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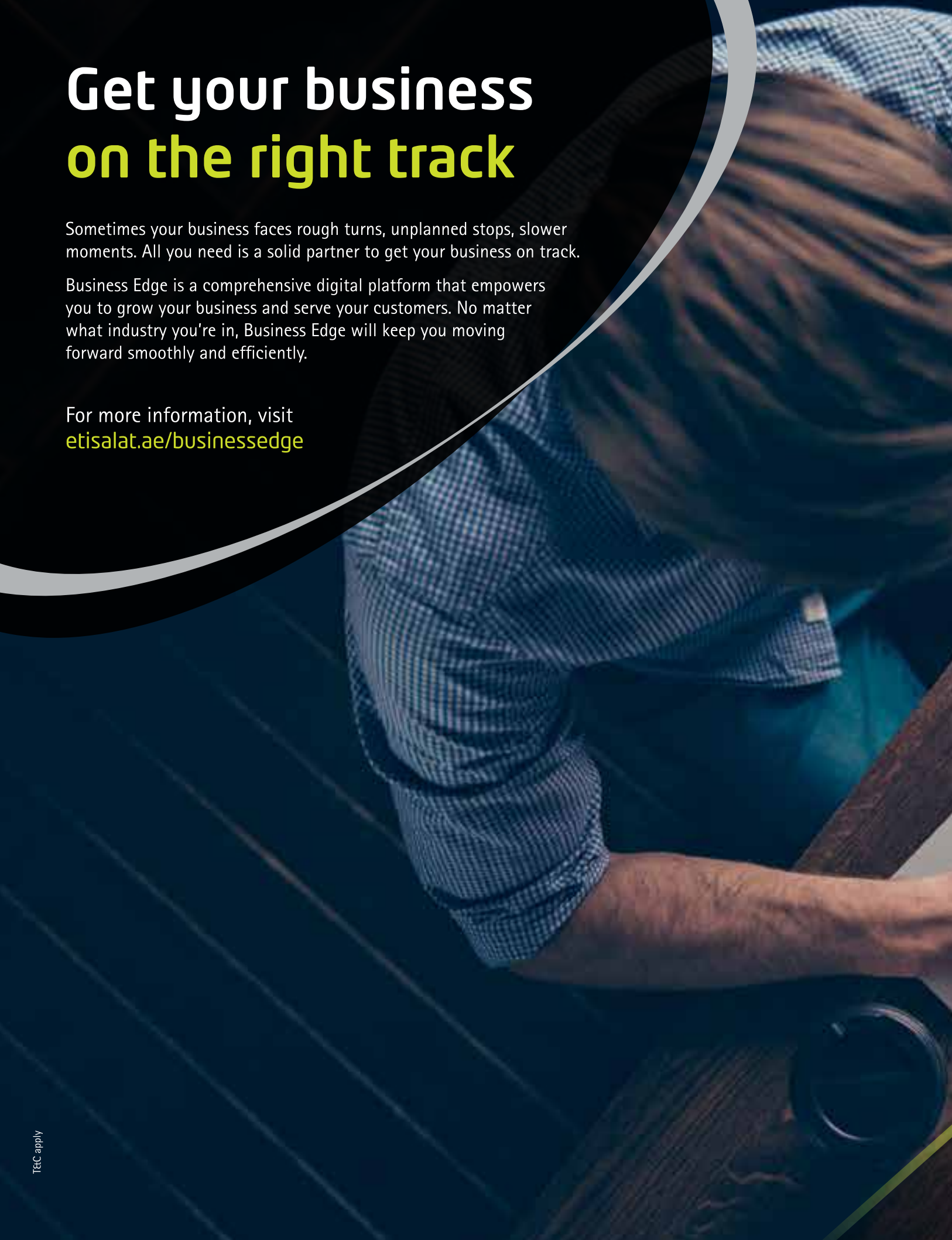

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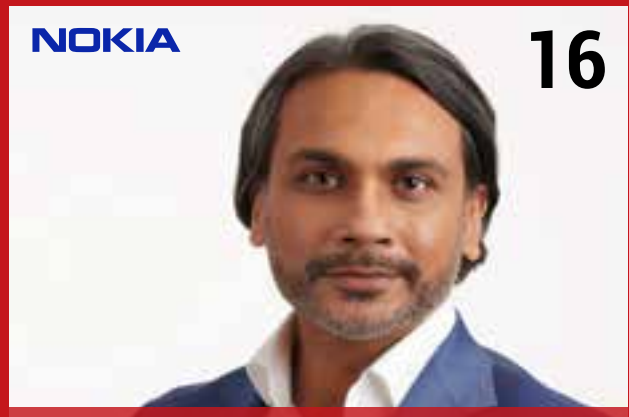
■ **Etisalat Group:** Digital transformation is at the core of 'customer excellence' and a 'sustainable economy'



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Toni Eid,
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Raising the issue of security

With more people connected, more data online and with the adoption of public or private cloud, the risk of security breaches has become significant.

Hackers have become more professional which is why traditional security layers are not sufficient now and the existing firewalls are not so protective anymore.

Telecom operators are now tasked with guaranteeing the right level of protection by securing any fugitive transactions, making their networks smartly secured, avoiding malware or blocking unwanted visitors to the networks. Telecom operators should also have their protection wall reciprocally from and within their base station to the servers all the way to their customers.

Open RAN poses today important security risks starting from mobile networks. Some governments leverage it to copy data or monitor network transactions, or even for spying, without the need to ask permission from MNOs.

The global ICT community, along with experts and CTOs at carriers' side should raise this concern before things get worse.

Our cover story this month delves into the details of this concern and sheds light on different points of view from experts. Read it for more insights.

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A new approach to Open RAN: Security concerns prevail

The constant and rapid technological evolution has put forth trends and concepts that now make the telecom and ICT industry quite a diverse and developed sector. Open radio access network, known as Open RAN, is one of the trends that has been shaping the industry. Leading telecom brands and experts are mobilized to further develop this network architecture, however different points of view exist regarding some of its controversial aspects.

The objective of Open RAN is to create a multi-supplier RAN solution that allows for the decoupling of hardware and software with open interfaces between the management plane and base stations, and interfaces between BBUs and RRUs inside base stations. Artificial intelligence and automation are also introduced to achieve network level intelligence.

The development and deployment of Open RAN technologies is driven by industry players such as Telecom Infra Project (TIP) - a global community of companies and organizations, O-RAN Alliance - a world-wide community of mobile network operators, vendors, and research and academic institutions operating in the RAN industry - and governments.

While TIP and O-RAN Alliance are advocating for Open RAN in order to reconstruct the communications and telecommunications industry and reduce the total cost of ownership (TCO), governments are leveraging it to gain control over the communication industry.

Country-level developments: The case of Germany

The European Commission launched a study on 5G supply markets and Open RAN to analyse global 5G supply market trends and set out possible options for the Commission to facilitate the development of a diverse and sustainable 5G ecosystem in the EU.

Peter Stuckmann, head of unit, future connectivity, DG Connect, EU confirmed that they "do not plan to intervene heavily" but rather leave the choice of Open RAN implementation to each country.

"The objective of Open RAN is to create a multi-supplier RAN solution that allows for the decoupling of hardware and software with open interfaces between the management plane and base stations, and interfaces between BBUs and RRUs inside base stations"

> Open RAN may be unable to compete with traditional networks in security performance and energy consumption

"We still see that the swift roll-out of the secured network remains our priority and of cause we don't want any delays here by introducing some additional requirements for implementation," he added.

Within the European Union, Germany has been active in the 5G space, including some investments made in Open RAN to support 5G deployment. Open RAN is backed by operators and telecom providers that have called upon governments to provide the necessary financial support.

However, Germany's biggest digital association, Bitkom, published its Open RAN position paper in March 2021. It highlights performance, reliability and energy efficiency gaps at the level of Open RAN systems compared to existing technologies. Bitkom assumes an internationally driven demand and market development that is unlikely to require a legislative mandate.

Furthermore, the European Council on Foreign Relations (ECFR) considers that Germany's investment in Open RAN will not solve its 5G problem. According to the Council, Open RAN is still an unproven concept incapable of solving the world's vendor diversity problem. It considers that European policymakers are falling victim to a degree of economic statecraft. However, a global turn towards Open RAN would allow US tech companies to carve out and dominate a space in the telecoms market through specialized production of individual components designed for use in a disaggregated system. Accordingly, it is in Washington's best interest for Open RAN to be the future of 5G.

Despite the United States' support, Open RAN may be unable to compete with traditional networks in security performance and energy consumption. This may also mean that Open RAN networks are more vulnerable to traditional security threats. Beyond these security concerns, constructing a piecemeal network can reduce performance and increase energy usage.

The controversy of Open RAN

Industry experts share different points of view when it comes to Open RAN which is causing controversy and raising several questions, including security and political influence.

One of the common opinions considers that Open RAN is not another 5G standard, but an implementation architecture and technology. In fact, the 3GPP defines architecture and interfaces but doesn't provide implementation details. Operators are the ones who choose solutions based on market requirement and competition, whereas vendors innovate based on an open market and fair competition environment.

Another important impact of Open RAN is the fact that software and hardware decoupling will turn the industry to a WINTEL model which will result in a high level domination. A multi-supplier model doesn't necessarily create an open ecosystem, but can rather hamper innovation.

Open RAN players are seeing a great opportunity in massive MIMO, however, some argue that massive MIMO is Open RAN Achilles heel. Yago Tenorio, head of Vodafone network strategy stated for example that "Massive MIMO is a difficult thing for Open RAN to crack", whereas according to Steve Papa, CEO, Parallel Wireless, "The place you need to put the money in is the semiconductor innovation and signal processing, putting it into virtualization isn't going to change that problem".

Another major setback for Open RAN is claims that the TCO saving has not been proved and that core network virtualization history proves that multi-vendor integration increases the system complexity.

Echoing this point of view, T-Mobile US CTO Neville Ray publicly said, "Today, I buy a solution from an Ericsson or a Nokia or a Samsung; it's warrantied. I have one neck to choke. If something goes wrong, I know where to go. In an O-RAN environment, you have to do a lot more heavy lifting as the operator," he said. "O-RAN for me is interesting at this point in time, but there's a host of unanswered questions around IP [intellectual property], around R&D, around system integration."

"Who's ultimately responsible for all of the integration? And whose neck do you choke when things go wrong? Your own. So that's a lot to work through," he added.

Open RAN security considerations

Concerns were expressed regarding the level of security in an Open RAN architecture. More security risks are brought about as a result of the open interfaces existing at the level of Open RAN. The use of open source operating systems also increases the risk of attacks. Moreover, the decoupling of software and hardware requires a complete trust chain from bottom to top, especially that hardware, operating systems and application software can come from different vendors.

However, according to a white paper by Altiostar, Fujitsu, Mavenir and Red Hat, by adopting a zero-trust security framework, an Open RAN architecture provides a path to a more secure open networks and open interfaces over what exists today. Despite misconceptions, open interfaces, defined in the O-RAN technical specifications, provide increased independent visibility and the opportunity for an overall enhanced and more secure system.

A zero trust architecture (ZTA) is a cybersecurity architecture that is based on zero trust principles and designed to prevent data breaches and limit internal lateral movement. In this new paradigm, an enterprise must assume no implicit trust and continually analyze and evaluate the risks to its assets and business functions and then enact protections to mitigate these risks.

Different industry opinions circle around the topic of Open RAN, but what is certain is that it is a transformative technology that needs to be leveraged in the correct framework and conditions in order to yield the best outcomes. TR

More security risks are brought about as a result of the open interfaces existing at the level of Open RAN

Staying the course, even in extraordinary times

On the back of its Annual Report and following Huawei's latest 2021 global mega events such as its annual Analyst Summit, Li Xiangyu (SpaceLee), vice president of Huawei Middle East, recaps the recent drivers for the company, and future plans for the region.

