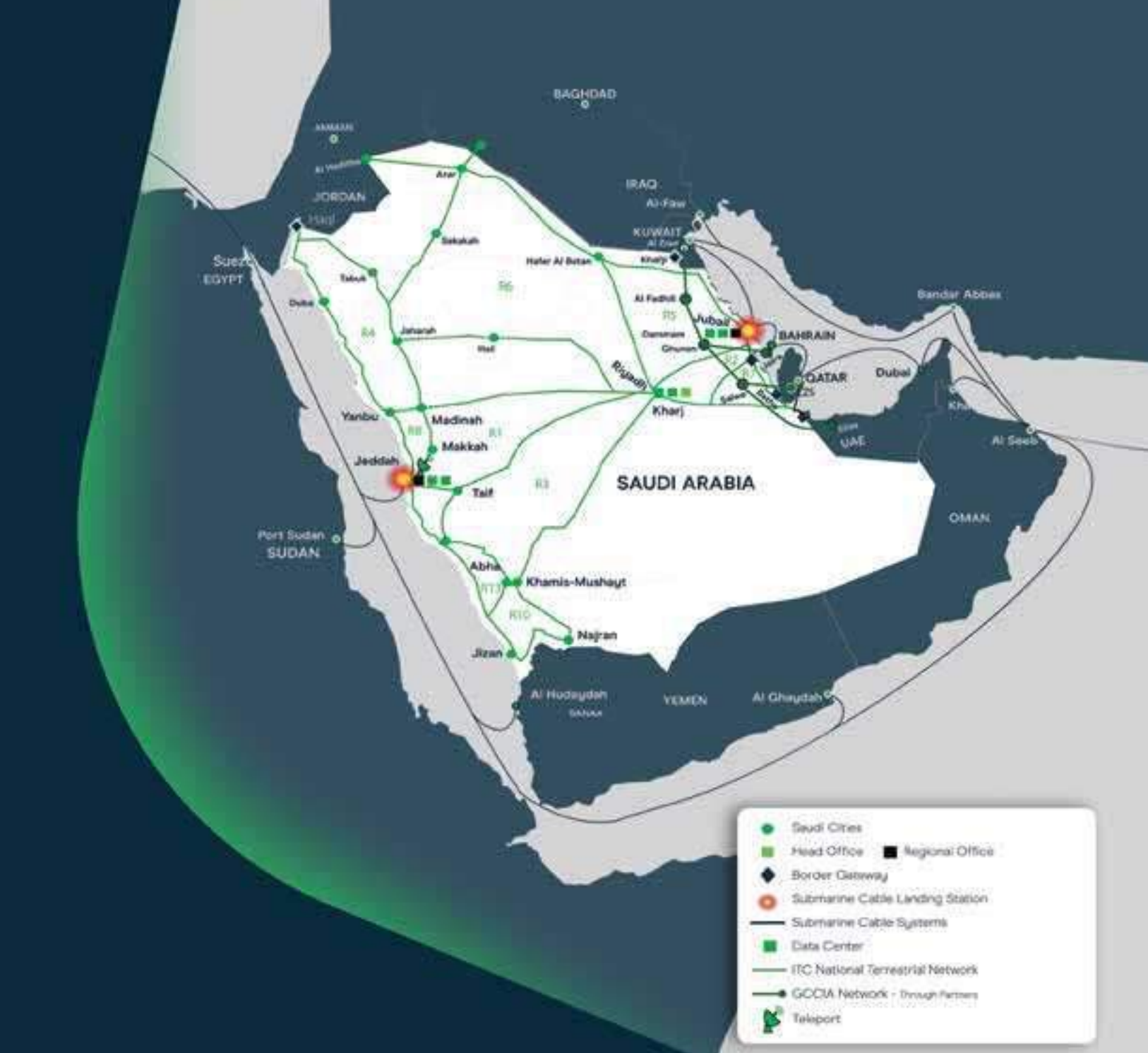
The helium dilution fridge comprises six levels the top one is at room temperature, with the temperature steadily dropping in the lower levels until the device can achieve the extremely low temperature of 10 Milikelvin (mK) one-hundredth of the temperature of outer space - that is optimal for the quantum chip to operate.

TII s Quantum Research Centre (QRC) is in charge of the breakthrough technology project that aims to give the Arab world a quantum advantage through developing a supercomputer with exponential computational capabilities.

A quantum computer uses quantum mechanics phenomena such as superposition and entanglement to generate and manipulate subatomic particles like electrons or photons - quantum bits also known as qubits - to create exponentially stronger processing powers and help perform complex calculations that would take much longer to solve even by the world s most powerful classical supercomputers.

Traditional computers use bits arranged as combinations of ones and zeroes while quantum computers use qubits in which particles can exist in two states at the same time thereby, increasing their computing power through allowing them to evaluate multiple outcomes at once.

Abu Dhabi is building the quantum computer in collaboration with Barcelona-based Qilimanjaro Quantum Tech. The quantum computer once it takes shape, can prove invaluable in diverse fields – from discovering new medicines to designing better batteries, and also help in multiple artificial intelligence applications.



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Salam connectivity solutions are supported with robust independent infrastructure across Saudi Arabia, with over 19,000 km of fiber-optic network and 10 metro-fiber rings spanning all major cities, connecting the Kingdom to the world. We address all the requirements of organizations across different vertical sectors and help them run their enterprise applications successfully.

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Esam Mahmoud, Senior Vice President, SMB, Etisalat

Etisalat leading the way for SMBs and entrepreneurs

The large young population makes the startup ecosystem in the region most vibrant with one of the highest levels of digital connectivity. In addition, a number of initiatives have emerged in recent years to promote business and social entrepreneurship in the region.

For Etisalat, small businesses are an integral component of the overall business, therefore constant innovation is key with a range of products and services designed to make their lives easier.

Esam Mahmoud, Senior Vice President, SMB, Etisalat shares his insights on the growing startup ecosystem and the various initiatives for this segment.

Growing startup landscape

The UAE comes out top of the list driven by advanced infrastructure, high funding levels and extended government support for businesses. The country has been looking to diversify its economy beyond the oil and gas trade for a number of years now, which has facilitated the advancement of the business ecosystem.

The economic diversification drive undertaken by regional governments in the past has given rise to a plethora of startups across the Middle East and North Africa (MENA) region. The regional startup ecosystem has grown from strength to strength; the UAE remained the most active startup ecosystem with 26% of all deals, as per the report from Magnitt.

The country also accounted for 60% of total funding across the Middle East and North Africa (MENA). During the COVID-19 outbreak last year, MENA start-ups attracted $1 billion with UAE attracting investments locally and from global markets. This signals high investor confidence despite global pandemic.

Importance of startups to business

Small and medium businesses (SMBs) today make up for about 94% of businesses in the UAE representing over 60% of the country s GDP, therefore an important segment in Etisalat business. This is an integral component to our overall business and is driven by a commitment to the future of UAE. It is essential to support the noble vision of the leadership in creating a hub for startups and SMBs encouraging them to come and set up their businesses in the country.

Etisalat has continuously worked to enable these young businesses with all the important elements, first is to be an active participant in enabling UAE leadership s vision, secondly with SMBs generating 60% of the GDP and 86% of the population working in these companies, it s definitely a business we can contribute to with our enhanced services and solutions. Etisalat over the years has taken care of every business and digital requirement which is a major step in this direction.

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

Etisalat initiatives for startups

Customers today are looking at focusing on achieving their long-term business objectives with minimal hassle on the operational front. They look for a one-stop shop solution where they deal with one single player reducing the hassle of dealing with multiple partners.

Etisalat has been focused on delivering innovative solutions to support business needs for many years now, that are delivered majorly from the cloud, removing the need for on premise deployments and installations, customisable as per the business needs and size and ultimately include bundled offerings that deliver much more value to the business than buying these products from the market.

Archive picture taken pre-COVID

Etisalat s main emphasis was always on the aspects that are required for day-to-day business requirements mainly the six pillars which are smart connectivity, unified communications, office productivity, security and analytics, business devices and digital marketing.

Etisalat s priority has been enabling customers with digital transformation by offering them innovative solutions. Business Edge is an example that focuses on helping SMBs run their business with no upfront capital investments providing the infrastructure and business tools to compete and deliver better services to their clients. This is a comprehensive platform for SMBs built on innovation, customisation and value to meet their varying business needs during a business lifecycle

Etisalat Hello Business Hub empowering SMBs

The opening of the Hello Business Hub added value through innovation enabling them with the right tools and services to drive into this digital future. At Etisalat, we are committed to providing startups and SMBs with tailored advanced solutions to increase their profitability and productivity.

The specialised business hub located at One JLT, Jumeirah Lake Towers, Dubai offers the latest telecommunications solutions tailored for SMBs and an extended platform offered by its strategic business partners that include the host Dubai Multi Commodities Centre (DMCC) as well as Virtuzone, National Bank of Ras Al Khaimah (RAKBANK), Amer for Government services, in addition to Etisalat solutions and Digital Marketing services for SMBs.

This hub serves as one-stop place designed to help businesses get started by offering unique propositions: company setup,

> “Etisalat is able to play a greater role in the digital lives of SMBs with the backbone of a robust and one of the most advanced, fastest and widest network in the region”

registration, insurance, banking, office equipment, combined with Etisalat s latest telecom and ICT products and services.

This was a major milestone of Etisalat s global innovation strategy and commitment to meet the needs of the country s developing small and medium business sector.

Success of Hello Business Pitch

SMBs are playing a key role in the UAE economy in driving innovation, job creation and disruptive business models. Given the importance of this segment, Etisalat has been working closely with businesses across all sectors to cater to their requirements, ensure a successful a digital journey and facilitate business continuity during these unprecedented times.

Etisalat s Hello Business Pitch is one of Etisalat s strategic initiatives that aimed at supporting entrepreneurs and startup businesses by providing them with an opportunity to pitch their business ideas in front of an expert panel of judges who assessed their business model through the strength of their pitch for a chance to win grand prizes that help in growing their business.

This platform, in its second year, has received an overwhelming response and is gaining popularity among aspiring entrepreneurs. Hundreds of passionate startup businesses applied since its launch in December 2019. After an intensive and comprehensive assessment of the applications based on the creativity of the business models, demonstrative scalability, and the ability to effectively portray their potential business growth in a clear and concise way, Etisalat shortlisted 52 candidates who progressed to the latter stages of the competition.

The shortlisted businesses were then invited to pitch their business model online. Twenty-five businesses were selected, who then got into a dedicated training session by Dr Petar Stojanov, Partner, Innovation and Future Strategy at Black, on how to perfect their pitch. Two more pitching sessions were conducted and the jury selected the top three winners, who were announced by Etisalat at a live awards ceremony viewed by the business industry around the globe.

This year s Hello Business Pitch has indeed succeeded in attracting high-potential startups and harnessing the potential of aspiring entrepreneurs who are bringing innovative ideas to the market. Etisalat witnessed first-hand the thoroughness and the quality of the content of these pitches, and was a great opportunity for us as well to hear about their entrepreneurial journey.

YallaGive won first place for a brilliant pitch and received AED150,000. The second place winner Key2enable Assistive Technology was awarded AED120,000, while App4Legal placed third in the competition and walked away with AED80,000 for their respective creative pitches.

This competition showed the strength of the UAE s future business leaders and their passion for innovation and entrepreneurship. Our initiative is in line with Etisalat s continuous efforts to support SMBs and start-ups in the UAE and position Etisalat as the preferred business partner of choice for SMBs.

Impact of the pandemic

The pandemic has accelerated digital transformation globally with a shift in investment priorities and changes in online behavior. Businesses and people globally today think differently about how they work and live their lives. The percentage of customer interactions that are digital has been accelerated by several years.

With communication and connectivity gaining more significance and demand more than ever during the pandemic, telcos play a critical role in closing this gap of digital readiness by becoming the engines of resilience and innovation. Moving ahead, network modernisation and digital transformation play a key role in bringing this change to society.

Remote working infrastructure, new online services, technology skills and cyber security are now priorities for governments, corporates and

SMEs. This is accelerating the digital transformation of society with telecom and 5G playing a major role. Research states that 85% of respondents said their businesses have somewhat or greatly accelerated the implementation of technologies that digitally enable employee interaction and collaboration. TR

> Hello Business Pitch is one of Etisalat's strategic initiatives that aimed at supporting entrepreneurs and startup businesses by providing them with an opportunity to pitch their business ideas