Li Xiangyu (SpaceLee), vice president of Huawei Middle East

The last year has been an extraordinary one for all of us. While there were innumerable unexpected challenges, new opportunities also presented themselves. This was perhaps no clearer than in the information and communications technology (ICT) sector.

Digital infrastructure has never been more important to how we work, learn, and collaborate, especially as network traffic has surged in the Middle East. The outsourcing of IT services in the region has also risen substantially during the pandemic, as organizations of all sizes embrace more digitized services.

These issues were examined recently in Huawei's 2020 Annual Report, and emerging opportunities were further reviewed at length during the 2021 Huawei Global Analyst Summit and the Industrial Digital Transformation conference this past month.

As we look to the second half of 2021, we believe that there are three fundamental priorities that we must now pursue to realize this opportunity.

Building resilience and new value: This begins by working with our Middle East partners across all industries—from education to healthcare, telecommunications, energy, finance, and transportation—to ensure business resilience in key sectors.

The resilience of these industries further hinges on new value creation. We believe deeply in the power of digital technology to provide fresh solutions to the problems we all face. In our latest Global Connectivity Index (GCI), we recognized that the digital transformation of industries will help economies develop "high-order" productivity to spur economic recovery and increase future competitiveness. That requires us to examine and address the specific pain points of organizations today. This will in turn enable us to build innovative, scenario-specific solutions to help entire industries to unleash their full potential.

Open collaboration: To that end, we believe that open collaboration is more crucial than ever before. This is especially true in the ICT industry. Knowledge sharing across the entire ICT value chain is essential to building greater resilience, and promoting sustainable development for both businesses and society as a whole. Moving forward, we must continue to enable joint innovation, build open ecosystems, and achieve shared success with all types of partners.

This will be underpinned by a commitment to research and development. At Huawei, we already invest over 10% of its sales revenue back into R&D every year. Our R&D investment over the past decade has exceeded US$110 billion. Last year alone, Huawei invested 141.9 billion Chinese yuan (approximately US$21.8 billion) in R&D, accounting for 15.9% of the company's total revenue, with a commitment to invest USD100 billion over the next five years. We are now directing this investment into basic research, making breakthroughs in fundamental theories and new inventions. We must also use this momentum to place a greater emphasis on open-source software and platforms, while releasing open-sourced motherboards, computing architecture, and enablement tools.

Unified standards: To help industries become more resilient and spur open collaboration, we ultimately need to promote unified standards in the digital era. Standardization and interoperability are the foundation of sustainable development in a connected world. This is the only pathway to shared progress.

With that in mind, unified standards are also critical to safeguarding society against cyber threats. Cybersecurity and privacy protection must always be our top priorities. Together with our security partners, Huawei has already founded the Huawei Security Business Alliance to bring together the industry's strengths and drive collaboration. While cybersecurity is not an issue for any single company or country, it is vital we do our part to stay on the front foot. Last year, for example, Huawei made 253 standards contributions on 5G security submitted that were accepted by 3GPP. As an active member and contributor of more than 600 standards organizations, industry alliances, and open-source communities, we have seen first-hand the need—and potential—for even broader collaboration.

If we can continue building business resilience and new value, support open collaboration, and promote unified standards for the digital economy, we will see a flourishing of new ecosystems across the Middle East in areas like 5G, AI, and more. We can thus all move closer to a fully connected, intelligent world. TR

5G download speeds in Bahrain exceed 2 Gbps

The Telecommunications Regulatory Authority (TRA) of Bahrain releases an audit that demonstrates the Kingdom's high-quality service networks with 5G download speeds exceeding 2 Gbps and the average 5G speed reaching approximately 440 Mbps.

Commenting on the report, Eng. Mohamed Alnoaimi, TRA's Director of Technical & Operations, stated, "Preparing for the introduction of the latest mobile technologies is one of the most important strategic objectives of TRA. TRA has worked with the Ministry of Transportation and Telecommunications and all relevant government entities to facilitate the launch of 5G services and to make the Kingdom of Bahrain one of the first countries to cover the population of Bahrain with 5G technologies, as it is easily available to citizens and residents."

The audit results are considered a quantum leap in data download and upload speeds and quick response, showing the results of coverage, billing accuracy, and quality of service in general for all wireless Internet services and 5G networks.

"This is part of the Kingdom's efforts to make it an attractive center for investment maintaining its leading position regionally and internationally in telecommunications and information technology services." Eng. Mohamed added. "We must commend the role of telecommunications companies that have invested in these technologies sand provided them to consumers in the Kingdom of Bahrain, enabling them to access multiple Internet services efficiently at better speeds."

TRA is constantly assuring that Bahrain preserves its status as a leading global hub in this critical sector and aims at improving readiness for the latest applications like the Internet of Things (IoT) and machine-to-machine (M2M) communications.

Bahrain has full nationwide 5G coverage, which means its 1.5 million population can now access high-speed mobile internet through telco operators such as Batelco, Zain, and stc Bahrain.

Cloud computing market in Saudi Arabia to witness high growth

The Saudi Arabia cloud computing market is expected to generate a compound annual growth rate (CAGR) of 35.5% between 2021-2030, according to QuantAlign Research. The Kingdom's sustained growth in the cloud computing market can be attributed to the increasing expenditure on information technology and growing demand for data digitalization across various industries.

In the Middle East, Saudi Arabia is one of the first countries to gain significant momentum on the adoption of cloud computing. The Ministry of Communications and Information Technology (MCIT) has announced a five-year plan to double the sector's growth and increase its contribution to GDP by $13.3 billion.

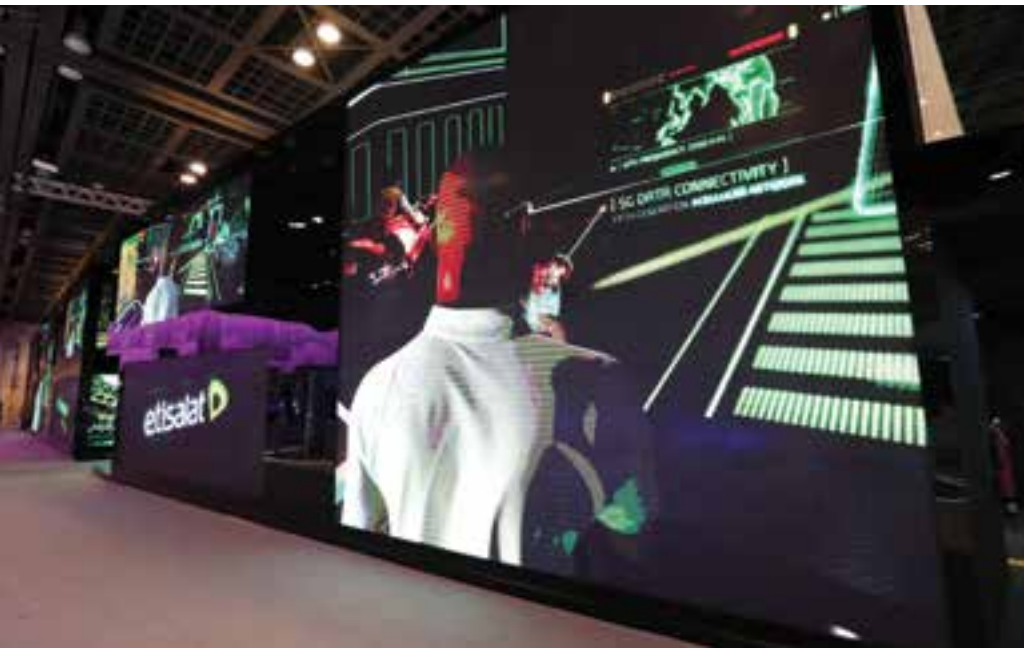
The government's National Transformation Program was launched with the Saudi Arabia Vision 2030 in mind. As the world becomes driven by digital technologies, the Saudi government decided to use the NTP to digitally empower all sectors of the economy, including banking, finance, government, manufacturing, and healthcare. Moreover, e-government services are set in motion in order to cut expenses, expand facilities, save time, and improve overall effectiveness and performance in the public sector.

In addition, the cloud-first policy has been implemented within the Kingdom of Saudi Arabia. This strategy aims to speed up the transition of government agencies from conventional IT solutions to cloud-based solutions. Furthermore, Saudi-based small and medium enterprises (SMEs) have already begun to embrace cloud computing to meet their technology needs. According to the research, more than a quarter of businesses have plans to deploy a combination of on-premise/dedicated private clouds, various public clouds, and legacy platforms.

These initiatives would have a positive impact in boosting the country's cloud computing market. As a result, it will become a regional hub for innovation by transforming its technology landscape. Over the last few years, the country has already seen rapid adoption of digital transformation initiatives with global players entering the market.

In December 2020, Saudi Aramco and Google Cloud signed an agreement that paves way for the rollout of high-performance, low-latency cloud services. A similar move was done as well by Saudi Telecom Company (STC) and eWTP Arabia for Alibaba Cloud.

Key players operating in the country's cloud computing market include Nournet, Wafai CLOUD, CloudSigma, Oracle, Microsoft, Cisco Systems Inc, SAP SE, IBM, Etihad Etisalat Company, and Sahara Net.



Etisalat Group: Digital transformation is at the core of 'customer excellence' and a 'sustainable economy'

Digital transformation is at the core of Etisalat's strategy and encompasses a broad spectrum of initiatives, including new cloud-based products and services, the enhancement and development of its digital channels and the transformation and automation of internal as well as customer-facing processes through the adoption of Robotic Process Automation (RPA) or AI-driven platforms. Digital channels such as mobile apps, websites or customer portals will continue to play a major role in both distribution channels and the maintenance of our brand relevance.

Etisalat is also committed to accelerating digital innovation to contribute to a more sustainable economy. Through sustainable digital innovation, the company aims to meet stakeholders' evolving needs and enable them to achieve their goals. Here below are the key areas of focus which helped in bringing this to reality,

Robotic Centre of Excellence

Etisalat's Robotic Centre of Excellence is aimed at delivering a wide variety of automated solutions to boost efficiency and improve productivity leading to greater customer satisfaction.

The centre currently has 141 robots that have saved over 171,000 man hours. The introduction of Robotic Process Automation (RPA) is part of Etisalat's endeavour to drive the digital future and empower society in line with the UAE Vision 2021.

> Robotic process automation to drive the digital future and empower society in line with the UAE Vision 2021

In the digital age, there is a growing need to turn towards emerging technologies to streamline operations and inject greater efficiency into business processes. The opening of the centre addresses the evolving needs of customers, with RPA services improving overall efficiency, speed, and accuracy of our back-office teams enhancing customer satisfaction. Software robots are supporting back-office agents to complete repetitive tasks 70% faster.

Digital customer care

All traditional human-supported customer care channels were digitalized with AI-driven virtual assistant bots, self-help Etisalat mobile app and "Be-Proactive" channels.

The AI-powered virtual agents, whereby 100% of the SME segment customers' calls, as well as consumer segment calls, engineering, and Central Information Technology (CIT) related calls, were handled by a virtual agent. The Etisalat AI-powered virtual agent is capable of handling 1.5 million transactions on monthly basis.

Digital solutions

The COVID-19 circumstances have heightened the demand for digital solutions across various areas of businesses and processes. In 2020, Etisalat launched a series of tools and services to cater to the market demand and provide means to ease activities and processes through digitisation efforts.

Cloudtalk meeting platform

Due to the high demand for teleconferencing and videoconferencing tools, Etisalat launched the CloudTalk Meeting platform which provides completely secure virtual meetings and online collaboration sessions.

Business Edge

In 2020, Business Edge was launched as an innovative and adaptable platform offering a variety of essential products and services such as smart connectivity tools, communication

> Etisalat Digital Open Innovation Centre received 180 visits in 2020, 77% were virtual tours, and 27% were returning customers.

> More than 300,000 users registered on the Etisalat Consumer Mobile App and Etisalat Business Mobile App

and collaboration mechanisms, office productivity tools, security and analytics, business devices for employees, and digital marketing solutions, all designed to strengthen the various aspects of any business.