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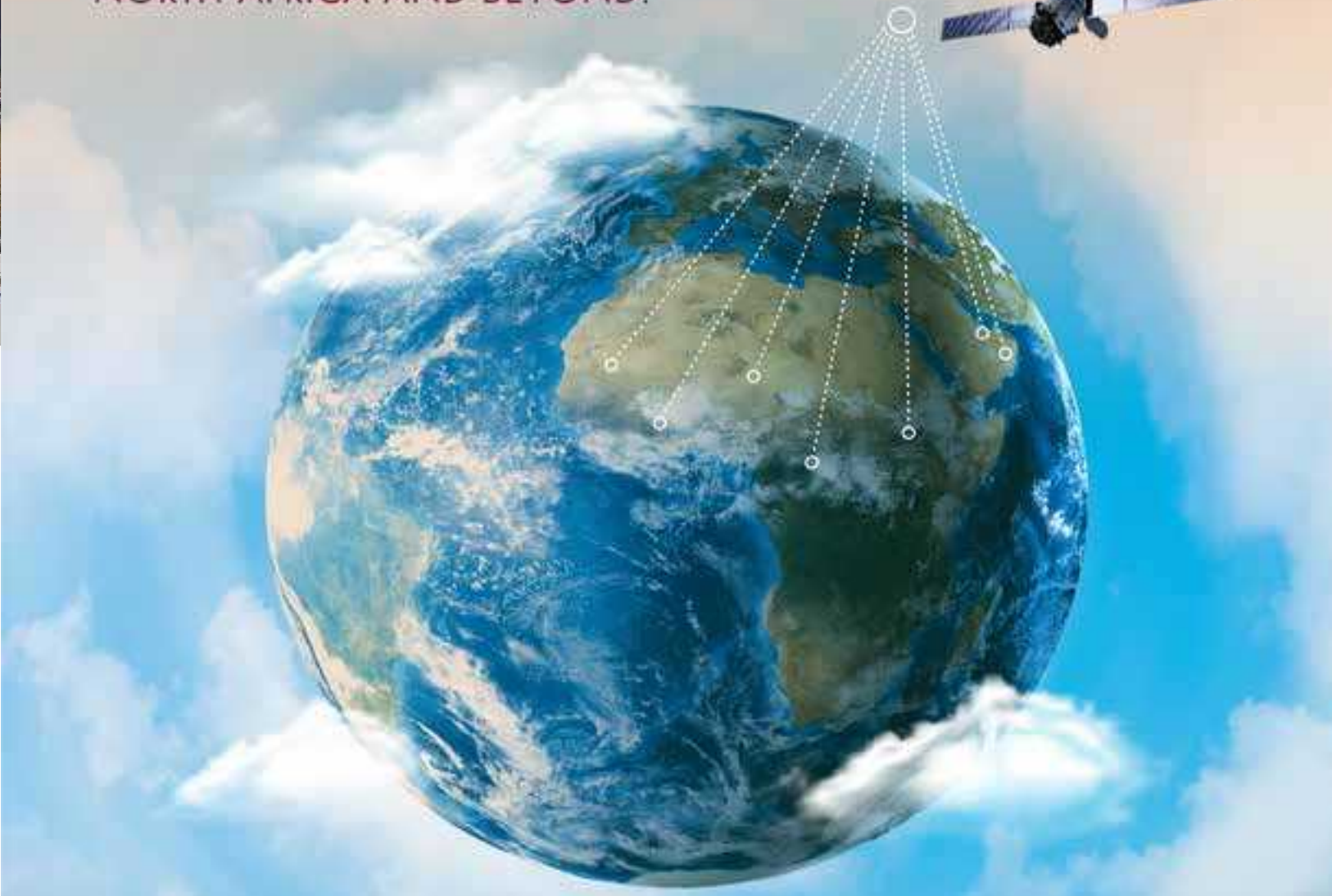

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Aji Ed, head of technology, mobile networks, Nokia

Mobile operators can now scale up their network capacity for 5G with Nokia s new radio products

Telecom Review caught up with Aji Ed, head of technology, mobile networks, Nokia who explained in details about the new generation of AirScale radio, massive MIMO antenna and baseband products that Nokia had recently launched. He also highlighted their relevance for the Middle East and Africa region.

Nokia s constant efforts on innovation led to the recent launch of a new generation of AirScale radio, massive MIMO antenna and baseband products. Can you give us some details on the products launched?

The first networks became commercial only two years ago. We are still in the early phase of the 5G cycle. Over the next three years, the 5G market will triple in EMEA (+281%), double in APAC (+190%), and North America continues to grow by half (156%) over the same period. Another important thing to notice is that we expect the peak of the 5G cycle to be extended and longer than it was in 4G. The reason for this is that the first phase of 5G is mostly about mobile broadband, but the second, overlapping phase comes with great Internet of Things capabilities (IoT) with ultra-reliability, low latency and extreme IoT connectivity.

We launched the below products to help our customers cope with increasing 5G capacity and spectrum demands:

AirScale massive MIMO antenna: The world s lightest massive MIMO antenna, weighing just 17 kg, without compromising on bandwidth or RF

(radio frequency) output power. And we don't sacrifice performance for weight. In fact, our new 17 kg light AirScale massive MIMO antenna supports 400 MHz RF bandwidth (400 MHz IBW and 200 MHz OBW) necessary to support the highly popular 3GPP frequency band n78 (3.4GHz to 3.8GHz), with up to 240W RF output power. The new portfolio includes new 32TRX massive MIMO antennas, 64TRX massive MIMO antennas and 8T8R remote radio heads.
AirScale baseband: The world s most integrated 5G and Single RAN baseband, up to 8-times the capacity of the previous generation and can reduce power consumption by up to 75 percent.

What are the unique technical capabilities of the newly launched AirScale products and how are they helping the operators in this region?
The new AirScale solution help global mobile operators scale up their network capacity for 5G (and 2G, 3G, 4G) flexibly, efficiently and at a reduced TCO.

The newly launched 32TRX massive MIMO radio is with 17 kg and this is the industry s lightest 32TRX massive MIMO antenna. Importantly, our new AirScale 32TRX massive MIMO antenna offers 400 MHz instantaneous bandwidth in a compact 17 kg design; and this combination makes it industry leading. Other vendors solutions offer higher weights (19 kg) but only support 200 MHz. In many cases, 32TRX mMIMO antennas offer the best balance of performance, size/weight and total cost of ownership the sweet spot. There are more parameters than the number of transceivers and the weight: occupied and instantaneous bandwidth, RF output power, form factor and ease of deployment, as well as compliance with national regulations, to name a few.

Our 64TRX massive MIMO antenna weighs 36 kg, which represents a reduction of 14% over earlier versions of 64TX mMIMO antenna. This massive MIMO antenna also supports 200 MHz occupied bandwidth and 400 MHz instantaneous bandwidth. Ideal for non-contiguous spectrum and network (RAN) sharing agreements. High RF power output of 320W, as necessary for certain markets.

Locations requiring the highest capacity and beamforming capabilities, are likely to need 64TRX massive MIMO antennas.

High instantaneous bandwidth is required to support non-contiguous spectrum - fragmented spectrum and the increasing number of 5G network sharing cases. This is very important for Middle East and Africa market.

Non-contiguous spectrum can occur for instance when an operator starts network operation with a given block of spectrum within a band and subsequently secures additional spectrum, usually via a spectrum auction. In this case, as long as the two separate spectrum blocks fall within the RF bandwidth of the antenna then the operator can continue to use the same antenna and not have to deploy another, eliminating the associated effort and costs.

Network (RAN) sharing cases is another example. Now that the early adopters of 5G have rolled out their networks, we re seeing a new wave of market entrants who are increasingly considering network sharing to lower costs and speed-up network rollout, especially in areas where the return on investment might not be favorable. One of the fundamental aims of network sharing is to lower costs by sharing the hardware. As the new mMIMO platforms support high bandwidth, this enables both operators to use a split-mode configuration single antenna. This obviously reduces the site footprint, wind load, cabling, installation effort, energy consumption and ultimately delivers the desired lower costs.

New AirScale baseband plug-in cards provide up to 3x the capacity of the previous generation and enable power consumption reductions of up to 75%. We increase the number of connected cells up to 8x (depending on configurations). We have plug-in cards that support 2G, 3G, 4G and 5G.

Our new capacity plug-in cards are optimized for 4G and 5G traffic, the area in which most of today s and all of near future's traffic growth will happen.

All of these are powered by Nokia ReefShark SoC.

Why is ReefShark SoC highly efficient? How is it progressing?
The use of our ReefShark custom silicon improves base station capacity and connectivity and reduces product cost and power consumption. The way this works is that we develop some of the IP blocks for the chips, our partners develop other IP blocks, and then the partners package our IP, their IP and 3rd party IP like ARM cores into a ReefShark System-on-Chip.

We have integrated ReefShark SoCs for all base station computing functions, both in baseband and radio, including Massive MIMO with beamforming. The share of ReefShark based products is constantly increasing, so that at the end of this year (2021), far fewer configurations will still rely on FPGA as opposed to SoC. In 2022, the transition will be complete. And we have already the next generation SoC s in the works, in addition to the ones we have already.

How do you see the relevance of these new AirScale products in Middle East and Africa market?
Middle East and Africa is a diverse market in terms of technology adoption. The majority of Middle Eastern countries have deployed 5G already and now they are in the phase of expanding 5G with additional spectrum and more dense urban deployments. Also, in Africa, many operators have now started deploying 5G. There are several discussions on network sharing scenarios.

This is exactly where the new AirScale radio products would help with more instantaneous bandwidths (e.g, 400 MHz) to cover even non-contiguous spectrum scenarios. We can offer the right mix of 8TRX, 32TRX and 64TRX radios different types of deployment scenarios. Similarly, Airscale baseband plug-in card offers very high capacity for both 4G and 5G which is just the right time for 5G capacity expansions. TR

How 5G business development was a major contributor to Kuwait carriers positive H1 2021 financial results

The Middle East region and particularly the GCC has been amongst the global forerunners in 5G experimentation and deployment. Over recent years, many of these networks have scaled tremendously as operators start to monetize these investments. New 5G ecosystems have been built. Original 5G-powered applications have been introduced to local industries. Many organizations also had the foresight to invest in 5G digital infrastructure long before the current pandemic, and that investment has paid off significantly as network traffic has increased, and more businesses have gone digital.

Gulf States such as Kuwait, the UAE, and Saudi Arabia have become 5G leaders, and are all in the top 10 in terms of 5G coverage and speed. Among these countries, Kuwait was one of the first countries to deploy 5G on a large scale. Since June 2019, three leading operators in Kuwait have started to deploy 5G on a nationwide scale. Recent reports in H1 2021 show that 5G development of these operators has entered a new growth track.

Continued investment in 5G achieved resilient financial performance

In Q1 2021, Kuwait demonstrated the highest year-on-year improvement of 84% 5G download speed, this is attributed to Kuwait s visionary 5G investment. Most recently, telecom services providers in Kuwait have announced strong business results that have been bolstered by their 5G user growth as well as 5G technology efficiency and competencies:

Zain Kuwait has been profitable with recorded 4% revenue growth in H1 2021. Data revenue grew by 5% Y-o-Y and represented 40% of total revenue. Bader Nasser Al-Kharafi, Vice-Chairman and Group CEO of Zain Group commented: The healthy growth in Kuwait was powered by its incomparable 5G network that sees the operator capturing the largest market share in the country.

Looking to stc, Kuwait, as another example, its first-half revenues increased by 2.2% compared to the same period a year ago. Engineer Maziad Alharbi, stc s Chief Executive Officer, pointed: "Due to the world-wide fundamental changes imposed by the COVID-19 pandemic, represented in the increasing demand for the traditional communication and digital services, stc has been able to achieve these results by leveraging on the 5G network s capabilities and efficiency."

Ooredoo is another operator which has benefitted greatly from its 5G investments. In Kuwait, for instance, Ooredoo recently witnessed the highest quarter-on-quarter 5G customer base growth ever reported.

What these and other examples reinforce is that 5G is indeed an accelerator for operators businesses. Through insights into the development experience of the first-wave 5G markets such as the GCC countries, China, and South Korea it is evident that 5G business growth needs strategic patience, and after an 18 to 24 months climbing period, operators have achieved strong revenue growth as well as profit growth due to the rapid increase of 5G subscribers and business services.

5G user growth enables a positive business cycle

Through strong 5G investments in GCC countries, including Kuwait, a positive business cycle is beginning

to emerge. This can be seen in three key domains:
Consumer market: In just 19 months after 5G launching in the GCC, the number of 5G mobile phone users exceeded 2 million; twice as fast as the adoption in the 4G era. Especially in the second half of 2020, the number of 5G mobile phone users in the Middle East increased by more than 350% after iPhone 12 5G launched. In Kuwait, for instance, the 5G user penetration rate has almost reached 17%, which is the highest among the GCC countries. This is going to reach the threshold of popularity of new things based on Rogers s Diffusion of Innovation Theory, in which the popularity of new things is led by a small number of people, and once the 20 percent threshold is reached, it will enter a phase of rapid growth. It is predicted that as more brands of high-, middle- and low-end 5G mobile phones are released, the number of 5G users in the Middle East could reach 8 million by the end of this year.
Home market: Since the pandemic, gaming, HD video, remote working, and remote education have become top home applications. When fiber is unavailable in many areas, 5G has provided remote working and education for more than 380,000 families, ensuring the availability of networks and services. Kuwait alone accounts for more than 45% of 5G FWA (Fixed Wireless Access) subscribers in the Middle East.
Industry market: 5G business leased lines have grown rapidly since the second half of last year. Over the past year, the number of 5G 2B leased lines has grown from 230 to 12,000 in the Middle East, with about 40% of demand coming from Kuwait. During the curfew period in Kuwait, carriers and banks leveraged the unique value of 5G mobile connectivity to implement mobile banking, ensuring that important real-time and contactless services can be accessed anywhere. Meanwhile, the Kuwait Ministry of Education is planning to connect hundreds of schools through 5G to enables better connections, as well as more and more intelligent application scenarios which are significant to peoples' livelihoods, and which enhance national strength. 5G leased lines provide the fastest time to market, and high QoS guaranteed wireless connections, especially in areas with less fiber deployment. These 5G features demonstrate irreplaceable value for a number of SMEs, as well as campuses such as schools, hospitals, factories.

The 5G development journey is far from over. While rapid progress has been made, most agree that 5G s potential is still in its infancy in Kuwait. Global case studies allude to this future potential.

For example, based on its Q2 2021 financial report, South Korea's LG U+ achieved sustained growth with a 39.8% increase in net income. As of the end of June, the LG U+ s 5G user base has more than doubled year-on-year to 3.73 million, accounting for 21.7% of the total users. 5G demand has been spurred by LG U+ s continuous development of value-added services and wide-range of 5G use cases for both consumer and enterprise segments. AR shopping, remote learning applications, VR content libraries, and telehealth applications are just some of the new services accelerating 5G user migration. These in turn enable service providers to offer package upgrades and increase ARPU. More importantly, this service diversity and innovation brings wholly new experiences to 5G end users.

The performance of Kuwait s 5G market in H1 2021 provides confidence that the achievements of South Korea will continue to occur in the GCC countries.

Continuously innovate 5G services to achieve new business success

It s clear that 5G is becoming an accelerator for operators businesses in the GCC. 5G is also an infrastructure that underpins other segments of the digital economy. This value is echoed in governments national development strategies, which are taking the opportunity to transition from oil-dependency, and which spotlight digital transformation, connected cities, and inclusive digital access as instrumental to reaching long-term socioeconomic goals.

This will undoubtedly bring many new and exciting 5G-powered applications to the GCC. These will not just benefit telecom operators, but businesses and countries overall. Analysys Mason has projected that 5G will support economic benefits in Kuwait by generating a cumulative increase of more than USD1 billion in GDP until 2025. The spread of digitalization in Kuwait has a potential translation to 25,000 added jobs. For the government, with greater 5G, cloud, and AI innovation, it will deliver wide-ranging benefits through improving access to healthcare and education, reducing road congestion, increasing the attractiveness and likeability of cities, and inventing new ways of communication.

For pillar industries such as oil & gas, digital transformation is becoming the industry s strategic vision. The large scale use of cutting-edge applications such as HD CCTV cameras, mobile surveillance, remote collaboration, remote control of robots, AGV, and so on will all greatly improve productivity. All of these use cases need ubiquitous and reliable mobile connectivity with wide area coverage. 5G s air interface capabilities, coverage, latency, mobility, E2E security, and SLA guarantee can perfectly meet the requirements of such campus applications. Indeed, 5G is actively accelerating digital applications in this industry. Some leading oil companies in Kuwait are already conducting 5G beta tests with operators to validate the productivity gain of innovative use cases.

The path forward

In summary, the strong growth in Kuwait s 5G market in H1 2021 has proven that the country s visionary 5G investments have been worth it. These not only bring business success to operators, but better connections and superior experiences to individuals, families, and enterprises. The continuous innovation in 5G technologies will further enhance these networks, promote more innovative applications, and bring more business value to operators, as well as more value to society. TR

Qatar: a model for IPv6 adoption

The internet as we know it is transitioning to the latest Internet Protocol Version 6 (IPv6) to fulfill the ever-growing need for internet connectivity. IPv6 promises long-term global and enterprise-level benefits and various businesses and technical service providers have already moved to IPv6-only or dual stack network driven operations.

Despite the current IPv4 s falling availability of IP addresses and its increasing cost on the secondary market, many countries in the Gulf region continue to struggle with IPv6 deployment, barring exceptions such as Iraq, Saudi Arabia, the United Arab Emirates, and Kuwait.

To put things into perspective, as per Akamai, on August 19, 2021, IPv6 adoption in KSA ranks 9th at 39.9%, UAE ranks 11 at 37.4% whereas Qatar ranks 121 at 0.1%.

However, Qatar has been steadily upping its ante when it comes to creating an advanced technology-ready ICT infrastructure.

With its modest ratings in the global IPv6 arena, Qatar s foresight in implementing IPv6 to enable next-generation telecommunications technologies such as 5G and Internet of things (IoT) to connect multiple devices was quite on the target. Moreover, Qatar was ranked first globally in the rate of internet adoption among the total population with a percentage reaching 99%, according to The Global State of Digital 2021 report.

Taking baby steps

To ensure a smooth transition from IPv4 to IPv6 to support the development and achievement of Qatar national vision 2030, Qatar s Communications Regulatory Authority s (CRA) IPv6 task force met with stakeholders and the Réseaux IP Européens Network Coordination Centre (RIPE NCC) at the CRA headquarters in May 2018 to create a roadmap for the next-gen model of connectivity. As a socially and economically growing nation, the requirement of an advanced ICT infrastructure to act as a catalyst for the development of emerging technologies and smart solutions was key for Qatar. The IPv6 Council Qatar, a chapter of the International IPv6 Forum under Eng. Abdulla Jassmi, technical affairs department manager, CRA dedicated to the advancement and promotion of IPv6 best practices and integration.

The task force operated on three main phases:

Assessment: In this phase, the assessment of the status of IPv6 adoption, as well as evaluation of the means required for the transition across the stakeholders, was made. A realistic roadmap was prepared and developed based on the relevant readiness, needs and requirements for the transition journey.

Awareness: This phase aimed at providing guidance and supportive assistance to organizations to develop their migration strategy and layout their action plans for the transition. This consisted of many campaigns, initiated by the regulator along with the leading stakeholders such as academic institutions, the internet service providers, governmental entities, banking industry, aviation, oil, and gas.

Implementation: Every national transition strategy of such a scale would require a focused implementation phase with national deadlines. This phase focused on gaining hands-on experience, learning from trials and testings through dedicated testing labs for this transition. Key stakeholders were identified to become the focal points for the transitional requirements to encourage and promote IPv6 transition and implementation throughout the industries. These key stakeholders were responsible for enabling IPv6 starting from their organizations and the organizations they led.

Facilitation and support

The key requirement for facilitation was ensuring that the technical teams had the technical expertise required for this initiative. CRA in collaboration with RIPE NCC conducted a technical IPv6 training course with the primary objective of internet resources management capacity building as part of a series of training courses under the IPv6 National Implementation Strategy. Technical training was provided in coordination with regional and international organizations to meet the requirements and support for the transition. Equally important was knowledge sharing across all industries. As academia were the leaders in adopting IPv6 across the organizations in Qatar, they were set as a key model who encouraged, shared their experience and lessons learned, and all the activities they had performed throughout the implementation of dual-stack solutions, where both IPv4 and IPv6 co-exist on the same network, to the other industries.

Ever-present challenges

Challenges were addressed to provide suitable solutions to encourage stakeholders and the ICT ecosystem in the State of Qatar to move forward.

It was a learning by doing approach, something that required studying, testing, implementing, and learning from the outcomes, said Salma Sulaiti, head of standards and next-generation technology of CRA during a Telecom Review Webinar on IPv6.

We needed to adopt a plan based on the progress that had been made by the ICT ecosystem. There was resistance as it was a change within the industries. People needed to have a new mindset to learn new skills and put new plans to ensure a smooth transition, she stressed. Throughout the process, it was important to convince people and promote the benefits and advantages of IPv6, she adds.

One of the key challenges was vulnerabilities and security threats related to IPv6. Therefore, it was important to provide awareness and education about IPv6 security. The taskforce worked with leading universities in Qatar to develop security guidelines for IPv6. Moreover, the COVID-19 pandemic posed many challenges including social distancing which has heightened the need for a robust ICT infrastructure for remote communications and ensuring work continuity. The importance of IPv6 for all types of communication services solutions is key to advancement towards digital transformation.

Lessons learned

Qatar s success in charting a smooth transition from IPv4 to IPV6 offers some important lessons that can be emulated by other developing countries. The first step was setting a clear national goal by providing a clear strategy, including the action and plans, cost analysis required for a smooth transition of IPv6 across the nation. This is followed by the identification and assigning of roles and responsibilities related to the project throughout the process.

Since it was a learning by doing process, plans and agenda had to be tweaked based on the progress made by the ICT ecosystem as a whole. This involved providing technical and non-technical support, coordinating and collaborating, providing IPv6 test labs along with key stakeholders, providing technical guidelines for the implementation and the vulnerabilities of IPv6.

Qatar managed to overcome its challenges by providing smart measurable solutions, addressing the challenges encountered and providing the solutions. It also kept the level of motivation high in terms of the benefits of IPv6 implementation and keeping the channel of communication open and transparent. A continual test, trials, and pilot projects were essential to achieve success.

I wouldn t deny that there have been some drawbacks, but to move forward, we needed to get ourselves comfortable throughout this journey as a whole ecosystem, stresses Sulaiti.

For the world at large to move away from IPv4 and switch to an IPv6-only public internet, wide-scale deployment is essential. Harnessing technology and innovation to drive a sustainable economic agenda while improving quality of life and enhancing the delivery of public services in sectors, such as transportation, logistics, healthcare, sports and environment is of prime importance.

There can be a lot at stake when taking on technologically demanding world events such as the World Cup with billions of dollars spent. However, the returns can be massively rewarding. Qatar could well be in that position with robust IPv6-enabled connectivity. TR

David Erlich, business consulting director, Sofrecom

Digital services: A solution or a problem for the climate s challenge? A preliminary response based on a quantitative approach

Digital services have been indicted for contributing to climate change, and in early 2020, Alternatives Economiques magazine titled The unsustainable growth of digital . The digital boom certainly exacerbates the carbon footprint, but can it also be part of the solution? How can we rigorously study its impact?

The carbon footprint measures the greenhouse gas (GHG) emissions caused by population consumption. Unlike emissions produced across the territory, the carbon footprint includes GHG emissions associated with imported goods and services, and excludes those associated with exported ones.

The carbon footprint and imported emissions

The French carbon footprint, for example, can be broken down as follows:

- Domestic production of goods and services (27%) includes the energy consumed (e.g. gas) to heat industrial buildings, power electrical equipment (mobile antennas) as well as the gasoline needed to run business vehicles
- Import of raw materials and products (57%) includes the carbon consumed abroad to extract imported minerals (from Australia for example) but also the carbon emitted by Chinese coal to produce consumer goods (machine tools, smartphones,...) sold in France
- Direct household energy consumption (16%) includes emissions from homes (electricity, heating) and individual transportation

This footprint can be further broken down by consumed products. Thus, we can define a "digital" perimeter that includes telecom and IT services.

The carbon footprint of the digital sector, mainly from imported emissions

Translated into digital services, we will count in the domestic production the emissions related to the telecom operators network power supply in France (mobile, fiber) as well as the companies IT and telecom services in France (private networks, data centers) - This accounts for 10% of the footprint. Imported emissions represent 80% of the emissions. They essentially involve all equipment produced in Asia, in addition to the impact of data centers located abroad. Households emit the remaining 10%, by powering televisions and boxes at home.

The total French carbon footprint was estimated in 2018 at 749 Million Tons of CO2, and that of digital services at around 12MTC02 equivalent to 1.7%.

Most of the digital carbon footprint comes from electricity. This energy is used to power equipment in France with nuclear energy but also to build them in China with a very carbon intensive electricity.

The positive impact of digital: Abatement

Digital services are also part of the solution because they help avoid emissions. The IPCC predicts an abatement impact of various initiatives, including digital.

The positive effects on the climate are calculated based on a series of use cases . One example is to examine how smart meters or remote control of air conditioning can save energy. Various bodies or researchers have carried out global studies. Their results show a positive impact of the digital of around 4 to 8%, but some go much further, such as GESI, which announces 20%.

The most impacted sectors are Transportation (smart cities) thanks to oil consumption savings following the use of autonomous electric cars, intelligent traffic regulation, and car

sharing practices;
- Energy with solutions for optimized use (savings), production of electrical energy (less waste) and management of renewable energies (SmartGrid)
- The decline in business travel thanks to the development of collaborative solutions
- The industry can benefit from logistics automation of connected factories, reducing the movement of machinery or streamlining recycling processes.

We can venture to apply these solutions to the French carbon footprint by applying these formulas to the three categories: production, imports and consumption.

The "net" footprint and the specifics of France

Based on the GSMA s extensive analysis, the gains would come mainly from transportation, which accounts for a share of emissions in France (29%) larger than the European average (21%). A quarter of the estimated gains would come from the decrease in traffic brought about by the use of collaboration solutions (video conferencing) and another half from connected mobility solutions linked to IoT (carpooling, traffic management, etc.). The total reduction would be 10%, which would be applied to the 125MtCO2 of road transport and the 23.4MtCO2 of air transport. This represents -3% for companies and -6% for households.

The gains related to power energy are not very significant in France due to the predominance of low-carbon nuclear energy.

The abatement effect on imported emissions mainly involves the manufacturing processes of Chinese smartphone factories, which essentially consume electricity. We have selected a rate of -2.4% inspired by the GSMA, quite far from the GESI figure ...10 times higher.

Different visions

In conclusion, while the digital footprint is starting to be relatively well known, this is not the case for abatements. On the other hand, we must not lose sight of the fact that emissions are always localized. Thus a purely local vision or a purely global vision offer quite different realities. In a world of low-carbon electricity, the digital footprint is lower and the benefits of abatement are mainly concentrated on transport. The balance sheet can thus appear very positive locally. But the majority of emissions are imported; they depend on how Asia manages its electricity mix and uses digital technology to optimize (from an emissions standpoint) its industrial and logistics processes which ultimately hold the key to digital s net carbon footprint. TR

David Erlich, business consulting director, Sofrecom

Digital Carbon Footprint 2018 - France

	Domestic production	Imports	Households	
Total MTCOE (2018)	201	425	123	749
Digital MTCOE (2018)	1,5	9,7	1,4	12,6
Digital share (in%)	0,7%	2,3%	1,1%	1,7%

Digital Service Abatement 2018 - France

	Domestic production	Imports	Households	
Total MTCOE (2018)	201	425	123	749
Abatement (in%)	-3%	-2,4%	-6%	-3,2%
Abatement MTCOE (2018)	-0,7%	-10,2	-0,7	-24,2

"Net" Carbon Footprint 2018 - France

	Domestic production	Imports	Households	MTCOE (2018)
Digital footprint	1,5	9,7	1,4	12,6
Abatement	-7,0	-10,2	-7,0	-24,2
Total	-5,5	-0,5	-5,6	-11,6

The whys and hows of telecom infrastructure automation

Digital transformation is everywhere literally. From the way we make conversation up to how we make transactions, leaning towards the automated approach is convenient and inevitable. This is applicable as well to the telecom industry as a whole; particularly on the backend.

In this regard, telcos face challenges to optimize their services and operations continuously. Otherwise, facing the risk of being in a saturated market exists with many competitors and vendors vying for the same consumers. The goal then is obviously to deliver the highest levels of connectivity and improve customer service. What s the best way to do this? Network automation.

With emerging technologies like artificial intelligence (AI), machine learning (ML), IoT, and 5G, telcos have no choice but to embrace a fully digitalized ecosystem. Automation is one of the driving forces in the telecom sector, influencing both tower operators in their infrastructure management and carriers duty to the end-users.

The latest data shows that the orchestration and network function virtualization (NFV) market is projected to surpass $70 billion by 2024. Moreover, by 2025, telco investments in AI will reach around $11.2 billion and 80% of mobile network operators (MNOs) are expected to have automated 40% of their network operations.

Why automation matters

Four words. It makes things better. Considering the emergence of 5G in a smarter world, telecom infrastructure must adapt to automation now (not later). I think in the coming years worldwide, 5G will be exhaustively developed. This will demand more productivity, more operations, and more coordination in terms of extending the reach of the coverage of 5G, particularly in big cities, where there will be more density, said Luis del Valle Alemán, chief revenue officer at Atrebo.