Telemedicine platform
The introduction of the cloud-based 'Telemedicine Platform' provides solutions by integrating essential functions within a patient-doctor journey, such as secure video, audio, and chat over internet protocol to support the entire workflow from patient registration, appointment booking, payment collection and remote medical consultation. American Hospital, one of the leading hospitals in the region was the first to utilise the platform hosting more than 2,000 teleconsultations with more than 100 doctors activated to date.

Malaffi software-defined networking in a wide area network (SDWAN)
Malaffi is the region's first health information exchange platform that safely and securely connects all public and private healthcare providers across Abu Dhabi. Etisalat has taken up the ambitious task of connecting 2,000 clinics in Abu Dhabi on a single SD-WAN fabric.

Etisalat cloud express
This is a secure private connection between the customer's corporate network and their public clouds, in partnership with Amazon Web Services and Microsoft Azure giving customers a variety of connectivity options to build a high-speed hybrid network for businesses.

Digital Open Innovation Centre
In 2020, the Etisalat Digital Open Innovation Centre was one of the first locations in which customers could experience 5G through holographic communications, and the Etisalat Video Cloud Platform was displayed for the first time. During the Etisalat Innovation Month several universities and organisations were invited to explore innovation in today's business environment.

With the pandemic the experience was shifted to a virtual digital online platform. The Etisalat Digital Open Innovation Centre received 180 visits in 2020, of which 77% were virtual tours, and 27% were returning customers. Since opening in 2018, Etisalat has received a total of 812 customers of which 63% of visitors were C-level executives during 2020.

UAE trade connect (UTC)
The trade finance platform addresses the risk of double financing and fraud across the UAE. The joint venture currently includes seven local banks, including Commercial Bank International (CBI), Commercial Bank of Dubai (CBD), Emirates NBD, First Abu Dhabi Bank (FAB), Mashreq Bank, National Bank of Fujairah (NBF), and RAKBANK to develop a new blockchain based trade finance solution.

Amazon Web Wervices (AWS) direct connect partnership
Businesses in the UAE can now

transfer critical data directly to the cloud using AWS Direct Connect from their data centre or colocation environment and bypass the public internet.

Smiles app

Etisalat Smiles App is a powerful loyalty programme that also launched a blockchain powered rewards exchange feature enabling customers to keep track of their loyalty points and exchange points between one another. Smiles App has exceeded two million unique users and has continued to expand its reach with over 1,000 partners across

Etisalat digitally transforms customer experience

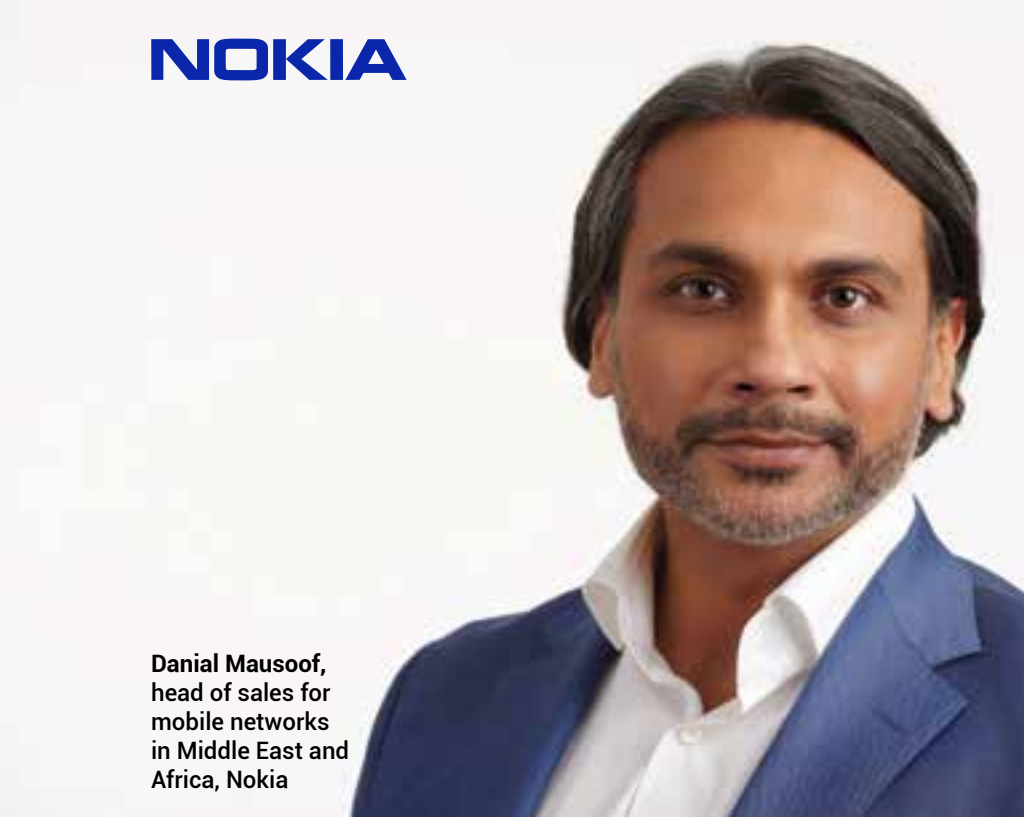
The end-to-end customer experience was transformed with all the various applications for business users and customers. Etisalat apps include digitisation of processes, product integration, and new features within the app. There is an integrated 'Central Feedback Management system' and through its self-serve options customers can control their usage and consumption of data and minutes as well as set limits and data caps.

By 2020, Etisalat achieved a total of 300,000 users registered on the Etisalat Consumer Mobile App, 321,000 users registered on the Etisalat Business Mobile App and 55,000 new users on the B2B Portal.

Smart stores

The Smart Store initiative has digitally and ergonomically transformed existing stores and those opening in new locations across the UAE. These stores allow our customers to undertake end to end transactions digitally, while enjoying a unique shopping experience via our latest digital touch points. In 2020, Etisalat opened 10 new digital stores across the UAE. TR

> “Smiles App exceeded two million unique users”



Danial Mausoof, head of sales for mobile networks in Middle East and Africa, Nokia

Nokia's innovation in mobile networks shaping digital transformation for CSPs and enterprises

Nokia's commitment to digital transformation has translated into digital transformation guidance to customers, including CSPs and enterprises. In an exclusive interview with Telecom Review, Danial Mausoof, head of sales for mobile networks in Middle East and Africa, Nokia highlighted how the company is helping CSPs and enterprises to grow in the digital age.

Congratulations on your recent appointment as head of sales, mobile networks Middle East and Africa (MEA). Can you briefly tell what does your new role mean for CSPs and enterprises?

Thank you for the opportunity to speak to Telecom Review. I am very excited to be leading sales of mobile networks for Nokia in MEA. The primary objective of the role is to lead a best-in-class solutioning and presales for all our customers and co-create network evolution strategies by introducing newer segments and technologies such as 5G, O-RAN, virtualized RAN (vRAN), private wireless, to name a few, for all communication services providers (CSPs) as well as enterprise customers.

Nokia is pretty much active in the O-RAN and vRAN space. Why are you interested in these two technologies? And what's the difference between them?

O-RAN and vRAN are an opportunity to drive innovation in radio networks, thanks to a wider variety of players. These concepts are crucial for the introduction of more intelligence (AI/ML) with the RAN intelligent controller (RIC) for network automation. Recently in an interview with Telecom Review, Tommi Uitto, president of mobile networks at Nokia stated, O-RAN is not a question of 'if' but rather 'when.' Hence, we are well positioned to lead and are actively collaborating with operators as they embark on shaping their strategy around O-RAN deployments. We were also the first major vendor to join the O-RAN alliance and O-RAN policy coalition.

O-RAN and vRAN are inherently interlinked but they have some essential differences:

O-RAN's objective is primarily to standardize open interfaces between different elements of a base station (remote unit, distributed unit and central unit), in addition to the introduction of more intelligence in

the network through the RIC function. In other words, O-RAN can be looked at as a vertical disaggregation of the RAN with standardized interfaces.

vRAN, on the other hand, is about virtualizing the BTS baseband functions and running them with GPP (general purpose processors) on top of COTS (commercial over the shelf) computing platform, instead of purpose-built hardware that is the case today. In other words, vRAN is the horizontal disaggregation of the BTS functions and hardware/ software separation.

It is often said that CSPs and enterprises need to adopt web-scale functionalities to grow in the digital age. How is Nokia helping CSPs acquire these functionalities? What are your recent partnerships in this field?

In line with our strong commitments in O-RAN and vRAN, partnerships will be a key enabler for deployment strategy. We need to develop high-value, high-accuracy 5G use cases that enable our customers, both enterprises and CSPs, to accelerate their digital transformation journey. To further advance these and continue our path towards network openness, we announced agreements with Microsoft to develop use cases targeted for enterprises over private wireless networks. This is a start of a long-standing collaboration where we will use solutions such as cloud RAN, RIC and mobile edge computing (MEC) with the Azure platform. The targeted outcome is to leverage MS Azure solutions and bring data processing closer to end-users ultimately addressing requirements of ultra-low latency, high 5G throughput type of applications such as immersive gaming and real-time robotics to name a few.

We also announced partnerships with Google Cloud and Amazon Web Services where we will enable CSPs and enterprises with 5G connectivity to leverage the web-scale player's agility and scalability capabilities to simplify the automation and virtualization of their networks.

As the partner of leading telecom operators in the industry, how do you drive improved performance proactively for them?

Network performance is a key measure for our customer's success, especially as data consumption continues to increase. We constantly work with our customers to improve network performance, thereby helping them to enhance the subscriber experience.

Our experts proactively use market intelligence from crowdsource platforms, like Ookla or Tutela, to benchmark and gather a valuable view of our customer's performance and capacity. This helps us get a 'subscribers' view of networks and recommend further performance enhancements, either via relevant features, capacity expansions or enhancement programs.

During these unprecedented times and arrival of 5G, these efforts have enabled our customers to ensure that sudden traffic growth, such as what we saw during lockdowns in certain countries, do not cause capacity constraints. We are able also to use an advanced analytical analysis to provide consultation on how to better monetize network capacity.

Furthermore, Nokia has invested in a digital deploy framework. Using this framework, we create precise digital designs targeted towards use-case requirements of our customers. This allows us to ensure accuracy from design to deployment. The framework extends towards the final acceptance of these sites and our customers can manage and ensure the best quality.

Post acceptance, we provide services using patented and proprietary tools and approach towards further optimizing and maintaining the high performance of their network.

We also offer our self-organised network (SON) portfolio to our customers who require a higher level of digitalization and automation in their operations and work proactively toward continuous improvements in their network.

Self-organizing networks (SON) can bring about many benefits to telecom operators. What are the main benefits? And what does Nokia offer in terms of SON technologies?

Automation is becoming pervasive in technology nowadays. We are working towards a portfolio where automation is embedded to help CSPs use automation to improve network performance, optimise costs and manage legacy network infrastructure.

Networks today are incredibly complex, and automation is crucial to simplify the workings of the networks for greater efficiencies. From radio configuration at the start to creating efficient use of 5G. With the advent of network slicing, CSPs can use SON today to allow network slicing per service, per user or per application to ensure the most optimum utilization of their network assets.

The closed-loop automation and predictive ML aspects of SON ensure that we are able to boost network quality, customer experience and significantly offload some of the workload of the operational staff, freeing up their time towards more strategic and productive tasks.

Today our customers can select predefined modules that can be easily deployed to create self-healing and self-optimizing action, immediately providing benefits to network operators. In addition, Nokia SON follows our commitment to OPEN standards, Open APIs and SDKs. We also foster innovation through the EdenNet Developer Community, which runs on cloud-native architecture. Furthermore, SON plays an important role in O-RAN that we discussed earlier; it allows ML-based orchestration of different traffic steering methodologies and optimization and load balancing features.