Building faster and scalable means of running the business is what telco

infrastructure automation brings to the table. Technology is being applied to replace legacy systems and customers become at the core of the environment.

No doubt, the need for seamless, never-ending connectivity, increased competition, and corporate accountability made automation mandatory for the telecom industry. Some key benefits this will bring include efficient data flow, increased asset security, and improved revenue per user.

Compared to orthodox, automation can process information at a much higher rate. With this smart method, a successful digital transformation may take place. With telecom infrastructures being physically present and susceptible to risks, automation can enable fraud-proof control of assets and increase the protection of equipment. By automating telco infrastructure, companies can also develop a data-driven business model leading to an increased market share and reduced cost, energy, and waste.
As we continue to move toward a more interconnected world, investing in connectivity infrastructure becomes critical. People s lives have become digital-centered with 5G, IoT, and cloud applications propelling the demand for connectivity further.

Hence, carriers and service providers are especially working toward delivering expansive, uninterrupted connections with lightning-fast speeds which rely on a robust tower infrastructure. To make this new generation of connectivity a reality, tower operators must have a targeted and strategic approach for modernization and expansion.

To remain competitive with carriers, carefully monitoring performance and providing a pathway for additional 5G expansion will become increasingly important for telco towers in the coming months and years. Particularly as smart cities develop and mature, small cells, distributed antenna systems (DAS), and rooftop sites can help enhance the network density in heavily populated urban areas.

This type of infrastructure plays a larger role in connectivity moving forward, and to ensure the best coverage and performance of these deployments, automation is requisite.

Several major trends also determine why automation is indispensable. Tower companies need reliable realtime visibility into what s installed on their structures and what capacity for installing additional equipment to accommodate the rapid rollout of 5G. Also putting pressure on tower companies to continue delivering strong returns are new competitors, higher investor expectations, and a rise in M&A and tower restructuring deals.

With relevant assets and tech-focused resources, the coveted shift from traditional to digital will constantly happen.

How automation works

With automation, the network has the groundwork for more innovation, improved efficiency, sustained success, and a sustainable structure. Tower Automation Alliance emphasized the two most important automation ingredients: intelligence which drives change and programmability which coordinates the responses and adaptations.

Some of the key technologies towercos must focus on are AI/ML, tower asset monitoring, robotic process automation (RPA), digital twin, and infrastructure security.

Telecom tower companies should take advantage of AI/ML-led intelligent tools for functions such as automated dispatching, preventive maintenance, and optimized field visits.
By leveraging drone-led tower inspection, for example, improves the efficiency of operations by tracking your tower devices and assets in real-time.
Various tasks such as invoice processing, event-based maintenance, backup and recovery processes, and dispute handling with landlords and vendors can be resolved by RPA.
Through the digital twin technology, towercos can leverage operational efficiencies in planning, design, deployment, along with network optimization and insights into new and innovative business models.
To deliver and maintain an effective, end-to-end network security strategy, threat analyses and security assessments must be adapted to an evolving threat landscape, avoiding any colossal damage.

The current model of telecom network operations needs to revamp to keep up with a more advanced and digitized world. Automation will therefore be a vital step for the new operating model of not only towers but the transformation of communication service providers (CSPs) to being digital service providers (DSPs).

In the journey from CSP to DSP, many network operators today have orchestrated network and IT domains but few have the capability to orchestrate end-to-end (E2E) services. Thus, the implementation and provisioning of automation use cases across all radio access network (RAN) types and vendors must be done. Only then can E2E orchestration happen. In line with this, building 5G standalone (SA) architectures in the next couple of years delivers the full promise of network slicing and tailor-fit connectivity for telcos. TR

The latest data shows that the orchestration and network function virtualization (NFV) market is projected to surpass $70 billion by 2024

IoT connectivity:

Challenges and strategies

Slowly, at a pace measured in decades, we are shifting to technologies whose main character is that they can be combined and configured endlessly for fresh purposes," said W. Brian Arthur, a renowned author and economist.

Today, digital transformation is influenced by four simultaneous technology shifts: cloud computing, big data processing, enterprise mobility, and the Internet of Things (IoT). Each technology has reached a certain level of maturity yet organizations still face challenges of upgrading to these solutions and delivering business value.

Among the four, IoT is one of the most apparent topics to tackle because it extends and complements the capabilities of other technologies including software-defined networking (SDN) that is becoming more evident across industries.

Connectivity is a fundamental building block of IoT. It links things together and integration makes them into a whole. With the growing IoT demand, this process does not come easy. Many organizations are facing difficulties with their IoT implementation and management, highlighting the importance of businesses to overcome the potential struggles that they may face along the way.

Full IoT value does not rely on just connecting a few devices together. Being a system of systems, IoT is made up of many different components and expertise. Hence, to revolutionize a business model and use cases, end-to-end systems integration and highly-coordinated initiatives must be designed.

Biggest IoT connectivity challenges

The way people live, communicate and do business has been touched, one way or another, by IoT. All around the world, billions of web-enabled devices are turning the world into a massive digital hub. Aiming for smarter homes, offices, vehicles, and other operations, IoT connectivity encounters various problems such as the following:

Scalability The ability of the underlying infrastructure to scale is necessary as more devices get connected. In 2021 alone, reports indicate that there will be 35.82 billion IoT devices installed worldwide. In line with this, IoT scaling also unleashes a tsunami of new forms of data as organizations add more IoT connectivity devices, such as sensors, gateways, routers, or cameras.

The scalability issue is multifold and encompasses other matters like cost, complexity, and bandwidth efficiency. McKinsey Digital reported that 127

devices hook up to the internet for the first time, every second. Thus, service providers, network operators, and other digital enablers must implement a connectivity solution to keep up with the maintenance and management load as the network grows.

Compatibility With IoT s expansion, many different technologies compete to become the standard which causes difficulty upon IT integration. Other compatibility issues may also arise from diversified operating systems, non-unified cloud services, and a lack of standardized machine-to-machine (M2M) protocols.

Users must keep their devices updated and patched for continued compatibility. As an example, when an IoT device communicates with another device and both devices run on different software versions, performance issues can occur. With regards to this, synchronization and interoperability of data flow between different smart devices in an IoT platform are also difficult to achieve.

Security Can you imagine that an average IoT device gets attacked just five minutes after it goes online? This trend is only expected to grow as more devices connect to the internet. Symantec revealed that the majority of cyberattacks on IoT devices are also a result of network routers, with an average of 5,200 attacks per router on a monthly basis.

Apart from the scalability and compatibility challenges mentioned above, successful IoT deployment would also need to resolve traditional network security challenges. These include device identity, personal data protection, access control, distributed denial of service (DDoS) attack, authentication, and other confidentiality issues. End-to-end security in practice requires the ability to make changes quickly so that problems can be fixed before they are exploited.

Essential strategies to implement

Company investments in IoT can be up to $15 trillion in 2025. These include investments being done in healthcare, manufacturing, automotive, retail, telecommunications, finance, and cloud, among others.

Yet to ensure IoT success, it s vital to understand the immediate needs of the connected infrastructure to map out all integral technical requirements. An IoT initiative might start small, but enterprises and solution providers must think big and prepare to scale sooner than later.

By and large, IoT connectivity has evolved from point-to-point communications into complex, multicarrier ecosystems. As a result, enterprises are demanding more from their IoT solution providers for sophisticated and up-to-date services.

Here are some IoT strategies to keep in mind during the planning and execution stages:

Design and test solutions that are highly flexible and configurable are priority. Flexibility will demonstrate the device performance under actual operation modes. The solution should be simple, inexpensive, and able to be used in both R&D and manufacturing to minimize correlation issues across the different phases of development.
IoT devices must undergo compliance testing which includes radio standards conformance and carrier acceptance tests, and regulatory compliance tests such as radio frequency (RF), electromagnetic compatibility (EMC), and specific absorption rate (SAR) tests. This will reduce risk of failures and guarantee that a device is up to the mark.
Coexistence testing measures and assesses how a device will operate in a crowded, mixed-signal environment. With various IoT devices interacting with each other, it is important to assess the potential risk in maintaining wireless performance in the presence of unintended signals found in the same operating environment.
Organizations must design and implement each layer of an IoT architecture (perception, transport, processing, application, business, and security) at-scale to handle large volumes of device and sensor data to be collected and analyzed, leading to informed operational and strategic decisions.
More IoT use cases correlate with economic success, an analysis derived from a McKinsey research. Thus, greater widespread usage forces a cultural shift into the organization wherein companies must be capable to adapt to any technology gaps, particularly in talents and expertise. In this case, a go big approach may seem counterintuitive, and depending on the business capacity, opting for a slowly-but-surely integration may work for long-term.
Increasing the potential value from IoT activities can be derived from accessing all sensor data. Currently, there are many publicly-hosted IoT platforms that provide data access, storage and analytics for applications but vigilance is the key. Learn which data should exist in a public environment and which should remain private. Establishing a hybrid strategy can help continued relevance and competitive advantage by retaining data ownership.
Commonly known as digital twin, this virtualized replication of the environment is suitable for testing or development activities in parallel to live production. A best practice to do is automating conformance and regression testings to confirm compatibility between the IoT platform and applications.

There s no single path to IoT success. With the current pace of digital transformation globally, companies have their own strategies that are deemed to be applicable on their industry or scenario. Some companies focus on connecting existing products to be more attractive and beneficial to customers while others harness opportunities for operational improvements that increase efficiency and lower costs. Additionally, several companies put their bets on creating new products or remaking business models that may improve their line of work substantially. TR

Etisalat Group appoints new CEO for UAE operations

Etisalat Group announces the appointment of Mr. Masood M. Sharif Mahmood as Etisalat UAE operations chief executive officer (CEO), effective from August 29, 2021.

Reporting to Etisalat Group CEO Eng. Hatem Dowidar, this new position is part of Etisalat Group s ongoing and agile transformation strategy that targets diversifying and exploring new growth opportunities, accelerating business development in the digital field, expanding geographical presence, and maximizing operational efficiency.

The appointment also marks the company s relentless efforts to maintain its leading position in digital transformation and continue providing innovative services and solutions to all customers, while investing in UAE nationals and empowering them.

Eng. Hatem Dowidar, CEO, Etisalat Group, said, Etisalat is thrilled by the joining of Masood as CEO for Etisalat UAE operations. With his recognized career and a strong drive for results, Masood is a true people leader who will focus on growing Etisalat UAE even further through achieving operational efficiency and generating value by organic growth strategies. In the new normal where smart and digital services dominate the scene, Etisalat backed by one of the most advanced portfolios of smart services and solutions in the region continues to attract and empower UAE s leading talent in the digital field. We wish him great success in his new role at Etisalat, home to the fastest mobile network on earth .

Mr. Masood is a widely experienced senior executive with a strong operational and financial track record spanning over 20 years primarily in the telecom and technology sectors. He held leading positions throughout his career including being the CEO of Yahsat and the vice president at Mubadala s Information and Communications Technology (ICT) unit. Additionally, he served on the boards of SHUAA Capital, Emirates Integrated Telecommunications Company (Du), and Abu Dhabi Financial Group (ADFG), among other expertise gained in positions at Dubai Investment Group and the Executive Office of the Government of Dubai.

Masood M. Sharif Mahmood, CEO, Etisalat UAE operations, said, It is a privilege to join Etisalat one of the world s leading telecom groups and ranked the strongest brand across all categories in the Middle East and Africa. This exciting appointment represents a great milestone and a motive to work continuously towards adding value for the services and solutions provided to Etisalat customers, capitalizing on our employees great talent, passion, and capabilities, while realizing the overall objectives of the company. Inspired by the continuous support and wise leadership of the UAE, Etisalat will continue deploying the latest innovative technologies to enrich the digital experience of customers and communities, bringing the country to the forefront in global ICT ranking.

His expertise in operational and financial fields led to developing high-performing teams, establishing creative work culture, and setting development strategies that elevated business performance. He holds an MBA with a concentration in Finance from McGill University in Canada, and a Bachelor s Degree in Computer Systems Engineering from Boston University in the United States.

Zain KSA supports CITC s national roaming initiative

In partnership with the Communications and Information Technology Commission (CITC) and other telecom operators, namely stc and Mobily, Zain KSA announced its support to the National Roaming initiative launched by Saudi s communication authority. This local roaming service aims to maximize the inclusiveness of telecommunication services throughout all Saudi regions and cities, with a particular focus on remote villages and desert areas. It would cover around 21,000 villages and desert lands across 147 governorates throughout the Kingdom, serving over 5 million users.

According to CITC s plan, the initial phase of the initiative will be launched in Asir and then it will be completed in the rest of the Kingdom s regions by the end of 2021. Following this, mobile users can utilize any available telecom network whenever they are outside their carrier network s coverage area.

Chief business and wholesale officer at Zain KSA, Eng. Saad bin Abdul Rahman Al-Sadhan, lauded the introduction of the National Roaming service, emphasizing Zain KSA s role as a key partner of CITC on this initiative. This is in line with the company s unwavering commitment to supporting nationwide efforts to achieve inclusive digital transformation and deliver the best telecommunications and data services throughout the Kingdom.

It is worthy to note that the National Roaming service will be part of the package offered by the service operator at no additional cost incurred by the user. The authority added that the local roaming service includes all services such as voice, Internet, and SMS.

Etisalat assures customers of smooth 2G switch-off

In line with the Telecommunications and Digital Government Regulatory Authority s (TDRA) announcement on 2G network gradually being switched off by the end of 2022, Etisalat assures all customers that it will continue to support this transition and modernisation of the network.

The 2G sunset is keeping with Etisalat s strategy to support the UAE vision 2030, bringing digital transformation in the country as well as enhancing UAE s ICT ranking in the global market. Etisalat is ensuring a smooth transition by educating all its customers including individuals, enterprise, and small and medium businesses and providing alternate devices which support the switch off from 2G to advanced 4G/5G networks.

Etisalat is currently coordinating with all business sectors that are still using the 2G network for machine to machine (M2M) communications such as industrial, vehicle-tracking devices, gateways and Point Of Sale devices (POS). Offers are made to upgrade and replace those devices to support 4G network and LTE CATM1 IoT Network that will help achieve operational efficiency with better connectivity and lower network latency.