We have recently announced that Nokia SON will be used by Orange and its affiliates for optimization. This extends to all sites, including non-Nokia sites as Nokia SON supports multivendor deployments. TR

Sofrecom embracing the digital transformation game

The launching of 5G raises the topic of the digital gap/ divide between developed and emerging countries, and between rural and urban areas within developed countries. Although theoretically, technology can fill this gap by eliminating the costs of building "buried" broadband access networks (fiber), the reality of backhauling needs shows that the difference in costs, at least in the short term, is not so significant. Verizon, which has already replaced the deployment of fiber optics in favor of fixed 5G network, has greatly reduced its ambitions, even though the target clientele was wealthy groups in residential areas of American cities.

In contrast, mobile 5G is experiencing an exponential growth in the United States and South Korea, strongly linked to the availability of terminals at affordable prices.

Addressing the issues by zone

In this context, how can 5G be an access technology in rural low-revenue areas and not a complementary solution in dense high-revenue areas?

First of all, it is relevant to address weakly covered areas in developed and emerging countries in a differentiated way. While the gap in developed countries is likely to persist for a short period and is linked to the price of terminals in the early stages, it will fade over time. On the other hand, in the short term, in emerging countries, it is hard to think that there will be 5G developments outside of a few large densely populated areas with a very high income segment of the population, without voluntary actions from governments and stakeholders. Therefore, it is not unrealistic to imagine a 5G deployment in Sao Paolo or Mexico. It is less realistic to imagine it in Africa outside of a few densely populated cities and a significant segment of high-revenue clientele.

The coverage gap

As a reminder, in 2019, 41% of the population of Sub-Saharan Africa didn't have access to any mobile broadband network (neither 3G nor 4G). In the least developed countries, only 3G is available in the capital. Niger is the most remarkable example. In 2019, 30% of its population had access to 3G in Niamey, the capital only.

It would be utopian to imagine 5G deployments in least developed countries, as the costs of building or upgrading networks (access, collection and transport) are not supported by any economic or social reality.

While a great number of African countries still lack sufficient 4G coverage across their territory because operators didn't find there an adequate economic model that justifies the deployments, considering 5G on a massive scale would not make sense at this stage. While it could be imagined that the launch of 5G would enable a leapfrog, the question would be to ask where this is needed. Although high speed connectivity is undoubtedly a crucial element for development, ultra-high speed connectivity still isn't necessary in all territories of the world.

The usage gap

Today, 3.3 billion people are covered by mobile broadband networks but don't use the internet.

Generally speaking, everywhere in the world, in 2019, rural population had 40% less access to the internet than urban population. The COVID crisis has probably changed this data for rural populations in developed countries, however the figures are not yet consolidated.

The cost of terminals limits digital inclusion and the development of usages in least developed countries: in most of them, "entry-level" terminals cost more than 20% of the average monthly income.

Technology is deployed in relation to usages. Therefore, thinking of 5G development at this stage in the majority of emerging countries seems early because of the lack of applications requiring this level of capacity and very low latency. 5G should be integrated in the actions of the ecosystem's global evolution that consider both the offer as a whole (by integrating the backhaul without which 5G access lose much of its interest), and the demand, i.e. the creation or hosting of local content and services. In addition to a very important variable which is the cost-efficient access to energy, not only to power the antennas, but also the CDN that will host the decentralized content.

While the arbitration of operators is often made on the basis of return on investment, that of public authorities and donors must integrate the need for specific uses of this new technology and in particular: the security of people and property, and addressing populations with sufficient digital literacy to enable the takeoff of usages.

Thus, the appearance of a new technological solution does not, for the moment, change the problems linked to previous technologies.

What could justify 5G deployments in least developed countries?

Avenues for targeted deployments exist, preparing for expansion when equipment prices become more affordable.

Vertical applications

Just as consumer deployments seem premature in the short term, the launch of certain vertical applications could act as a lever for deployments in areas considered unprofitable in the short term, in particular vertical applications related to agriculture and the security of people and property (particularly in the context of the extraction industries, which have the budgets and applications). The FAO, for example, is extremely active in supporting farmer connectivity in Africa through the provision of terminals and the development of commodity price applications.

Optimization of existing networks

"Dig once" is the new credo of the stakeholders and the ITU. Although the use of network doesn't solve completely the deployment of wireless networks, the deployment of backhaul networks in existing infrastructure highly reduces the total 5G bill.

Moreover, a global vision of multi-use networks (piping/electricity/telecom) would justify the deployment of ducts in places where they do not exist and would also contribute to ecological protection, another major priority of the Sustainable Development Goals.

Replacing fiber

Although in absolute terms, the argument of the cost of mobile networks compared to fixed networks also applies in the context of 5G, in emerging countries, this is not yet a sufficient reason for deployment, for the reasons expressed above. On the other hand, the coverage of specific areas, can find in 5G a valid solution.

In some countries around the world, the deployment of fiber in the access network is particularly difficult due to poor visibility of buried utilities, excavation difficulties and even looting.

Thus, today, highly targeted 5G deployments in Africa are in small niches (as was the case with early fiber deployments around the world). For example, the incumbent operator Cable and Wireless Seychelles launched 5G in the capital Victoria, in Roche Caiman, the central district of the island of Mahé, and at the airport in July 2020, Togocom covered the western part of Lomé international airport with 5G.

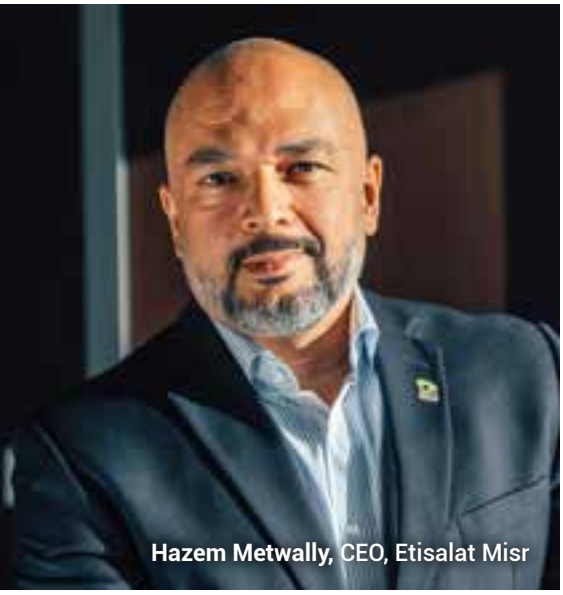
Optimized new equipment

Furthermore, new solutions aiming at easing the accessibility to equipment are emerging and can eventually cover new technologies. This is the case of Huawei Rural Star Pro antennas that integrate a base station and backhaul radio/LTE in an accessible and small package.

Although planning a massive deployment of 5G in developing countries or rural areas seems early, identifying the levers that will dynamize the launching in the next 3 years will create the conditions for a qualitative leap in the ecosystems of these areas. Moreover, addressing the usage gap will create the demand conditions necessary for the development of new services TR

By Maria Gabriella Macra, senior consulting manager, Sofrecom

5G should be integrated in the actions of the ecosystem's global evolution that consider both the offer as a whole and the demand


Hazem Metwally, CEO, Etisalat Misr

Hazem Metwally drives Etisalat Misr further to the top

Etisalat Misr is ensuring a steady stream of high quality service and is trying to always find creative and new ways to foster sustainable growth within the country. Telecom Review Africa was able to secure an exclusive interview with Hazem Metwally, CEO of Etisalat Misr, to talk more about the company's growth in different aspects, how they're leading digital transformation, 5G, and many more topics.

This year marks the 15th anniversary for Etisalat Group and the 14th for Etisalat Misr. What were the major milestones achieved during this journey and what are your outlook for the future?

In the past 15 years, the composition of the industry has shifted tremendously, going from "who" is online to "everybody" is online; this is an era of hyper-connectivity and it hasn't only shaped the way we interact, but the way we live as well. At Etisalat Misr, we got the fundamentals right early on which gave us the opportunity to support innovation and disrupt the industry. This is the guiding principle of the past years, but also the aspiration going into the future. Some of the major milestones definitely begins with being the best network in the market with the most advanced technology, acquiring 4G SIM cards early on in 2007, launching VoLTE service and hosting the introduction of back-then new operator WE on our networks; again showcasing the strength, resilience and capabilities of our service.

We are looking into providing an expanded set of services with higher bandwidth: educational services, entertainment services, digital-enterprise building solutions. Let me use this opportunity to build a bit of anticipation. Later this year, we will announce the introduction of a new experience that integrates our service offerings with entertainment; a more nuanced approach to customer engagement.

How important is your partnerships with technology providers to boost Etisalat domination over the advanced services in Egypt?

Leadership is built on the foundation of strong partnerships fostered over the years. We are always looking for opportunities to collaborate with great entities that help us cater to our customers' needs through enhanced user experience; and our recent partnership with technology partners cultivates the mindset of a win-win. We are pioneering voice service and continue to expand our infrastructure across networks while technology providers bring the innovative all-converged, reliable and ultra-simplified Single Voice Core solution to our offering.

The increased digital transformation of consumers' lives and businesses presents our industry with important opportunities to extend our services beyond connectivity, through integrated solutions, consumer and enterprise digital services, and reimagined models of digital communication leveraging advances in human interfaces and technology. We continue bridging the gap on innovation, through partnerships with purpose, across every corner.

Digital transformation is one of the pillars of Egypt's progress towards its 2030 vision. What is Etisalat Misr's role in this journey, how is it taking the lead?

Egypt is one of Africa and the Middle

East's most powerful transformation stories with a growth trajectory strengthened by reform and private sector engagement. Etisalat Misr is contributing to its 2030 Agenda not only on Digital Transformation but also on inclusive and sustainable economic growth, through increased investments, job creation, promoting competitiveness and excellence in innovation.

As one of Egypt's biggest telecoms operators, we are contributing significantly to the ICT sector; as we have built the infrastructure to support acceleration to the 4IR. In the digital economy, connectivity counts. It is impossible to imagine a sector, industry or area that cannot benefit from the digitalization of services.

One of the sectors that we see rapidly evolving is digital financial inclusion. The pandemic highlighted the necessity of having robust systems that would help include a greater segment of our society with simplicity to carry out basic transactions. We have recently announced our partnership with the Canal Sugar Company, which provides farmers with facilitated payment methods through Etisalat Cash, a safe and easy-to-use electronic channel.

We continue enabling the ecosystem through financial inclusion, accessibility and providing opportunity across sectors such health, education, agriculture, manufacturing and entrepreneurship.

You were recently allocated new frequencies to be added to your network. With this boost, what are your plans for Egypt's development regarding 5G?

Egypt is a great market, the more you serve it, the more it gives you back. While we embrace the thought of 5G connecting human and machine in an infinite number of ways that can change our world, the public hasn't yet caught up, with adoption still nascent. When technology solves a problem, it sells fast. The newest generation of wireless technology will transform our world and lives, when it starts to facilitate and contribute to our day-to-day routine. The new frequencies weren't added due to a current necessity but rather they were part of our usual 10-year planning exercise to ensure that we can cover the growing forecasted needs of our clients. We are gearing up on infrastructure, networks, increased spectrum for coverage as well as partnerships so that when it's time for the next-gen technology, we'll be ready. I am confident that Etisalat Misr will play an essential role in transforming the concept into reality, given the accumulated experience that the group has in the introduction of 5G across countries.

Customer satisfaction is with no doubt a focal point for Etisalat Misr. What are your plans to further implement customer-centricity?

We have been investing for quite some time now in a customer-centric strategy and operating model; with a culture that aligns with them and talents who deliberately cultivate the necessary mindset and values required within their teams. It takes a degree of foresight, coupled with data and agility to further implement customer-centricity.

We're keen on resolving service issues quicker, offering more personalized services, adapting our products to the needs and demands of the people. We are the only operator with a full digital portfolio; an indication on our keenness in steering our direction towards our customers, through Quality of Experience (QoE) and Quality of Service (QoS).

Being customer-first has two dimensions: first is the degree of relevance to the market demands, and second is our ability to deliver impact. This puts us in a stand to always define which areas we want to show leadership on.

Etisalat is now considered as the most valuable brand in the Middle East and Africa, figuring among the top 25 global brands for the fifth year in a row. What made Etisalat Misr stand out and what is the next step you aspire to achieve?

I believe what makes Etisalat Misr stand out is that we really focus on customer retention versus acquisition; that is where consumer experience drives value. We attract our customers through the availability of options including tiered pricing, bundle packs, incentives. However, the challenge is how to retain them. We have to always meet the people where they are, on both financial and quality levels; and that is how we become a valuable brand.

Looking boldly into the future, we will continue to attract, delight and retain customers, beginning with ensuring a steady stream of high quality service and of course finding creative and new ways to foster sustainable growth within the country.

The social responsibility file is one of the most important files in the recent period, in which companies devote their efforts to be part of. What are the most important issues that Etisalat Misr supports in this file in the recent period?

We're seeing a shift from shareholder capitalism to stakeholder capitalism; where every business needs to bring value to its stakeholders beyond profits. This shift in mindset requires partnerships, embed the concept of sustainability in our core, and move from social responsibility to social impact. A live-able world is in all our interests: the public, businesses and governments. That requires an enormous combined effort.

Etisalat Misr is scaling up core efforts in contributing to the community through focusing on technology that enables development in priority sectors such as health, education and capacity building. We are also embedding the Sustainable Development Goals in our corporate agenda through integrating Gender Equality and Women Empowerment, Responsible Consumption and Environmental Sustainability, as well as Decent Work and Economic Growth.

2020 has been a catalyst for initiatives, ideas and thousands of projects and collaborations across every industry. As Etisalat Misr, we continue to scout, enable, and implement some of those ideas, to help benefit our society. TR

Huawei new iPowerCube-S solution opens a new chapter in off-grid power generation

In addition to connecting communities through telecommunications infrastructure, new and innovative ICT-enabled solutions are also proving their mettle in other industries, particularly in the energy and utilities sector. To that end, Huawei's latest innovative power supply solution could revolutionize power supply for areas across the Middle East with limited access to mains electricity.

The reality is that the global power supply is unbalanced. According to the IEA, 770 million people worldwide have no access to mains electric supply. Even in areas connected to the grid, power supply stability can be poor, and power shortages persist. The shortage has severe effects on the everyday life of residents and can limit local economic development.

Recent advances in smart technology have seen the cost of photovoltaic (PV) components plummet. As a result, solar energy as an alternative to diesel generators delivers a low-cost, green, and universal power supply.

Huawei's iPowerCube-S smart integrated power supply solution features one-stop delivery, fast deployment, and optimal power cost. It is ideal for the Middle East and Africa region with abundant sunshine. Solar can power entire communities with economical, sustainable, and reliable power. This in turn supplies electricity to residents, schools, hospitals, banks, and factories in areas with no or poor mains supply.

The iPowerCube-S consists of the power generation system, lithium battery energy storage system, efficient conversion system, and intelligent network management system. Compared with traditional solutions, iPowerCube-S features more simplified deployment, reliable operation, and intelligent O&M.

The Huawei solution also addresses a key concern around cell sites. Cell sites share the same characteristics with unconnected communities. Many are in remote areas that are difficult to access or suffer from a lack of infrastructure. Traditionally, sites have used internal-combustion-engine-driven generator sets, which, being less efficient than public power, increase operating costs and are a source of pollution.

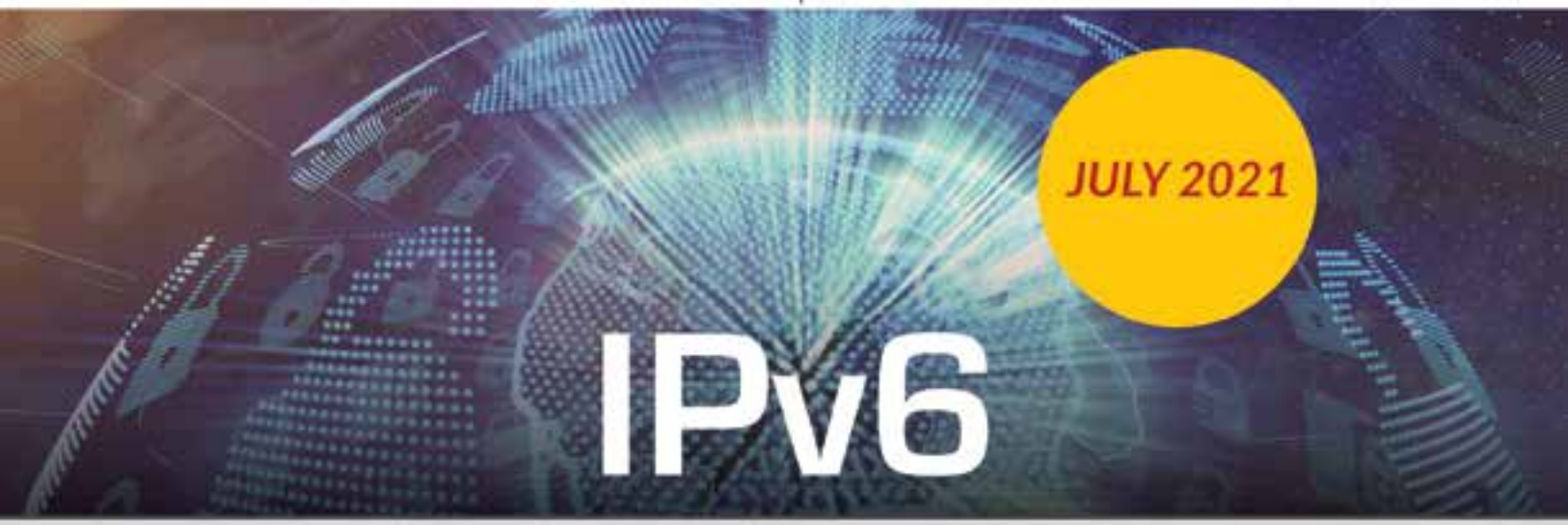
Renewable sources, such as solar power, are increasingly viable solutions for off-sites, capable of reducing fuel costs to the cell tower by up to 75%. In addition, they can be backed up by a fuel generator system which allows the cell site to work when the renewable sources are not enough.

In terms of deployment, the solar-diesel-electrical-electrical-storage integrated structure of the iPowerCube-S enables distributed deployment without equipment rooms. This shortens the deployment period by more than 75%. In terms of operation, the fully-modular design, redundancy backup, zero interruption of power supply, high-protection cabinet, and built-in intelligent air conditioner further ensures reliable operation in all-weather environments.

This is but one example of the value that such ICT-enabled solutions could bring to the region's energy sector. For its part, Huawei has committed to innovation and open cooperation with partners in the field. By applying its end-to-end expertise in digital transformation, the company hopes to work with more global partners to promote renewable energy, bridge the energy gap, and enable renewable energy to light up every corner of the region. TR

By Dengwei, Digital Power Product Management Manager, Huawei ME

TELECOM Review
virtual panels



Expanding the influence of IPv6+ to enable the digital economy

For the second consecutive year and following the success of the first edition, Trace Media and Telecom Review are organizing the IPv6 webinar entitled **"IPv6: Expanding the influence of IPv6+ to enable the digital economy"**.

The webinar will provide an update on the IPv6 and all the pertinent developments that took place throughout the year.

International high level speakers will share their insights into the projects and achievements they've made in the field of IPv6 and IPv6+.

This is your chance to know more about the IPv6 industry and hear from the experts.

For more information, contact ***Toni Eid, CEO, Trace Media:***
toni.eid@tracemedia.info

Rania Halimeh, regional business development manager META, Logical Operations & CertNexus, emt Distribution META

Rania Halimeh: Women as part of the digital transformation

In an exclusive interview with Telecom Review, Rania Halimeh, regional business development manager META, Logical Operations & CertNexus at emt Distribution META, gave us valuable insights into the importance of technology learning to empowering women within the ICT industry.

In today's digital transformation, women are presented with new avenues for empowerment that can contribute to greater gender equality. The Internet and various digital platforms help bridge the digital divide by allowing women to increase their employment opportunities and access knowledge and information.

First of all, can you tell us more about your career and background within the ICT industry — from the time you started until now?

I have over 10 years of experience in business development and sales within the telecommunications and IT industries.

I entered the telecommunication field back in 2010 where I joined one of the leading companies in telecom in UAE by being part of the in-building solutions /network team as head of acquisition. After that, I moved to a company where their core business was network infrastructure and data centers and I served as the regional development manager. Currently, I am more involved in training for emerging technologies where we offer courses in cybersecurity, artificial intelligence, Internet of Things, and data science through giving firsthand experience for graduates and highly strengthen their preparation for the local job

market as well as identifying the skills of nontraditional candidates by enhancing them to stay relevant to the industry.

In line with your role at emt Distribution META, what is the core of your company?
emt Technology Distribution is a value-added master distributor for various cybersecurity, ITSM, and network monitoring solutions for the META, APAC, and Europe region. We act as major consultants for many sectors including security, ICT management, network, and education.

I serve as the regional channel development manager for the education department. We are partners with Logical Operations/ CertNexus who are the global purveyor for vendor-neutral emerging technology certifications for business IT and security professionals.

Logical Operations manages the global channel of CertNexus authorized training providers as well as organization of national accreditations. We are accredited with a number of international organizations around the world including the US Department of Defense, NIST NICE Cyber Security Framework, United Kingdom's National Cyber Security Centre (NCSC), Tamkeen in Bahrain and Knowledge and Human Development Authority (KHDA) in Dubai, and many others.

In your opinion, how does technology learning contribute to empowering women in the ICT industry?
We are living in a world where women are contributing in ICT is playing an important role in changing the attitude and perspective of society towards women. It is creating a psychological comfort level of women at their work place by providing them additional knowledge and skills.

I believe that ICT is playing an important role in changing the attitude and perspective of society towards individuals especially for women. There are many efforts done by the Organization for Economic Co-operation and Development (OECD) to broaden the evidence base to better understand the position of women in the economy and society that is being transformed by digital technologies. Women are significantly less likely to choose natural sciences, engineering, and ICT studies.

However, emerging economies show encouraging countertrends; with more than 260,000 female ICT graduates in 2015. This is a positive aspect that shows there is a lot of interest from women to be involved in this industry, especially for countries like the United Arab Emirates and Saudi Arabia where governments are encouraging women to be part of the digitalization by offering training to reskill and upskill their knowledge.

ICT is playing an important role in changing the attitude and perspective of society towards women. It is creating a psychological comfort level of women at their work place by providing them additional knowledge and skill.

Do you consider training as one of the pillars of digital transformation for future generations?
For any organization to digitally transform, education should be the first priority. If not, companies can't be successful on digital transformation and digital culture initiatives. Especially after the pandemic, the whole world is now connected to networks. Training is playing a major role in reskilling and upskilling the employees and the new graduates. In 2016, there were 250 million fewer women than men online but now we can see this gap is shrinking due to the awareness and support from the governments where they empower women to play an essential role in their countries by offering the training and jobs vacancies in digital transformation.

We all know that the success of an organization depends largely on its people. Organizations with a plan for their digital maturity aim to train and develop the skills of their existing workforce. They understand that training professional and personal development is a priority for employees. If organizations empower their employees with digital education, they can leverage the training as a powerful retention tool in addition to gaining their new digital capabilities and incentivized attitude.

As a woman in the ICT industry, what is your take on gender equality?
I think in this digital world, internet is a great enabler of creating opportunities for women entrepreneurs to enter global markets for the first time. ICT will create opportunities to boost their business by creating an international and well-balanced field that enables businesses to compete on an equal footing in global markets.

ICT has brought women employment gains and I think women can succeed in ICT with the encouragement of parents, role models, mentors and the awareness of the country they live in. TR

I believe that ICT is playing an important role in changing the attitude and perspective of society towards individuals especially for women

How does cryptography in the cloud work?