The 2G network switch-off is aimed at keeping pace with the rapid and continuous developments of the telecommunications sector, particularly in the digital front. The frequencies and bands utilised by the 2G network will be allocated to more advanced networks.

The 5G network has tremendous capabilities to support the acceleration of digital transformation that leads to new prospects and opportunities in many sectors. As a major enabler of the next generation of broadband service and the Internet of Things, investing in 5G is necessary as it delivers faster speeds and ultra-low latency, providing access to all kinds of applications and services and will drive innovation, efficiency and productivity to a wide range of business and industrial sectors of the UAE.

5G network is the backbone of many emerging technologies such as Internet of Things, cloud computing, big data, artificial intelligence, robotics, autonomous technologies, augmented and virtual reality, among others. With the shutdown of older generations of networks, individuals and societies will witness the benefits of these technologies as an essential part of the digital future.

Zain KSA is digital partner for MCIT s ThinkTech initiative

In its continuous commitment to support and develop young national talents in the digital entertainment sector in the Kingdom, Zain Saudi Arabia sponsored the second edition of the Make and Play it for Juniors competition, in the category of digital strategic sponsor, as part of its partnership with the Ministry of Communications and Information Technology (MCIT) within the ThinkTech initiative. This was in partnership with the Saudi Electronic Sports Federation, within the 2021 Players Without Borders season.

The competition targeted the youth category from 9 to 14 years old to teach them electronic games programming, discover their talents and support and guide them in this field. The competition focused at enabling them to live a different cognitive experience through introduction to the technical aspect of game development, training them on different development environments with expert mentors in the field. The competition has attracted 4,600 participants from all over the Kingdom.

In addition to the Make and Play competition, Zain Saudi Arabia recently announced its strategic sponsorship of the ThinkTech Talk forum, which aims to spread awareness about the industry and development of electronic games by highlighting inspiring local and international experiences in this field.

In confirmation of its leadership in the field of developing the electronic gaming environment in the Kingdom, Zain Saudi Arabia ranked first in the Game Mode report issued by the Communications and Information Technology Commission (CITC) for the second quarter of 2021 AD, in 4 electronic games: Fortnite, FIFA 21, APEX Legends and Dota2, and the average response time of mobile internet in the city of Riyadh. Zain Saudi Arabia also announced, at the beginning of this year, its cooperation with NVIDIA, the leading electronic games provider in computing, to launch the GeForce NOW cloud gaming platform, exclusively, on the fifth generation network (5G) in the Kingdom of Saudi Arabia.

Etisalat increases Maroc Telecom ownership stake to 53%

Etisalat Group recently signed a $505 million agreement to acquire the 8.7% stake of the Abu Dhabi Fund For Development in Etisalat Investment North Africa LLC (EINA). This eventually increases Etisalat s ownership of EINA to 100% as well as its ownership of Maroc Telecom Group from 48.4% to 53.0%. This is made possible as EINA holds shares in Maroc Telecom Group through investment in Société de Participation dans les Télécommunications (SPT). In May 2014, Etisalat successfully held 91.3% of Maroc Telecom through EINA, valued at $5.6 billion. State-owned Abu Dhabi Fund for Development held the rest.

Maroc Telecom Group is the largest telecom operator in Morocco, having operations in 11 countries in Morocco and West Africa. It offers telecom services such as mobile and fixed voice and broadband, and mobile money.

The cost of acquisition, funded by bank borrowings, is subject to change based on prevailing market conditions such as foreign exchange rates. The closing of the transaction is also subject to fulfilling certain conditions.

Karim Bennis, chief financial officer, Etisalat Group, said in a statement, Accordingly, this will positively impact Etisalat Group s consolidated net profits due to lower minority interest of group consolidated results and potentially increase future dividends from Maroc Telecom Group.

Telecom Egypt records 88% hike in H1 net profit, revenue up 16%

Telecom Egypt posted net profit of 3.9 billion Egyptian pounds ($249.20 million) for the first half of 2021, up 88% from the same period last year, as a result of a strong operational performance, growth in investment income from Vodafone, and FX gains, according to a company statement.

Consolidated revenue settled at EGP 17.4bn, growing 16% YoY on a 31% YoY hike in data followed by voice and other enterprise revenues.

Customer base continued to grow YoY across the board with fixed voice customers increasing 6% YoY, fixed data 18% YoY, and mobile customers 21% YoY.

EBITDA came in at EGP 6.7bn, growing 33% YoY and recording a strong margin of 39% on a higher margin revenue mix and cost containment efforts.

In-service CapEx pegged at EGP 2.4bn, 14% of sales, while cash CapEx stood at EGP 6.0bn, excluding spectrum fees, representing 35% of top line. Net debt amounted to 19bn, representing 1.4x of annualized EBITDA compared to 1.6x in FY 2020, while the effective interest rate declined to 5.7% compared to 6.9% in H1 2020.

Commenting on the results, Adel Hamed, managing director and chief executive officer, said, "Top line grew 16% YoY mainly owed to significant data growth of 31% YoY, which, in parallel to the continued cost containment efforts, sustained the improve profitability. EBITDA margin came in at 39% and operating profit grew almost 60% YoY, trickling down to an organic net profit growth of 54% YoY.

Our focus on cash flow is also evident in this quarter s results and in the recent announcement of a modified shareholders agreement with Vodafone Group. In the first half of the year, we have doubled our net operating cash flow and reached a positive free cash flow both including and excluding Vodafone Egypt s dividends of EGP 1bn and EGP 0.2bn, respectively, the latter being a first in five years, which is a substantial milestone especially considering the EGP 2.4bn spectrum payment in Q1, he added.

We are also happy to inform you that we have received the second tranche of Vodafone Egypt s exceptional distribution of EGP 3.6bn in July, he said.

du urges device upgrade prior to 2G network closure

du, from Emirates Integrated Telecommunications Company (EITC), will be shutting down its 2G networks in the near future as per the direction of The Telecommunications and Digital Government Regulatory Authority (TDRA). This is in line with mobile technology developments, as well as increasing demands to improve users overall mobile experience. The 2G network (GSM) shutdown will be phased out across the UAE and is expected to be completed by the end of 2022.

As 2G services will no longer be available, customers still using 2G devices will need to switch to 3G/4G/5G mobile-supported devices. Upgrading devices will enable high-definition voice quality, high-speed data connection, and higher internet surfing and downloading speeds. Mobile users who are currently using a 3G device on the 2G network can change their settings to 3G to avoid any service disruption and continue using their devices as normal.

Mobile phones available at all du stores and e-shop are 3G, 4G, and 5G ready. du customers are encouraged to visit the telco operator's official website to learn more about the 2G shutdown and how to upgrade their devices.

stc s sustainability report: 18 bn riyals spent on local content, 40% drop in water consumption

stc s 2nd sustainability report revealed that spending on local content has increased to more than 18 billion Riyals. This is in line with the group s aim to achieve sustainability and create a positive environmental impact by supporting community development through the digital transformation process in the Kingdom. stc sponsors 292 projects that address environmental and social issues.

With stc s adoption of responsible best practices and raising standards in the ICT sector and achieving the principle of sustainability, the report revealed its efforts to decrease water use by 40% from 509,768m3 in 2019 to 303,789m3 in 2020, in addition to reducing the total electricity consumption by 16%, gasoline by 18%, and the use of paper documents in procurement by 100%.

The report reinforces the organisation s message that in all its functions and activities, it is fully committed to managing the business in the most sustainable way possible. stc has also been developing a Sustainability Platform to ensure it builds on the successes of 2020 and aims to make sustainability more transparent and accessible while raising the profile of activities, services and community initiatives, along with raising awareness for critical issues.

To achieve this end, stc has put in place three core services - a Volunteering Program where stc employees have the opportunity to enhance their participation in sustainable community development; Technical Enablement - a service that digitally transforms charities and non-profit organisations by providing them with digital solutions and platforms; and Knowledge Sharing - training courses used to build awareness of sustainability issues.

Ooredoo advocates shift to a managed end-to-end IoT service

Ooredoo Qatar s new whitepaper entitled Device and Operational Support: The Overlooked Components for Successful IoT Deployment highlights how businesses can increase operational efficiency and enhance products, solutions, and customer engagement.

The newly-published report pinpoints the importance of both devices and operational support to the IoT sector s continued success. Ooredoo seeks to clarify the benefits of managed services when IoT is becoming regarded as a basic digital transformation requirement.

A key prediction in the latest whitepaper is that managed end-to-end IoT service will play a crucial role in enhancing products, solutions, and customer engagement while pioneering the creation of top-line revenue streams such as digital services. Under a managed IoT regime, the twin roles of devices and operational support to ensure positive business outcomes are essential.

Ooredoo s secure and reliable networks and experience in provisioning single parts and assembling holistic systems alike, allow for the meeting of business needs through an IoT portfolio. These include IoT Connect, as well as vertical-specific solutions such as asset management, waste management, industrial metering, and fleet management.

Role of AI and ML in enterprise networks

The network is the pillar of any modern enterprise business operation. The absence of efficient connectivity would simply mean disruptions in the flow of information for companies operating with branches scattered around countries. Indeed, the ever-growing size and complexity of enterprise networks demand investments to build, maintain, administer and keep them secure. Hence, it has become binding for organizations to constantly keep track of the network infrastructure s rapid evolution and dynamism.

Moreover, the inevitable ubiquity of 5G technology s scalable bandwidth and lower latency in leveraging MEC to move applications and use cases to the edge will facilitate wireless extensions of present-day time-sensitive network (TSN) applications. The potential for TSN applications over 5G is one of the drivers in the pursuit of private networks and network slicing.

How will AI and ML help?

Enterprise network management is all about reducing CAPEX and OPEX to survive in a competitive digital-driven marketplace. Options such as intent-based networking are a better solution for today s complex, software-defined networks. However,

as these networks grow larger, the vast programmability of devices and flexibility in their configuration will lead to unimaginable levels of complexity. It can be said without exaggeration that a network driven by artificial intelligence and machine learning (AI/ML), is the only way for humans to navigate this complexity.

When in cloud

Applications are moving to the cloud. The network architecture needs constant updating to support the many different entrance points for data into the campus and the diverse paths that the data will travel. Many enterprises have not been able to maintain the network at a pace with the rapid adoption of cloud applications. Especially with the trend towards a hybrid workplace, networks should be able to deliver the right or the same level of access to information and systems for employees regardless of their locations. The combination of AI and cloud has the potential to accelerate processes and procedures, making organizations strategically competitive and technologically well structured.

> The combination of AI and cloud has the potential to accelerate processes and procedures, making organizations strategically competitive and technologically well structured

Technologies such as the intelligent cloud are capable of autonomous sensing, scheduling, repair, and evolution. It frees operators from basic repetitive tasks to automate cloud-based data centers by leveraging artificial intelligence (AI) technologies. By utilizing intelligent cloud, computing operators can manage resources to maximize power efficiency by scheduling resource use with a neural network system.

Moreover, the integration of AI and cloud computing will allow agile development of solutions, ensuring the efficiency of processes and reduced downtime. Intelligent cloud computing can facilitate the enhanced exchange of information between DevOps teams, assisting them in their work while building mobile sites. AI enables extensive data management, and cloud computing maximizes information security, making it possible to deal with massive amounts of data in a programmed manner. Also, since a cloud model operates on an on-demand basis for storage, it eliminates traditional infrastructure costs. With this model, an organization can use cost savings to fund the development of AI for cost-efficient projects.

Race to greener networks

The big issue facing the world today is the need to reduce harmful emissions in the atmosphere and minimize the impact of global warming, with the race to net-zero emission by 2050 gathering steam across the telecom industry. Recent findings suggest data traffic in digital networks and other ICT consumes about 7% of the world s electricity and is projected to increase to 13% by 2030. Supporting these new challenges means collecting information in the form of real-time telemetry throughout the network.

With the help of data analytics and AI methods operators are creating algorithms that will enable mobile networks to be more efficient in terms of saving energy and as a result, decrease CO2 emissions. For instance, machine learning (ML), a part of AI, can achieve energy efficiency by enabling greater automation by picking up the patterns from historical data without being programmed. Suggesting configuration settings that can be applied to base stations and other equipment will allow ML-based techniques to reduce energy consumption in network elements without impacting the quality of experience (QoE) for customers.

Supporting industry 4.0 requirements

The advancements in new technologies are not going to end anytime soon. Organizations that have

embraced and deployed industry 4.0 practices into their businesses have survived in the competitive digitally-driven marketplace. By using AI and ML innovations, operators can provide enterprise-level services to support industry 4.0 requirements.

Experts predict the rapid acceleration of enterprise migration to the network edge with 70% of enterprises running varying levels of data processing at the edge by 2023. Technologies such as the intelligent edge can enable enterprise uses cases that require aggregating, securing, and analyzing a great deal of data across operations and customers.

Recent market research findings reveal that from 42 billion in 2020, connected devices will touch 55.7 billion by 2025, out of which 74% will be IoT devices. To process the zettabytes of data generated by such devices, networks will need to be more distributed, flexible, and intelligent. Telcos and operators can monetize from such an ecosystem by delivering end-to-end solutions to end-users in networking as well as new business applications. Indeed, the industry 4.0 technologies facilitate industries to work smarter, while allocating resources for cost-effective and efficient processes, however, businesses must overlook the potential challenges of increasing cybersecurity risks across the network and its infrastructure. Companies need to formulate robust security practices that will safeguard the business from security threats and possible data breaches. TR

> “Connected devices will touch 55.7 billion by 2025, out of which 74% will be IoT devices”

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CRA approves wholesale charges for telecom networks from 2021-2023

The Communications Regulatory Authority (CRA) issued an order to direct Ooredoo Qatar and Vodafone Qatar to implement specific wholesale charges for 2021, 2022, and 2023; aiming to maintain a competitive, fair, and developing telecom sector in Qatar.

Wholesale charges are the price that telecom service providers pay to each other to interconnect and access their networks. These include termination services, interconnection link services, transmission link services, and duct products.