The world we have today is quickly turning to the cloud for various purposes such as hosting applications and services, SD-WAN, big data analytics, storage, and backup recovery, among others. Hence, the global cloud computing market is expected to be valued at over $620 billion by 2023, with global spending on cloud services to reach $1 trillion in 2024.

Providing access to data from anywhere is the main reason for cloud adoption as we live in an era where operations are more global and connected. Due to the COVID-19 pandemic, the work-from-home setup and increased digitalization are also drivers of the surge of cloud strategy.

Similar to any other technological advancements, privacy and security are among the two major roadblocks in embracing the cloud. IDC revealed that nearly two-thirds of organizations see security as the biggest challenge for cloud adoption while privacy and regulatory issues worry more than 60% of enterprises.

It is essential for organizations to use encryption or other security safeguards to protect sensitive data in the cloud. Particularly in a cloud environment, IT experts pointed out that managing privacy and data protection are more complicated than on-premises.

Let us take a deep dive into how cloud data security, privacy, and trust are addressed by cryptography.

Security concerns on the cloud

Cloud computing is an evolution to the information technology sector. Among its main advantages are cost reduction via efficient and optimized computing practices, flexibility, and portability.

The word cloud in cloud computing stands for a set of software, hardware, storage, networks, and interfaces that are combined together to be delivered as-a-service. Being dynamic in nature, it opens up a lot of room for security risks.

Among the possible vulnerabilities are data leakage, unauthorized

access, DDoS attacks, hacking, and misconfigurations. With all these, enterprises need to take a data-centric approach to protect their sensitive information from advanced cyber threats emerging due to virtualization, cloud services, and mobility.

Even shifting from traditional to cloud data centers poses inevitable security risks that challenge cloud data security. The question of how to authorize cloud data process and protect data processing simultaneously is another critical subject to consider.

One of the security solutions that can be implemented to provide consistent protection for sensitive data is through encryption and cryptographic key management.

Benefits of cryptography in cloud

Cloud cryptography is a form of encryption that safeguards data stored within the cloud. Without delaying the delivery of information, several measures are being placed by adding a strong layer of protection to secure data. This reduces the likelihood of being breached, hacked, or affected by malware.

Data confidentiality and authentication processes are among the key benefits of cryptography in the cloud. Determining whether data is highly valuable and requires guaranteed protection against unauthorized disclosure is one aspect that cryptography works ideally on. As the data remains private for normal users, cybercrime from hackers becomes avoided.

In terms of authentication, the organizing body can receive notifications immediately if an unauthorized person tries to make any modifications to a certain piece of data. To prevent this, the users who have the cryptographic keys are the only ones who will be granted access to the data.

What is more, cryptography prevents the data from being vulnerable when the data is being brought over from one computer to another. Receivers of the data will also have the ability to identify if the data received is corrupted, permitting an immediate response and solution to a possible cyberattack.

Encryption is, in fact, one of the safest methods to store and transfer a huge amount of data as it complies with the restrictions imposed by organizations such as FIPS, FISMA, HIPAA, or PCI/DSS.

Understanding cloud cryptography

Cloud cryptography is based on encryption that runs on codes called ciphertext. The ciphertext can then be changed into plaintext through an encryption key to decode it into series of bits. This form of encryption can be used to secure both information at rest and information in transit.

Data encryption can take place in an end-to-end manner where senders and receivers send messages between themselves, without any third-party interference. Additionally, file encryption is when data at rest is encrypted, impeding an unauthorized person who tries to intercept a file.

Cryptography brings a stronger level of security and efficiency to the cloud. As physical control over cloud storage is impossible due to its digital nature, the only way to secure a piece of information is to protect it with cryptography while maintaining control over the cryptographic key.

There are various types of cryptographic keys/algorithms available for cloud security, namely symmetric and asymmetric. Symmetric algorithms use a single key for both data encryption and decryption. It works to provide a two-way system for users to ensure authentication and authorization. Unless the user has the single key, the encrypted data stays in the cloud and cannot be decoded.

On the other hand, asymmetric algorithms use different keys for encryption and decryption. Here, each recipient requires a decryption key which is also referred to as the recipient's private key. This type of algorithm is considered the safest as it requires both keys to access specific data. Hence, the decryption process will only commence if the other key exists.

An example of a widely used asymmetric algorithm for cloud computing security is the Rivest–Shamir–Adleman (RSA) algorithm. By illustration, user data is encrypted first and then stored in the cloud. When required, the user places a request for the data to the cloud provider. Following this, the cloud provider authenticates the user, and once validated, only then will the data be delivered.

In a cloud environment, the public key is known to all, whereas the private key is known only to the user who originally owns the data. Thus, the cloud service provider is responsible for the encryption and the cloud user has the key for the decryption.

In a nutshell, once the decision to move to the cloud has been made, full control over the data becomes lost. Thus, the amount of protection needed to secure data must be directly proportional to the value of the data. In this way, trusted computing and cryptography can be enforced to maintain data security in the cloud. TR

As physical control over cloud storage is impossible due to its digital nature, the only way to secure a piece of information is to protect it with cryptography while maintaining control over the cryptographic key

Intelsat: "We're solidifying our position as the trusted global network provider"

In an exclusive interview with Samer Halawi, chief commercial officer, Intelsat, Telecom Review has gained insights about network convergence and the important role of satellites for modern connectivity. In addition, we are enlightened on the innovating steps the leading satellite communications provider has taken to serve the needs of telcos and transform into reality the needs of businesses and governments across numerous verticals.

Samer Halawi, chief commercial officer, Intelsat

In general, satellites provide a variety of mobile and fixed communications services. Intelsat offers a wide range of solutions delivered by utilizing emerging software-defined and 5G technologies, maintaining its global competitiveness within the satellite industry.

With almost six decades in the satellite industry, what is the current global footprint and coverage of Intelsat?

Intelsat operates the world's largest integrated satellite and terrestrial network. We own and operate 52 satellites and eight teleports that cover 99% of the world's population. We also have a record-breaking 10 more satellites currently in production, which will expand our coverage and scope even further.

Intelsat supports customers in 200 countries around the world. We serve over 3,000 commercial aircrafts and eight of the world's top 20 global carriers. We're also the largest provider of connectivity for the offshore oil and gas market. Seven of the world's top 10 mobile operators work with us. We reach more than two billion people via TV and radio, and we're the largest provider of satellite services to the US government.

Out of all the solutions Intelsat offers, how do you particularly serve the needs of telecommunications companies around the world?

Telecommunications companies have a wide variety of operations, from internet service for homes and businesses to mobile network coverage. Intelsat enables these companies to connect their operations and customers with a variety of integrated space and terrestrial based services and solutions.

Telcos can leverage Intelsat's services to increase branch-office resiliency and application performance in their SD-WAN deployments. We also offer fiber and teleport services that provide a cost-effective alternative to building and owning satellite infrastructure. And our cellular backhaul managed service offers mobile network operators (MNOs) a cost-effective, end-to-end solution for expanding coverage into rural and hard-to-reach places.

Intelsat works with telecommunications companies around the world to identify the right solution or set of professional services that will help them achieve their business objectives. We're doubling down on our customer commitment this year and launching several new customer support centers across multiple time zones, regions and languages. Our in-region teams speak our customers' language and understand their specific culture, priorities, teams, and service platforms.

Can you elaborate on how the Intelsat global network connects possibility to reality for businesses and governments?

We're known for solving some of the toughest connectivity challenges.

Right now, for example, we're helping scientists in Antarctica quickly communicate their research findings to colleagues around the world, and we're equipping rural cocoa farmers in Peru with real-time crop pricing on their mobile phones – if our customers can imagine the possibility, we're here to help them make it a reality.

Another great example of this is the work we recently did with one of the leading telecommunications service providers in Japan. They were looking for a way to quickly and cost-effectively provide 3G and 4G coverage to rural areas that are hard to reach because of the island's topography. Intelsat provided a complete, end-to-end cellular backhaul managed service to meet this customer's needs,

including a fully staffed, 24x7 network operations center in Japan.

In today's era, many players are involved in connectivity. Is Intelsat ready to converge with other service providers? What is Intelsat's role when it comes to network convergence?

We're more than ready, we're leading the way. Intelsat acquired Gogo's Commercial Aviation business in December, and we're now the leading global provider of inflight broadband services to commercial airlines, including to nearly half of the world's top 20 global carriers. For us, the vertical integration made sense – combining the world's largest satellite operator with the leading provider of commercial inflight connectivity (IFC) services will deliver unprecedented innovation and long-term value to our commercial airline customers.

In all of our verticals, we partner across the ecosystem to deliver the best for our customers. Right now, for example, Intelsat is pioneering the land-mobile connectivity market with a whole host of partners, including Kymeta, Starwin, Satcube, and GRC. As a result, emergency response and industrial vehicle fleets, railroads and other Communications-on-the-Move (COTM) applications across the globe are now able to stay connected wherever they go on our seamless global network.

Intelsat's leadership position in the maritime market is also a result of the strong partnerships that we have in place today. We're defining the future of maritime connectivity with KVH, Navarino, and others – making it easier and more affordable than ever to add user-friendly, high-performance broadband to any class of ship. We also work very closely with our wholesale bandwidth partners, including Marlink, SpeedCast, and Global Eagle, enabling them to provide exceptional end-to-end services to their customers in maritime, as well as other segments.

Our customer-focused approach ensures our customers get the best quality of service and coverage. By working with Intelsat, they are opting into an ecosystem that we have spent decades developing with our partners. The value that Intelsat has to offer, from satellite diversity to terrestrial connectivity, is augmented by the value-added services that our partners also offer.

We are also actively engaged in bolstering the great momentum that we are seeing in our managed services space, particularly on Flex. Our channel partners have been instrumental to the growth that we are seeing today in maritime and land mobility on Flex, with a lot of that driven by their ability to reach new customers, introduce exceptional value-added services and exhibit agility in deployments and customer service. With FlexMaritime, FlexMove, FlexGround, and FlexEnterprise, Intelsat and our partners are laser-focused on delivering a great customer experience.

We continue to work with our partners on evolving our customer experience. We constantly evaluate new platforms, terminal technologies and other aspects of our space and land connectivity assets to ensure we are providing our customers with the best possible experience out there. Our leadership position and market experience help us aggregate feedback from our partners and customers, and that helps us shape how our products and services evolve to better address growing demand and higher expectations.

Intelsat claims that innovation begins at connection. What are the company's future plans to stay at the forefront of the satellite industry?

For starters, Intelsat is at the forefront of the move to software-defined technologies. In January, we announced a contract with Airbus for two software-defined satellites, which we can dynamically adjust and configure while in orbit, significantly improving the economic equation for our customers and making our network even more flexible, accessible, relevant, and cost-effective for them.

We also think small GEO satellites offer unique advantages, that make them particularly optimized to service a certain geography or a certain application; and you can launch multiple small GEOs at a time.

In addition to our space assets, we're also virtualizing our ground infrastructure, further solidifying the power and reach of our extensive fiber network with our strategically located teleport system – all of which integrates seamlessly with our satellite network. This integrated network combines the most cost-effective balance between space and terrestrial assets, enabling our customers to rapidly deploy new end-to-end services with minimal investment, maximum flexibility, and optimal reliability and security.

Intelsat is building a 5G ecosystem – compatible with 3GPP – that is a flexible, adaptable technology framework, fully capable of supporting multiple access technologies and responding to the ever-increasing expectations and demands of end users. Working closely with the mobile operators, we can easily leverage and deliver on the promise of 5G.

We head up the Non-Terrestrial Networks 5G Working Group (NTN 5G WG) for the Alliance for Telecommunications Industry Solutions (ATIS), where we're working to align technical proposals between the satellite community and major terrestrial 3GPP ecosystem contributors, including terrestrial network operators, radio access network (RAN) suppliers, and chipset vendors. The goal is to ensure an end-to-end ecosystem standard for unified 5G networks by mid-2021, which will be transformative.