The CRA was keen that the prices for wholesale services approved by the CRA are in line with international regulatory best practices to ensure the provision of advanced and reliable telecom services across Qatar and building a competitive and innovative Qatari telecom sector that attracts investment. For fixed termination, prices will remain stable for 2021, 2022, and 2023 while mobile termination prices will decrease by 11%, 12%, and 13% respectively in the same period, said His Excellency Mohammed Ali Al-Mannai, president of CRA.

Under this order, the telecom service providers started implementing the set wholesale charges from the 1st of June 2021. This will remain in effect until the CRA issues another order amending the wholesale charges.

Nokia and Vocus launch 200G optical network in Australia

Nokia announced that Vocus, Australia's leading fibre and network solutions provider, has deployed Nokia s solution to set up the 200G optical links covering more than 4,100 km between Brisbane and Darwin. Nokia s 1830 Photonic Service Switch (PSS) is used to upgrade Vocus optical network between Adelaide, Brisbane and Darwin to deliver 200G with the capability to easily provide 300G and 400G in the near future. With this initiative, the Vocus capacity upgrade covers more than 7,100 km of fibre.

The deployment between Adelaide to Darwin and Brisbane to Darwin replaces the existing optical transport network to provide 100G and 10G services to Vocus Enterprise, Government and Wholesale customers. The deployment of 2 x 200G based wavelength unregenerated optical transport networks covers 70 sites, over a distance of 3,000 and 4,100 km respectively, and will help Vocus to optimize CapEx and reduce OpEx. The upgraded, higher capacity optical network allows Vocus to provide the latest generation of quality optical services, in connecting Darwin to Hypercloud Data Centres, regional locations and international submarine cables.

Nokia s solution is based on a flexible spectrum hybrid architecture with Colorless, Directionless, Contentionless Flex-grid (CDC-F) architecture at the terminal sites at Adelaide, Brisbane and Darwin, and a simpler Colorless-Flexgrid (C-F) solution at regional drop sites providing a total warranted capacity of 10.8Tb (54x200G) between Adelaide-Darwin and Brisbane-Darwin. The solution is powered by Nokia s Photonic Service Engine (PSE) super coherent digital signal processors. This is a cost-optimized solution designed to combine end-to-end 200G traffic with more economical nodes in regional sites, allowing express traffic and regional traffic in selected locations to be served by the same system.

NTRA approves regulatory framework to establish data centers in Egypt

The National Telecom Regulatory Authority of Egypt (NTRA) approved a regulatory framework to establish data centers as well as provide cloud computing services in the country.

This step comes in line with the State s strategy to uphold digital transformation and foster e-services provision to citizens. In line with this are the objectives of increasing investments in this field, optimizing Egypt s geographic location, and reinforcing its strategic position as a regional and global pivot point for data movement.

Furthermore, this measure was taken by NTRA to amplify Egypt s position as a gate connecting Africa and the Middle East to Europe, making the country one of the most promising markets in the rapidly-growing scope of data centers.

Several meetings and sessions with local as well as global corporations working in this field were conducted by NTRA, to come up with the optimum regulatory policies. In fact, the regulatory framework was set and approved to act as facilitating tool for the business procedures of data centers in global markets and within Egypt. The said framework is also set to provide the investment facilitation necessary for this scope, in an attempt to have more investments in cloud computing and e-content services.

E-transactions could be smoothly and rapidly carried out via quick access to content hosted in such centers across the Arab Republic of Egypt.

New branches added to 2Africa subsea cable system

The 2Africa consortium, comprised of China Mobile International, Facebook, MTN GlobalConnect, Orange, stc, Telecom Egypt, Vodafone, and WIOCC, announced the addition of four new branches to the 2Africa subsea cable system.

Alcatel Submarine Networks (ASN) has been selected to deploy the new branches in Seychelles, the Comoros Islands, and Angola as well as a new landing point to southeast Nigeria. The new branches, together with the recently announced extension to the Canary Islands, will increase the number of 2Africa landings to 35 in 26 countries.

This results in improved connectivity into and around Africa. Service providers can utilize the available capacity offered by 2Africa subsea cable on a fair and equitable basis at carrier-neutral data centers or open-access cable landing stations. This will encourage and support a healthy internet ecosystem.

Aiming to be the largest subsea cable project in the world, 2Africa will deliver faster and more reliable internet service to each country where it lands. Expecting to go live in late 2023, the 2Africa consortium has made considerable progress in planning and preparing for the deployment of the cable.

In fact, most of the subsea route survey activity is now complete. ASN is ready to deploy the first segment in 2022 as it started manufacturing the cable and building repeater units in its factories in Calais and Greenwich.

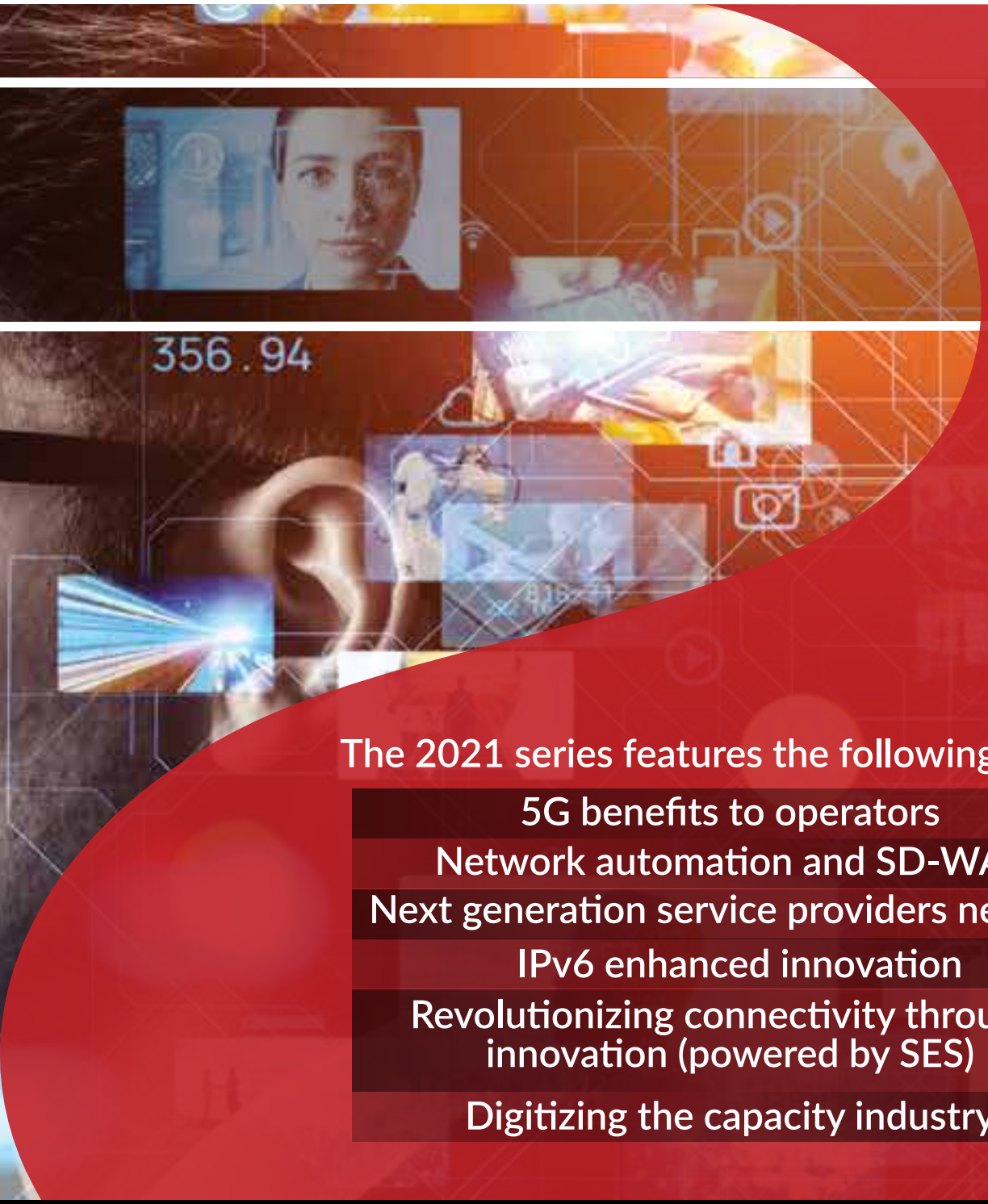
One of 2Africa s key segments, the Egypt terrestrial crossing that interconnects landing sites on the Red and the Mediterranean Seas via two completely diverse terrestrial routes, has also been completed ahead of schedule.

TELECOM Review
virtual panels

Telecom Review's virtual panels' series continues in 2021

In light of the huge success achieved in 2020, *Telecom Review announces that the series of virtual panels will continue in 2021* with new and updated topics.

The 2020 series saw the participation of top notch speakers representing the industry's leading brands and registered a record number of online viewers.



The 2021 series features the following topics:

- 5G benefits to operators
- Network automation and SD-WAN
- Next generation service providers network
- IPv6 enhanced innovation
- Revolutionizing connectivity through innovation (powered by SES)
- Digitizing the capacity industry

For more information on sponsorships and participation, contact
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What are green networks anyway?

ICT industry entities such as GSMA and ITU have been relentlessly advocating for 'greener networks' in the hopes of achieving a significant reduction of the environmental impacts of the ICT sector. ICTs contribute to around 2 to 2.5 percent of global greenhouse gas (GHG) emissions; however, ICTs are also well positioned to assist other sectors of the economy in reducing carbon emissions. With a host of initiatives, they aim to limit global warming within a 1.5°Celcius target set by the ITU Recommendation ITU-T L.1470 compatible with the UNFCCC Paris Agreement.

Robust discussions and interactions have been put in place by the organizations to encourage operators, vendors, research institutions, and other ecosystem players to participate in the standardization efforts of equipment used to reduce the environmental footprint of digital goods and services. They also encourage stakeholders to share knowledge, develop and adopt common approaches towards an environmentally friendly ICT ecosystem.

As per the International Energy Agency (IEA) forecast, the growing use of residential ICTs and consumer electronics goods will triple electricity consumption by 2030 if no action is taken to improve their efficiency. However, it also concludes that the adoption of the most efficient technologies would cut electricity consumption by more than half, preventing the increase to 1 percent a year through 2030. This level of energy savings would save 260 gigawatts in additional power demand more than the current electrical generating capacity of Japan.

By infusing green ICTs across the industry, up to ten times more energy can be saved. Thus, making network infrastructure power-aware and energy efficient is being seen as an important step towards reducing the energy footprint in the ICT sector.

So what s green networking?

Low power consumption or energy-efficient communication networks, especially concerning environmental issues are commonly referred to as green networks. Its primary objective is to minimize energy consumption, increase energy efficiency or energy optimization. Green networks beginnings go back to the models proposed by researchers in 2003-2004 whereby the researchers proposed network devices and strategies that enabled reduction of energy consumption and energy efficiency – the main difference between traditional or non-green networks and green networks.

Pegs for green networks

There are four main important techniques for establishing green networks:

1. Adaptive link rate (ALR): A widely used approach in making network infrastructure and network protocols power-aware and green. ALR technology reduces power consumption by adapting link speed to traffic demand. If there is no communication in the network, devices go into sleep mode.
2. Interface proxying: Outsourcing network operations from CPU and to on/off devices on demand. When there is less communication in the networks, it turns on devices that consume low power.
3. Energy-aware infrastructure: Design and management of networks, including clean slate network design whereby the entire network is made energy-aware and energy-efficient.
4. Energy-aware applications: Energy-efficient software designs (virtualization) in place of hardware components.

Some of the best practices

Network engineers have explored both wired and wireless network to analyze the energy consumption pattern of network devices and to reduce energy consumption using different strategies.

1. **Re-engineering the network:** Aims at optimizing network elements or designing with completely new energy-efficient equipment or devices with a focus on energy-efficient hardware devices.
2. **Dynamic adaptation:** Modulates the capacities of packet processing engines and network interfaces to meet actual requirements with intelligent modulation and routing. Smart routers automatically operate according to network traffic.
3. **Sleeping/standby mode:** Considers the case where the networking equipment or parts of the equipment are switched to a sleep state, using intelligent networks, smart devices, or software. Smart devices such as wireless card/ LAN card turn off when there is no communication or traffic, however, when it senses network traffic or communication it turns on automatically.
4. **Renewable energy source:** A completely green network involves the entire network using renewable energy (wind and solar). However, if few devices are using renewable energy, they are called partial green networks.
5. **Power amplifier:** This electronic device increases the magnitude of voltage or current of an input signal. It can convert a weak electrical signal to reproduce a similar strong signal at the output device, minimizing energy requirement to some extent. Networks using power amplifiers also fall under partial green networks.
6. **Smart topology:** Femtocells or microcell is a small, lower power cellular base station designed for use at home or small organizations. Also called Femto access point, it connects to the service providers network through broadband such as DSL or cable. Current design supports 4 to 8 simultaneously active mobile phones in a residential setting depending on versions and femtocell hardware.

   Cognitive Radio (CR): A form of wireless communication in which a transceiver intelligently picks active and passive communication channels and instantly switches into vacant channels and changes its transmission or reception parameters to allow more concurrent wireless communication in a given spectrum band in one location as a form of dynamic spectrum management.

Green networks focus on consuming less energy to ensure environmentally responsible usage of communication networks and related sources. Strong government and industry efforts on energy efficiency, renewables procurement, and RD&D are of massive importance to limit growth in energy demand and GHG emissions.
As the ICT sector and systems become ever more complex, greater transparency between the different levels in how they communicate and interact with each other is warranted to design more energy-efficient operations of the future. TR

Huawei commits to building trustworthy open-source software chain

Huawei, a global leader in technology and open source, has joined the board of the OpenChain Project alongside 20 other global companies such as Qualcomm, Google, Siemens, and Toyota.

Huawei will work to align the supply chain behind OpenChain ISO 5230, the international standard for quality open-source compliance. Huawei is delighted to join the OpenChain Project. Huawei adheres open collaboration and innovation, has long been committed to establishing a compliance management system that aligns with industry best practices, and incorporating compliance management into end-to-end business activities and processes, said Wang Yousheng, director of open source & developer dept, Huawei.