We're also investing in next-generation satellite-imaging technology with BlackSky, and exploring High-Altitude Platform Systems (HAPS) technology with partners like AT&T, Nokia, and platform providers. As the foundational architects of satellite technology, we're able to bring our expertise, strength and scale to bear on a number of collaborative efforts like these that are aimed at accelerating innovation, connecting more people in more places and defining or scaling entirely new markets.

We're fortunate to be making all of these investments from a position of strength. Intelsat already operates the largest-capacity fleet of advanced commercial satellites in the world, providing seamless, secure global coverage with performance others just can't match. We're solidifying our position as the trusted global network provider with the best performance, the best reach, and the best economics for our customers. TR

Etisalat supports Abu Dhabi SMBs in their digital transformation journey

Etisalat announced its value propositions that address the varying requirements of Abu Dhabi's small and medium businesses (SMBs) in a bid to boost their digital transformation journey.

This follows Khalifa Fund for Medium Enterprise Development's recent announcement of Etisalat and Microsoft being the latest industry leading organisations to come on board the e-Empower programme ecosystem with innovative resources, such as webinars, workshops, preferential rates and digital support.

Etisalat is committed to supporting the growth of UAE's SMB sector, which represents more than 94% of the total number of companies operating in the UAE and employs over 86% of the private sector workforce, according to the Ministry of Economy.

Abu Dhabi's start-up community will have access to a dedicated platform that has all the information of the initiatives. Registered e-Empower SMBs will gain access to Etisalat's one-stop destination 'Hello Business Hub'. The dedicated business hub offers tailored telecommunications as well as value added services to SMBs while providing them the ease and flexibility of kick-starting their operations in the UAE, whether it be registering their company, setting up a bank account, telecommunication services or another aspect of operational set-up.

Etisalat's Hello Business Hub partners will provide exclusive trade license and banking offers for the startups to legalise their presence in Abu Dhabi.

Esam Mahmoud, senior vice president, SMB, Etisalat, said, "We are honoured to be a strategic partner of Khalifa Fund and be part of the e-Empower programme, enabling us to cater to the requirements of small enterprises and startups, while helping them to grow their business and accelerate their digital transformation."

Khalifa Fund's SMBs will also have access to Etisalat's digital academy, providing a host of informative videos, interviews with subject matter experts, and webinars that will take their business to the next level. In addition, the start-up community can benefit from Etisalat's customised comprehensive digital platform addressing all their business needs, ranging from smart connectivity to office productivity, business devices, digital marketing solutions and Microsoft business applications.

Etisalat is offering preferential rates for Microsoft 365 and digital support as well as educational webinars sponsored by Microsoft to help SMBs upskill, grow and run their business.

Zain Bahrain brings high-speed connectivity to Khalifa City

Zain Bahrain, the leading mobile broadband network operator in the Kingdom, has become the first network operator to provide enhanced mobile and broadband network connectivity to Khalifa city, the second-largest housing project in Bahrain. Located in the Southern Governorate, it is home to approximately 6,000 residential units.

Zain Bahrain aims at delivering a superior and reliable mobile and home broadband experience to its customers in Khalifa City (Ulaim and Al Mahadeer Housing, Blocks 964/965/966) through enhanced data speed and network connectivity opportunities to meet the increasing customer demand.

Khalifa City residents can now enjoy faster data speeds to improve learning, streaming, and gaming experiences.

Zain Bahrain's expansion of network coverage to the newly developed Khalifa City is part of its ongoing expansion plan slated for 2021 in line with its commitment to Bahrain's Vision 2030 to provide seamless connectivity to its customers and enhancing their digital experience.

Commenting on the development, Ali Al-Yaham, director of technology at Zain Bahrain, said, "We at Zain Bahrain constantly strive to provide our customers with enhanced connectivity. The network expansion is part of our strategy to drive digital transformation in Bahrain and provide a robust network to the residents of Khalifa City thereby enabling reliable and super-fast speeds for their digital needs. We continue to invest in our network to make connections easier and provide our customers with the best network experience, especially at a time when their dependency on connectivity is higher."

"As we expand our networks, we take an active approach and continue to expand both home broadband and mobile deployments at a much faster pace throughout the Kingdom," he added.

Zain Bahrain aims to contribute to a sustainable growth towards the local communities in the academic, societal, and commercial aspects. Zain Bahrain commits to enhancing and introducing more innovative offerings to other such newly developed areas in the future to provide an unprecedented and best-in-class experience to its Bahrain customers. The company also focuses on expanding its 5G network in 2021 and will continue its dedication to transforming and enhancing people's digital lives across the Kingdom.

Etisalat's E-Vision launches TAM service for TV audience analytics

Broadcasters and industry professionals will be able to analyse and respond to viewership data of over 3.5 million UAE TV viewers via E-Vision's independently accredited TAM system.

The Television Audience Measurement (TAM) system identifies the audience's selections, trends, and desires from eLife, the region's largest and most successful IPTV service that is set to put the UAE at the forefront of TV audience measurement in the MENA region. Using the data available, TV stations can develop their programs to match the desires of their audience and air them at the most appropriate timings.

The TAM system is accredited by an independent audit agency following rigorous testing and verification. Broadcasters, agencies, advertisers, consultants and industry experts will be able to subscribe to the data and log in to access a wide range of reporting tools.

For many years, the MENA TV industry has had to rely on telephone surveys for audience information, whilst broadcasters around the world have had access to people metering (direct recording of TV viewing) to measure and understand audience nature. Commenting on the launch, Olivier Bramly, CEO of E-Vision, said, "We are proud to be leading the way in the MENA region by offering exceptionally powerful audience analytics tools to industry professionals. By giving broadcasters insights about the interests and desires of our viewers, we are providing them with the tools they need to make their channels more relevant and attractive towards their viewers and more efficient towards agencies and advertisers."

The TAM system will measure audience reach, ratings, share and viewing time for over 530 channels, and will cover both live and catch-up viewing across all viewers. Subscribers to the TAM system will be able to monitor viewing of any period, ranging from same day to previous years and have access to a variety of configurable reports within the TAM system, offering them a fully detailed analysis and reports with channel-related filters.

BENYA signs agreement to establish a new local telecoms operator in DRC

BENYA, the leading digital solutions and ICT infrastructure provider in Egypt and the MEA region signed the shareholders agreement with Société Congolaise des Postes et Télécommunications (SCPT) to establish a new local telecommunications operator in DRC, with the aim to develop the telecommunications infrastructure there. Based on this agreement, BENYA Telecom DRC will be established in partnership between SCPT and Benya to build and operate the national fibre-optic network (NFON) in DRC to connect cities and enable a connection with neighboring countries.

The signing of the agreement took place in the presence of the President of the Democratic Republic of Congo (DRC), His Excellency Mr. Félix Tshisekedi during his last visit to Egypt between the 1st and 3rd of February 2021. A series of meetings and negotiations with The DRC Minister of Posts, Telecommunications and New Information and Communication Technologies (PT-NTIC), H.E. Mr. Augustin Kibassa Maliba and the leadership of SCPT preceded finalizing the agreement, through which BENYA Telecom DRC, a BENYA subsidiary in the DRC, will be the main operator of the national-fibre optic network in addition to offering tower sharing and data center services in the DRC. Within the context of this strategic partnership, BENYA will expand the access to digital services to the DRC citizens while creating new digital routes in Central Africa.

The DRC Minister of Posts, Telecommunications and New Information and Communication Technologies (PT-NTIC), H.E. Mr. Augustin Kibassa Maliba, said "The Democratic Republic of Congo has a geostrategic position in the center of Africa, which makes it a natural crossroads for trade between North and South Africa as well as East and West. As a result of this position, it should be one of the largest telecommunications and digital data hub in the world, able to link the Mediterranean and the Cape of Good Hope, the Atlantic Ocean and the Indian Ocean. Once this project is executed, the DRC will play the pivotal role of connecting the African continent."

Chairman & CEO of BENYA, Eng. Ahmed Mekky highlighted the importance of this project due to its strategic role in connecting DRC cities and improving the citizens' accessibility to high-quality and high-speed network services at a low cost. He further affirmed that the project will enhance DRC's ICT infrastructure capabilities which will accelerate the adoption of digital transformation in the country.

Telecom Egypt records growth in Q1 2021

Telecom Egypt announced its Q1 2021 results for the period ending 31 March 2021. Consolidated revenue came in at EGP 8.4bn, growing 20% YoY on higher data revenue (+37% YoY) constituting 66% of top line growth.

Customer base grew across the board with fixed voice customers increasing 7% YoY, fixed data 22% YoY, and mobile customers 38% YoY. EBITDA landed at EGP 3.2bn, growing 42% YoY and recording a strong margin of 39% thanks to an enhanced revenue mix and continued cost optimization. Net profit reached EGP 2.1bn, growing 62% YoY, thanks to strong operational results. Excluding non-operational items such as provisions, impairments, FX gains, deferred tax, and inorganic growth in investment, net profit would reach 1.8bn, growing 77% YoY.

Operating cash flow grew 80% YoY and 33% QoQ, reaching EGP 3.4bn.

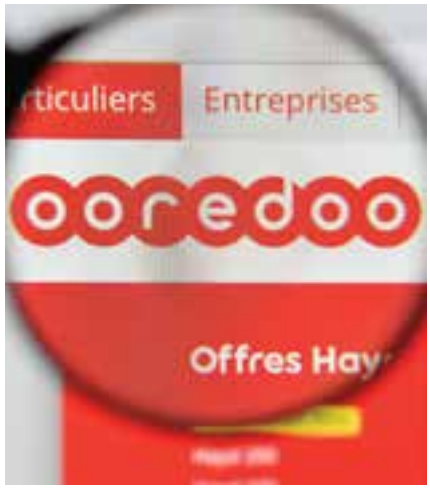
In-service CapEx/sales recorded 14%, while cash CapEx reached EGP 5.7bn mainly as a result of paying the first tranche of the new spectrum acquisition.

Net debt reached EGP 19.8bn, representing 1.5x of annualized EBITDA, declining from 1.6x in FY 2020, while the effective interest rate declined to 5.7% vs. 7.4% in Q4 2020.

Adel Hamed, managing director and chief executive officer, commented, "I am very pleased with this quarter's results as they reflect Telecom Egypt's ability to preserve its growth momentum witnessed during 2020 and report strong financial and operational results. We have witnessed double-digit growth across the P&L; with revenue growing 20%, EBITDA 42% with a margin of 39%, and normalized net profit 77% YoY. The main growth driver continues to be data, both fixed and mobile, and we have witnessed growth in customer numbers and spending, which we continue to push by not only investing in our network, but also enhancing customer experience to solidify our leading position in the market."

"Our aim is to continue to translate the impressive growth in our top-line, now that it is evident in our bottom line, to our cash flows. We monitor our operating and free cash flow closely and continue to look into cost optimization and CapEx rationalization strategies that also support the growth of the business," he added.

Ooredoo Qatar launches new Enterprise EDGE service



Going beyond traditional connectivity services, businesses can now leverage Ooredoo Qatar's newly-launched Enterprise EDGE service. This enables the network to be a comprehensive and all-in-one source for software-defined wide area network (SD-WAN) needs.

This service can be added to any standard networking service to speed cloud adoption, boost operational agility, and meet network connectivity's need for cost-effective bandwidth. As described on the website, the service provides abstract software to separate network software services from the main hardware, creating a secure, independent, and reliable network.

Sheikh Nasser bin Hamad bin Nasser Al Thani, chief commercial officer at Ooredoo, said, "Once again, we are offering innovative, future-proof digital solutions to serve our customers. This new managed service will be provided at an incremental charge, costing moderately more than standard connectivity services while delivering superb returns on the investment."

"In the weeks ahead, we will be sharing some of the many Enterprise EDGE use cases we are developing with customers, including those in government and oil and gas. Businesses are invited to follow our social media and the Ooredoo Qatar website to stay up-to-date with these exciting developments," he added.

The SD-WAN ready service also combines multiple access points (multi-protocol switching using MPLS/LTE and broadband IDs) and uses routing technology to choose the best pathway, ensuring consistent performance and having the capability to overcome any quality and outage issue.