Wang pointed out that Huawei will be an active member in OpenChain Project. Through mutual understanding, cooperation, and trust with global developers and open source communities, the Chinese multinational tech company hopes to build a more secure and trustworthy open-source software chain together.

China is the center of innovation across many types of technology, including open source, says Shane Coughlan, OpenChain general manager. Huawei s leadership in this space has helped build bridges across the world. Their decision to join the governing board of the OpenChain Project is further evidence of this and will be pivotable in taking OpenChain ISO 5230 to the next level. This will benefit every company using open-source, a shared undertaking we approach with both excitement and respect.

Nokia Bell Labs launches 5G Secured Networks course

Nokia announced a new professional level 5G course and certification aimed at network security. The Nokia Bell Labs 5G Secured Networks course is part of Nokia s program to train and certify industry professionals on 5G technology, from network access to application management.

The newly launched Nokia Bell Labs 5G Secured Networks course addresses the vulnerabilities faced by all industries, governments, and individuals to secure 5G systems. Given that 5G is becoming a key element of emerging mission-critical Industry 4.0 solutions, securing 5G networks has moved to the forefront as an industry imperative, for which comprehensive end-to-end solutions are needed.

Geert Van Wauwe, chief security officer at Nokia, said, 5G will empower new services and applications beyond our imagination. However, user acceptance will be based on trust that information has not been breached and services cannot be compromised. Therefore, the Nokia Bell Labs 5G Secured Networks course and certification are essential for educating professionals to a high level of understanding on how to build and operate secure 5G networks.

The 8-hour web-based course, which can be completed at the learner s own pace, covers the processes, tools, technologies, and resources needed to implement an effective program that proactively prevents and resolves threats to network security. Course participants will examine the role of 5G security in network, software, and cloud environments, and they will apply an understanding of security threats, protections, and potential responses through a series of real-world case study exercises.

Sergio Fasce, head of people services at Nokia, said, With security breaches dominating news headlines at an alarming rate, the Nokia Bell Labs 5G Secured Networks Certification Program brings a greater awareness to network susceptibility and safeguards, along with the means to address them. We are pleased to have partnered with our colleagues at Nokia Bell Labs to deliver a training program addressing arguably the most timely and impactful issue facing the communications industry today.

This course is the fourth of the Nokia Bell Labs 5G Professional Level Certification Program, and nearly 30,000 individuals across many industries have registered for 5G certification courses since its February 2020 launch.

As a leader in cellular technology R&D and standardization, Nokia is in a unique position to address network security challenges in the 5G world. It implemented more than 500 security projects worldwide over the past 15 years and plays an active role in more than five standardization bodies that are shaping the latest in security standards and best practices.

Huawei gets US approval to acquire automotive chips

The global market for network automation software hits $4.36 billion in 2020, with Nokia and Huawei among the leading telecom vendors, according to a new Appledore Research report.

The Finnish vendor ended the year with a 17% share of the market with $758 million followed by Huawei with a 12% market share, recording $544 million in revenue. VMware had $379 million in revenue and a 9% market share, indicating a structural transformation within the market.

The modernization, digitization, and cloudification of telecom networks over the last few years have not only resulted in a change to architectures and strategies. In our view, the telecom software market landscape itself has now been transformed, analysts said in a blog.

According to the report, the top three vendors from Finland, China, and the US accounted for about 38% of the market in 2020. On the other hand, second-tier players captured an aggregated 25% market share. This shows a relatively high percentage of involvement from other tech companies.

In the latest report, the network automation software market has been broken down into six categories for analysis. Dominating the market with almost 46% is domain management, which includes network-facing functions and near real-time controllers, valued at $2 billion in revenue.

This is followed by distributed cloud infrastructure management that generated $689 million last year, artificial intelligence for IT operations (AIOps) with $558 million, service orchestration with $509 million, network data management with $430 million, and component lifecycle management at $176 million.

The analysts believe that automation is the dominant business driver behind new spending on software. Network automation is an operational philosophy that CSPs must need to adapt to succeed and thrive. CSPs must change metrics, incentives, organizational structures, and root out long-held assumptions and prejudices that are no longer true.

Qualcomm and ZTE achieve peak speed for 5G mmWave

Qualcomm Technologies and ZTE announced that, to support the testing needs of the IMT-2020 (5G) promotion group for 200MHz carrier bandwidth over 5G mmWave, the companies successfully showcased features required in anticipation of 5G mmWave rollouts in China. The tests were completed using a smartphone form-factor test device powered by the flagship Snapdragon® X65 Modem-RF System, and ZTE mmWave AAU network infrastructure equipment.

This marks the first connection in China using 5G NR standalone Dual-Connectivity (NR-DC, or FR1+FR2 DC) with one 200 MHz carrier in the 26 GHz (n258) mmWave band, along with one 100 MHz carrier in the 3.5 GHz (n78) band, achieving a peak downlink speed of over 2.43 Gbps using a single device. In the tests, the companies also achieved a peak downlink speed of over 5 Gbps using a single device employing carrier aggregation with four 200MHz carriers in the 26 GHz (n258) mmWave band and successfully tested two 200 MHz mmWave carriers on the uplink. The use of standalone (SA) that uses a 5G Core (5GC) network allows for capabilities such as network slicing and lower latency.

5G mmWave is a key aspect of the 5G global standard. It allows mobile operators to use vast spectrum resources in bands above 24 GHz to deliver massive network capacity and extreme multi-Gigabit performance up to 10 Gbps with the Snapdragon X65 that is important to help operators meet everyday data demands in industrial, enterprise and consumer scenarios.

Whether it is enabling collaboration with colleagues using cloud-based applications, allowing for a smooth video meeting from a crowded train station, supporting professional live TV video transmissions, connecting machinery and sensors in a manufacturing plant, or providing scalable processing power and storage in the office – superior everyday experiences are built on 5G mmWave.

In fact, analysis from GSMA Intelligence in 2021 shows that 5G mmWave and sub-6 deployments are more cost-effective than sub-6 only in a variety of scenarios including dense urban and enterprise settings. The global 5G mmWave ecosystem is now mature, with more than 120 5G mmWave commercial and pre-commercial devices supporting the technology including smartphones, PCs, hotspots, modules and customer premise equipment (CPE), according to GSA.

Huawei s Seeds for the Future program receives recognition in Bahrain

Huawei s flagship corporate social responsibility (CSR) program Seeds for the Future has been recognized in Bahrain by the International Group of Artificial Intelligence, one of the world's fastest-growing AI communities, for the substantial contribution Huawei has made to the advancement of technologies such as AI, IoT, and cloud computing amongst universities in Bahrain.

Dr. Jassim Haji, president of the International Group of Artificial Intelligence, presented the appreciation certificate to Eric Li, managing director of Huawei Bahrain, in honor of the exceptional, long-term commitment Huawei has made to bolstering local talent in line with Bahrain s ambitions to become a leading regional ICT hub.

Huawei has always been a trusted strategic partner for Bahrain public and private sectors and its value is acknowledged on both the business and social levels. Seeds for the Future program is yet another Huawei initiative in Bahrain, supporting Bahrain ICT ecosystem and driving digital transformation through nurturing local talent and building the ICT talent pool, a key pillar for achieving the socio-economic development goals in Bahrain, said Dr. Jassim.

Upcoming graduates will be fundamental to Bahrain s future tech industry, notes Jason Cao, CEO of Huawei Bahrain. Encouraging knowledge exchange at this level is essential to opening new doors in the sector, which in turn builds a stronger and more sustainable technology ecosystem in Bahrain and the wider region.

Huawei s Seeds for the Future program was initiated in 2008, and today it supports the development of local ICT talent by enhancing international knowledge transfer amongst students, promoting a greater understanding of and interest in the technology field, and encouraging participation in a growing digital economy.

Nokia ropes in online learning platforms to provide tech education for underrepresented communities

As part of its efforts to lessen the digital divide and promote inclusivity across the tech industry, Nokia has offered over 300 scholarships for Nanodegree programs, which are fully online and can be completed alongside further studies or full-time work, with a focus on students and career changers from underrepresented communities.

Under the program, core tech competencies such as cloud computing and programming, artificial intelligence, and data science will be covered from elementary to advanced levels.

Nokia will be working together with online learning and talent transformation platform Udacity and Blacks In Technology (BIT) Foundation. Udacity, whose Nanodegree programs are fully online and designed to be completed alongside further studies or full-time work, making them accessible to anyone regardless of their position or profession. Scholarships are open to applicants based anywhere in the world, to both students and industry professionals who wish to further develop their technology skills. Scholarship recipients will also have access to support and networking provided by the BIT Foundation, including mentorship, tutoring, and post-completion career support resources. Nokia will also work closely with its African-American employee resource group ABLE (Advancing Black Leadership and Excellence) to further promote the initiative.

The successful candidates will be able to select courses on topics such as AI Programming with Python, Java Programming, Data Structures and Algorithms, Intermediate Python, and Cloud DevOps Engineering.

CommScope s Q2 core net sales increased by 18% year-over-year

CommScope s core net sales increased 17.8% year-over-year primarily due to higher net sales in the Broadband Networks and Venue and Campus Networks segments, as revealed in its latest results.

Our second-quarter results demonstrate strong execution and some early quick wins with our CommScope NEXT initiative offsetting a portion of our inflationary impacts with a longer-term focus on optimizing our portfolio and delivering strong revenue growth, said Chuck Treadway, president and chief executive officer. Despite ongoing global supply chain challenges, our team remained focused and continued to deliver for our customers. We remain encouraged by opportunities to capitalize on industry tailwinds such as the demand for 5G, the recent launch of HELIAX® SkyBlox to meet the demand for network upgrades, and the help we provide operators to put reliable mobile networks in place.

Overall net sales in Q2 2021 increased 3.9% year over year to $2.19 billion while the net loss of $153.8 million decreased by 52.1% compared to the previous period s net loss of $321.1 million. Non-GAAP adjusted net income also surged by 34.4% reaching $105.7 million, or $0.43 per share, versus $76.9 million, or $0.32 per share, in the second quarter of 2020.

Non-GAAP adjusted EBITDA also increased by 10% to $307.7 million in the second quarter of 2021 compared to the same period last year. According to the company s statement, the negative impact of COVID-19 has eased during their 1H 2021 financial performance, with network strain driving increased demand for their Broadband segment products.

Alex Pease, executive vice president and chief financial officer, said, "While we are pleased with our second-quarter performance and strong demand outlook, we will need to work hard in the back half of this year to stabilize the challenges within our global supply chains. CommScope continues to position itself to reinvest in our core strategic markets and technologies, capitalizing on growth opportunities in our Broadband, Outdoor Wireless, and Venue and Campus segments. As we move into the second half of the year, growth, cost control, and portfolio optimization will continue to be our priorities.

Cisco reports strong Q4 and FY 2021 earnings

Cisco reported fourth quarter and fiscal year results for the period ended July 31, 2021.

The company reported Q4 revenue of $13.1 billion, up 8% from $12.15 billion a year ago. On a GAAP basis, net income was $3.0 billion, an increase of 14%, and EPS was $0.71, an increase of 15%. On a non-GAAP basis, net income was $3.6 billion, an increase of 5%, and EPS was $0.84, an increase of 5%.

Adjusted total gross margin, product gross margin, and service gross margin were 65.6%, 65.0%, and 67.4%, respectively, as compared with 65.0%, 63.2%, and 69.8%, respectively, in the fourth quarter of fiscal 2020.

Non-GAAP operating expenses were $4.2 billion, up 8%, and were 32.1% of revenue. Non-GAAP operating income was $4.4 billion, up 10%, with non-GAAP operating margin at 33.5%.

Cash Flow from operating activities was $4.5 billion for the fourth quarter of fiscal 2021, an increase of 18% compared with $3.8 billion for the fourth quarter of fiscal 2020. In Financial Year 2021, the company reported total revenue was $49.8 billion, an increase of 1% from $49.3 billion last year. On a GAAP basis, net income was $10.6 billion, a decrease of 6%, and EPS was $2.50, a decrease of 5%. On a non-GAAP basis, net income was $13.6 billion, flat compared to fiscal 2020, and EPS was flat at $3.22. Cash Flow from Operating Activities was $15.5 billion for fiscal 2021, flat compared with fiscal 2020.

Looking ahead, the company expects 61 cents to 66 cents a share in Q1 profit, or 79 cents to 81 cents on an adjusted basis. Analysts are forecasting 67 cents and 81 cents, respectively.

For fiscal 2022, Cisco is modeling revenue growth of between 5% and 7%, and EPS of between $2.72 and $2.84, or between $3.38 and $3.45 on an adjusted basis.

SASE:

Future of network security

Modern network security requires a great deal of time, energy, and resources. With more enterprises going into the cloud, secure access service edge (SASE) has seen broad adoption among security and networking vendors alike.

To define, SASE is the convergence of network and network security services into an integrated cloud-native architecture. SASE guarantees broad and holistic network security services to support the needs of businesses and empower digital transformation.

Looking ahead to the next 12 months, a Help AG report predicts that SASE will see continued focus, alongside several other areas, including secure software-defined wireless wide area network (SD-WAN), application and endpoint security, micro-segmentation, managed security services (MSS), and server message block (SMB) security.

From its inception in 2019 until today, SASE is a practical and compelling model that can be partially or fully implemented depending on the business requirement and vendor capability. Digitalization, the surge of remote working, and cloud-based computing have accelerated SASE offerings. Hence, migration from the traditional perimeter and hardware-based paradigm to a SASE model is needed.

In a digitally-focused era, to ensure protection anywhere and anytime, SASE is opted by many as security standards become fitting in a software-defined and cloud-delivered environment. This influences changes in security architecture and vendor selection as a whole.

Core SASE elements

The fourth industrial revolution which involves large-scale automation and the growth of Internet of Things (IoT) is just half a decade old, yet everything s changing fast. This means innovation-wise, security-wise, and technology-wise. To stay competitive, relevant, and secure, businesses have to change their underlying framework.

SASE stitches together secure web gateway (SWG), cloud access security broker (CASB), zero-trust network access (ZTNA), SD-WAN, and cloud-based firewalls into a single cloud-based service. This comprehensive service enables identity-based access anywhere in the network based on real-time context, security, and compliance policies.

SWG: Secure web gateways are mostly used to protect enterprises against malware and malicious websites. SWG adoption targets web threats via an inline proxy solution with advanced threat defenses such as URL filtering, advanced machine learning (AML), anti-virus (AV) scanning, sandboxing, data loss prevention (DLP), and web isolation. A gateway effectively blocks malware and acts as a barrier to prevent any confidential data from being stolen such as social security numbers, credit card numbers, and medical information. Having said that, the web gateway strengthens security against external sites, software, or data that could harm people and programs within the organization.

CASB: The transition to a cloud and remote-working world pressured traditional perimeter-based SWG to innovate. Literally from any location on various devices, users can now directly access IT infrastructure and connected resources virtually. Hence, cloud access security brokers are designed to provide visibility and control over cloud applications. Authentication, credential mapping, device profiling, encryption, tokenization, logging, and alerting are among the multiple security policies that CASBs execute. For malware detection and prevention, CASBs usually run in multi-mode as they are set up as a proxy or within API-based systems.

ZTNA: To outsmart threats and liberate users, SASE is essentially built upon principles of zero trust; fundamentally changing the way enterprises are protected. Zero-trust network access removes excessive implicit trust as access is granted on a need-to-know, least-privileged basis. By creating software-defined perimeters and enforcing adaptive and context-aware policies, ZTNA connections grant access only after devices and users are verified. Unlike the traditional approach of simply employing virtual private networks (VPNs) to secure access between applications and users, ZTNA also increases flexibility, agility, and scalability without exposing internal applications directly to the internet. This is done through micro-segmentation and full application cloaking.

SD-WAN: SD-WAN is a software-based approach to building and managing networks that connect highly distributed offices. By means of SD-WAN, companies securely connect their branch offices in corporate networks seamlessly. No need to deal with multiprotocol label switching (MPLS) connections or other exclusive hardware. Though commonly associated together, SD-WAN and SASE have an actual difference. SASE combines different security components that affect the overall network decision-making process. On the other hand, SD-WAN focuses on smart routing by using a centralized control function to securely direct traffic across the WAN.

FwaaS: Firewall as a service (aka cloud-based firewalls) forms a virtual barrier around cloud assets. Taking the functionality of a next-generation firewall (NGFW), FWaaS provides a level of flexibility and scalability that standard firewalls struggle to match. Through a SASE approach, FWaaS leverages layer 7 and NGFW firewalls for maximum security. Among its benefits is being a proxy-based architecture that enables granular firewall policies. Also, a cloud-based intrusion prevention system (IPS) delivers threat protection and coverage, regardless of location or connection type. As the first line of defense, a cloud-based firewall protects users from reaching malicious domains and uses advanced analytics to correlate events and provide insight into current and future threats and vulnerabilities.

Benefits and use cases

Companies are currently carrying out multi-year digital transformation strategies to survive in an era of digital disruption. As the nature of businesses changed, security leaders are set to face a new set of challenges arising from a decentralized workforce. As expected, as IT infrastructures evolve, so must security practices. Thus, embracing SASE enables companies to acquire the security, agility, and performance they need.

Some use cases of SASE are quite evident in work-from-home scenarios

and the rise of IoT devices. As employees nowadays tend to access corporate resources from home or anywhere outside the office premises, SASE can help control who can access which by adapting permissions based on context. This works as well in securing the edge, data centers, and other cloud services that also power organizational assets.

As a result, SASE brings forth improved cloud security posture by providing an end-to-end (E2E) encryption mechanism with integrated web application and API protection (WAAP) services. Using the ZTNA model, strict access controls can be applied. Moreover, a boost in network performance is achieved through the SD-WAN and SASE integrated security service approach.

Leaving the security protocols working under an automated state, the number of branch devices, agents, and vendors will also be drastically reduced. This lowers not only the cost but also removes network complexity by abstracting away upgrades, patches, and network maintenance.

Adoption gaps and recommendations

Without a doubt, SASE will be the security trend of the decade. Being the latest cybersecurity toolkit for enterprises, SASE moves away from data center-oriented security. Instead, it unifies the network and security tools into a single service delivered via the cloud. All in all, it addresses the need for consolidation, cloud, and convergence.

The shift from on-premises data center-oriented security to cloud-native security may be viewed as a threat. Similarly, vendors with traditional product offerings may find it difficult to modify their offerings and keep up with the demand. Some SASE vendors are SD-WAN solution providers while others are network security companies which may cause them to overshadow their capabilities in non-traditional areas.

It is very important to remember that, in this context, any tools should fit into a company s cybersecurity strategy. The belief that 'one size fits all' does not apply here. Different enterprises have different security fabrics that may correspond with single or multiple vendors. Furthermore, SASE adoption will depend on the customer s starting point and its end goals.

For example, the tactics for a startup that needs a bottom-up security approach will differ from a multinational company that already has an existing framework. With the former, the choices available for a SASE environment extend to multiple operating systems. Thus, digital workspaces can interconnect and stay protected simultaneously. For the latter, with single-interface management for SASE elements, it s possible for IT to move from on-premises to hybrid/multi-cloud environments without sacrificing workspace availability, application performance, or security.

Some recommendations and outlook of Gartner for a SASE roadmap include replacing legacy VPN by deploying ZTNA; consolidating market vendors; creating a dedicated team of security and networking experts; having consistent policy enforcement and coverage; combining techniques for sensitive-data visibility and control; and committing to contractual SLAs for high availability and low latency. TR


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Singapore and US expand cybersecurity cooperation

Singapore and the United States have signed a Memorandum of Understanding (MOU) to expand cooperation on cybersecurity. The MOU was signed by David Koh, Chief Executive of the Cyber Security Agency of Singapore (CSA) and Jen Easterly, Director of the Cybersecurity and Infrastructure Security Agency (CISA).

Besides strengthening information sharing, fostering cybersecurity exchanges between Singapore and the U.S., and cooperation through joint exercises, the MOU will expand into new areas of cooperation such as critical technologies, and research and development.

Singapore and the United States share deep mutual interests in enhancing cybersecurity cooperation, particularly as cybersecurity has become a key enabler for both countries to leverage the benefits of digitalisation to grow our economies and improve the lives of our people, said Mr Koh. This expanded MOU is a testament of our shared vision to work together towards a stable, secure, resilient and interoperable cyberspace. We look forward to continuing our work with the US to strengthen cybersecurity cooperation between our countries.

Cyber threats don t adhere to borders, which is why international collaboration is a key part of the Biden-Harris administration s approach to cybersecurity, said Ms Easterly. The MOU allows us to strengthen our existing partnership with Singapore so that we can more effectively work together to collectively defend against the threats of today and secure against the risks of tomorrow.

Huawei set to build an innovation center in Tunisia

Tech giant Huawei will build a research, development, and innovation center in Tunisia, announced President of Huawei North Africa Terry He during a meeting with President Kais Saied. According to Terry, Tunisia meets all the criteria to become a technology hub in Africa.

Received by President Kais at Carthage Palace, Terry affirmed the company s commitment to continue supporting Tunisia, particularly in the implementation of the medical city in Kairouan as well as the creation of jobs and skills training. The Chinese multinational telecom provider is also willing to expand partnerships with universities and educational institutions and equip them with computer labs, Terry added.

For his part, the President of the Republic welcomed the opportunities for partnership between Tunisia and China, stressing his commitment to strengthening this partnership, particularly in the sectors of education, teaching, transport, and health.

Verizon expands SDN same day cloud interconnection

Verizon Business is expanding its Software-Defined Interconnect (SDI) solution, enabling global enterprise and Public Sector customers to connect their MPLS and Ethernet private networking services to hundreds of cloud, infrastructure and service providers with automated, same-day connectivity. Together with Equinix the two companies recognized shifting market demands and worked to expand this solution to meet changing global needs. Now, customers can get quick activation of network services, lower access costs and increased networking agility. The SDI solution is part of the Verizon Business Network-as-a-Service (NaaS) strategy.

Organizations are seeking more agile ways of working from anywhere on any device. To take advantage of new solutions built on 5G, from real-time data analytics and AI, to enhanced security and AR/VR, they need a flexible, programmable, scalable and reliable platform that delivers network services in a much more resilient and cloud-centric way than traditional network infrastructures, said Massimo Peselli, Senior Vice President of Global Enterprise, Verizon Business. Equinix is a trusted strategic partner who helps enable our Network-as-a-Service approach to managed services, and this SDI expansion provides our customers with the agility they need to meet their needs as they migrate to the cloud.

Since the launch of SDI in 2019, Verizon and Equinix have worked to enhance Verizon s capabilities to handle the drastic shift in digital transformation journeys for enterprise and Public Sector due to the pandemic. The service initially included same day provisioning of Private IP to Equinix s colocation environments and will now support Ethernet E-Line and E-LAN wide area networks. Verizon and Equinix have invested heavily in agile services and expansion into new markets. This enables customers to leverage Verizon s high-speed network (up to 10 Gbps), coupled with Equinix Fabric, to expand and enhance connectivity to Verizon s MPLS and Ethernet customers globally. The scalable bandwidth and provisioning automation are a foundational component of Verizon s NaaS capabilities being rolled out at Equinix.

GSMA calls for 2 GHz midband spectrum in Kenya

Global System for Mobile Communications Association (GSMA) has called on Kenya s mobile industry regulator to boost the country s spectrum provision by at least two gigahertz (GHz) to maximize 5G potential and minimize environmental impact.

In a new publication, the GSMA recommends that the country s mobile industry will need an average of 2 GHz of midband spectrum to meet the International Telecommunications Union (ITU) data speed requirements of 100 Mbps download speeds and 50 Mbps upload speeds.

GSMA also said that by achieving the required ITU targets, the mobile industry regulator would be able to lower the cost of 5G for the consumer and minimize the impact on the environment

Without the additional spectrum, it will be impossible to realize the full potential of 5G in some cases. In others, it will lead to higher carbon emissions and consumer prices, stated GSMA.

This will help stakeholders on the path to realizing the maximum benefits by 2030. The study shows that policymakers should license spectrum to mobile operators in harmonized bands, such as 3.5 GHz, 4.8 GHz and, 6GHz to meet the ITU s requirements by 2030, added GSMA.

5G is now being deployed in 44% of private mobile networks

45 countries/territories have been identified with private network deployments based on LTE/5G or where 5G-suitable private network spectrum licenses have been assigned. The new Private Mobile Networks market status report of GSA reveals that while LTE still accounts for the majority of private mobile networks deployment, the market share of 5G is growing.

According to GSA s data, LTE is being used in 64% of the cataloged private mobile networks down from 81% in October 2020. In contrast, 5G is now being deployed (or planned for deployment) in 44% of private mobile networks 8% of these are deployed with LTE and 5G combined.

For local area private mobile networks, manufacturing leads as an early adopter with 79 identified companies holding suitable licenses or involved in known pilots or deployments of LANs. Automotive companies, as a subsector, account for over a quarter (25.3%) of the abovementioned sector. Coming in second is the mining industry with ports also actively trialing/deploying local area private mobile networks.

The demand for private mobile networks based on LTE, and increasingly 5G, technologies are being driven by the spiraling data, security, digitization and enterprise mobility requirements of modern business and government entities, said Joe Barrett, GSA president. Organisations of all types are combining connected systems with big data and analytics to transform operations, increase automation and efficiency or deliver new services to their users. Wireless networking with LTE or 5G enables these transformations to take place even in the most dynamic, remote or highly secure environments while offering the scale benefits of a technology that has already been deployed worldwide.

SES s O3b mPOWER MEO system to provide additional connectivity as more critical workloads move to cloud

SES announced Microsoft as the first cloud provider customer for its next-generation medium earth orbit (MEO) system O3b mPOWER. Microsoft plans to leverage the MEO high-performance connectivity services to showcase its Azure Orbital solutions that integrate satellite connectivity with Azure services. Microsoft will use SES s current MEO to provide connectivity now before migrating to O3b mPOWER next year.

SES s current O3b and upcoming O3b mPOWER systems operate in the medium earth orbit, around 8,000 km above earth s surface. When fully operational in 2022, O3b mPOWER will deliver an unprecedented increase of flexibility and throughput speed and capacity to any Azure Network locations on earth.

Microsoft s plans to deploy O3b mPOWER at Azure Network locations is another step in the close collaboration between the two companies. SES is co-locating four of its O3b mPOWER gateways at or near Azure data centres; is the founding medium Earth Orbit (MEO) satellite connectivity partner for Microsoft Azure Orbital; is an Azure ExpressRoute for satellite partner; and is the first satellite operator to implement Open Network Automation Platform (ONAP) using NFV technology on Azure.

Telecom Review virtual panel, powered by SES

Telecom Review is hosting a virtual panel powered by SES, which will give C-level speakers the opportunity to speak about the topic: revolutionizing connectivity through innovation.

Place: virtual

13 SEPTEMBER

Digitizing the capacity industry

The wholesale industry is a key to the telecommunications cycle. Telecom Review will highlight the importance of wholesale services in its upcoming virtual panel.

Place: virtual

5 OCTOBER

GITEX

GITEX features a grand showcase of technology from big tech companies to government entities to next generation startups. The latest trends and discoveries in 5G, AI & analytics, future mobility, digital economies, cybersecurity, fintech, cloud & edge and more.

Place: Dubai World Trade Center, Dubai, UAE

17 - 21 OCTOBER

Cabsat

Cabsat, the MENA region s most competitive event for the satellite, broadcast and filmed content industry, will showcase ground breaking innovation and powerful solutions for professionals looking to create, manage, deliver and monetize content on any platform.

Place: Dubai World Trade Center, Dubai, UAE

26 - 28 OCTOBER

Telecom Review Leaders' Summit 2021

The 15th edition of the leading ICT gathering will be held in a hybrid mode where the latest industry trends will be tackled.

Place: InterContinental Dubai Festival City and virtual

8 DECEMBER

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