Developed in collaboration with SD-WAN and SASE pioneer VMWare, this new managed service includes key features such as a flexible service model with a high level of service level agreement (SLA); a flexible business model; leased devices at the customer's location to reduce capital expenditure (CapEx); and simplified WAN management.

MTN Group to exit major Middle East markets

In the framework of MTN's Capital Markets Day, CEO Ralph Mupita disclosed the Group's plan to gradually exit the MENA market over the medium term, notably Syria, Yemen, Afghanistan and Sudan where the operator has a presence. In light of its Ambition 2025 strategy, MTN aims to focus on its operations in Africa to become the continent's leading digital solutions provider. MTN's CEO also announced a structural separation of the Group's fintech and fiberco businesses.

In March 2021, MTN Group had said in a statement that it is still on its word to continue negotiating a $65 million sale of its 75% stake in its Syrian unit despite the business, MTN Syria, being placed under judicial guardianship over alleged MTN violations of the terms of its licensing contract, which the state says deprived the government of revenue.

Ooredoo's excellent quality, performance bring ISO 9001:2015 recertification

Ooredoo marks another milestone in its quest for quality and performance excellence as it achieved the ISO 9001:2015 Quality Management recertification. The globally recognized certification is awarded only to companies that demonstrate the ability to consistently provide products and services that meet statutory and regulatory requirements while enhancing customer satisfaction through the effective application of the system.

Attaining the certification for the last three years, Ooredoo has attained the certification for the last three years, proving its position as a leading ICT and telecoms solutions provider. Dr. Ahmed Abdullah Al Abri, chief technology & information officer at Ooredoo, said, "This achievement is a testament to Ooredoo's commitment to investing in future-proof technologies, leveraging world-class industry compliance, and providing service continuity for our customers in every circumstance. We are constantly challenging ourselves to do better and are always on the lookout to deliver an enhanced service that exceeds our customers' expectations."

Ooredoo first achieved the ISO 9001 certification in 2017 and has maintained it through annual certification body surveillance audits that check if the organization is adhering to the current standard requirements of the ISO certification.

Vodafone Group announces Full Year 2021 results

For the year ended 31 March 2021, Vodafone reported Group revenue decline by 2.6% on an annual basis to €43.8bn (FY20: €45.0 billion). The company said, "our good underlying momentum and the benefit from the acquisition of Liberty Global's assets in Germany and Central and Eastern Europe was offset by lower revenue from roaming, visitors and handset sales, adverse foreign exchange movements and the disposal of Vodafone New Zealand."

Operating profit was up 24.3 percent to €5.1 billion (FY20: €4.1 billion) while adjusted EBITDA was €14.39 billion, which was down 1.2 percent.

The Group made a profit for the financial year of €0.5 billion (FY20: loss of €0.5 billion). The profit increase was attributed to higher operating profit and the recognition of mark-to-market gains (FY21: €1.1 billion, FY20: losses of €1.1 billion). These factors were partially offset by higher income tax expense in the current year, primarily due to a noncash charge of €2.8 billion following a decrease in the carrying value of deferred tax assets, according to the statement.

Basic earnings per share was 0.38 eurocents, compared to a loss per share of 3.13 eurocents in 2020.

The company announced that total dividends per share are 9.0 eurocents (FY20: 9.0 eurocents), including a final dividend per share of 4.5 eurocents.

The company said that adjusted EBITDA will be referred to as 'adjusted EBITDAaL' from fiscal 2022 onwards.

The company's outlook for fiscal 2022, expects adjusted EBITDAaL between €15 billion euros and €15.4 billion.

Commenting on the result, Nick Read, Group chief executive said, "I am pleased that we achieved full year results in line with our guidance and we exited the year with accelerating service revenue growth across the business, with a particularly good performance in our largest market, Germany. We have delivered on the first phase of our strategy to reshape Vodafone as a stronger connectivity provider – including the simplification of the group to Europe and Africa, the successful IPO of Vantage Towers (€13.2 billion market capitalisation), the fast roll out of our next generation mobile and fixed networks, share gain in broadband subscriptions and continued reduction in customer churn."

Telecom Review sheds light on what goes beyond 5G

Telecom Review organized a virtual panel on May 20th entitled "Beyond 5G: The endless benefits of 5G to operators". The panel aimed to highlight what goes beyond 5G's traditional definition and all the hype around it.

The audience joined a very interactive session chaired by Toni Eid, CEO and founder of Telecom Review Group, with the participation of Alex Sinclair, CTO, GSMA; Dr. Ibrahim Gedeon, CTO, TELUS; James Kirby, SVP & Head of EMEA Business, CSG; Dr. Mohamed Madkour, VP Global Wireless Networks Marketing and Solutions, Huawei; and Mohamed Al Marzooqi, VP Technology Synergies, Etisalat Group.

Toni Eid welcomed all participants and panelists and gave a brief introduction to the topic of the virtual panel. After all the introductions, he delved into the topics of the panel.

The session revolved around four main topics. The first topic was about the competition between OTTs and operators. Panelists shared their point of view on whether both industry players should cooperate or compete. All panelists agreed that 5G should change the relationship between OTTs and operators and that both parties should leverage the opportunities that this technology offers.

The moderator then asked about the ways to secure return on investment. Telcos have made significant investments in 5G but the panelists discussed whether those investments were enough. They also discussed which entities will be the source of ROI.

Income diversification was also on the agenda of the panel. With the numerous 5G applications and use cases, telecom operators have very diversified income sources that they need to tap.

The panelists wrapped up the discussion with the final topic of 5G being the pillar of a smart connected world. They all shared insights into what will be 5G's greatest impact and use cases and how all industries will be able to benefit from it.

A poll was launched towards the end of the panel to gather statistics on the audience's expectations on 5G. The results showed the impact that all the developments in 5G have had so far on the participants.

A Q&A session gave the participants the chance to interact with the panelists and ask about their opinion on different pertinent topics.

Considering that OTT platforms such as WhatsApp, Facebook and Netflix are changing the way end-users consume content, carriers are faced with a

dilemma whether to join forces with OTTs or act alone to generate newer revenue streams.

Starting from this point, the first question for the panelists was: The competition between OTTs and mobile operators has been fierce. How can 5G support operators' positioning against OTTs' domination?

Taking on the first question, Alex Sinclair said that 5G was not just another consumer broadband. He said, "It's not about competing with Disney and Netflix to take the last dollar from the consumer wallet, it's much more about positively disrupting every other sector."

"We want to make them all truly wireless and truly mobile for the first time, and that's by definition a new business. It's not owned by Netflix, Facebook, or WhatsApp. Nobody owns it as of yet. So, there's an opportunity for operators to lead. Given the pace of rollouts of 5G, we've got about 157 live commercial networks in 62 countries, that's despite the Covid restrictions. That opportunity starts here and it starts now," he added.

Mohamed Al Marzooqi said that he slightly disagreed with the view that OTTs and operators were at war with each other. "I think both entities are trying to connect the world from different angles. So why don't we cooperate?" he surmised.

He said that operators have to think of OTT as a new opportunity to increase revenue. "Whoever can add value to the economy, will add benefit to the telecom industry," he stressed. With regards to the GCC region, he said that Etisalat was moving in the same direction. "We operate in 16 countries, we have sufficient infrastructure to support the OTTs. We can either cooperate with them, or we can establish our own OTTs somehow, but the old school thought of blocking them and considering them as a threat is going to vanish soon," he concluded.

Joining the conversation, Dr. Ibrahim Gedeon said that it was tough to agree or disagree on the opinions. To strike the right balance, he said that operators have been fighting with each other for the longest time and now there was a revenue stream that operators had not looked at and that the hyperscalers had occupied this vacuum.

"So, I agree with Mohamed that the key is a partnership because of some stuff that we are not good at. We never go to a butcher to get vegetables in the same vein why would you come to the operators for the hyperscaler-type activities?" he reasoned.

"As operators, we need to focus using 5G for our clients, and hyperscalers are coming up with great ideas, the question is with whom you want to partner the most?" he asked. "It would be great for us as operators to be a bit more empathetic because if you look at the end customers everyone is talking about digital, cloud, and 5G. All this has to come together because if they each evolve on their own, the industry is going to suffer. The pandemic has proved that we have to get our heads together and do something purposeful out of all of this," he contended.

"A little bit of reinvention is needed," said James Kirby. "If it's just about the pipes getting faster, then probably there is going to be money left on the table and the operators aren't going to be taking that money, somebody else is going to be taking it from them," he said.

He felt that there are some lessons to be learned from previous network generations (3G, 4G), but said that 5G was changing the game. "With 5G, it's not just about the speed but underneath that there are some interesting use cases, probably always not apparent from a consumer perspective but in the business environment, we need to take that into account," he said.

He felt that the operators needed to embrace the different business models whether it was financial trading or autonomous cars requiring ultra-low latency, or things behind this. "In some cases, enterprises are going to be key to 5G than consumers. The enterprise sector is probably one of the most underserved from a digitalization perspective. As we look to reinvent ourselves, the B2B and enterprise side of operators need to look at this and those that do look at that will be the ones that will succeed beyond just providing a data byte," he opined.

Being the last one to take on the question, Dr. Mohamed Madkour said that he completely agreed with what had been said so far but felt that industry has to move on from the current state of the relationship between OTTs and operators and see 5G as a wonderful and strong tool that will allow operators to control their pipes and provide a wide range of services in different market segments.

"It's kind of a greenfield opportunity now with no incumbents and the carriers are well-positioned to continue providing services from pipe perspective, cloud or even ICT service," he said. In the context of the Middle East, "We are expecting to have about 8 million subscribers for 5G by the end of this year. By the Rogers theory of diffusion of innovation, once we reach 20% next year, it's going to be huge in the Middle East when it comes to consumer space," he said.

"We have 720,000 broadband subscriptions, lease line exceeded 9000 5GtoB lines. We see enormous space and leveraging of 5G. OTT doesn't have anything to do about that. We care about collaborative competition," he explained.

He said that by deploying 5G to ports, coal mines, airports, and mines, etc, Huawei was able to cut the number of resources underground by 50% thereby cutting the risk of putting people in dangerous operation areas. "So, 5G not only provides technical benefits but also commercial benefits, societal benefits, as well as social responsibility benefits. The space is enormous and I think we are yet to see huge applications and that's going to be remarkable," he concluded.

5G investments are still in their early stage and there are a lot of factors

and business use cases to consider. To make the most out of the money being spent, fostering usage, filling the gap, leveraging business, ensuring consistency in operations, and improving the network must be the end goals.

Telcos must invest now and become enablers

Mohamed Al Marzooqi, VP Technology Synergies at Etisalat Group thinks that despite the perspective of stakeholders that telcos have invested a lot on 5G, the investments being done until now are just the "tip of the iceberg." He anticipates that only in the next two to three years will more significant investments come up.

Along with this, he highlighted that not only investment in the spectrum, licensing, and base centers will generate a lot of money but also integrated services on artificial intelligence (AI), slicing, big data, quality of service (QoS), machine-to-machine (M2M) communication, cloud networking, and blockchain. "We as an operator need to be ready and we need to invest in the beginning to be able to monetize whatever investment will be done in these fields."

James Kirby, SVP & Head of EMEA Business at CSG also specified that despite having large 5G investments in the network and RAN-side of the rollout, one of the ways of maximizing the ROI is to get the people to use it. In this case, operators must change the ways of how they do their business.

For James, there's a gap among operators as they focus too much on putting up the masts and waiting for clients to show up. "As we look at the more complex business models, there's an integration activity that is needed. For operators that do go beyond sticking up the masts, they actually have the capability for system integration or communication integration where they actually enable the enterprises to come on board with these new business models. I think that can actually speed up the return on the investments." He pointed out that failing to be enablers may cause operators to lose some money.

5G is a catalyst but transformation is the key

In his point of view, TELUS CTO Dr. Ibrahim Gedeon relates 5G investments to edge deployment, considering the larger and more beneficial scope. "Before we talk about monetization, I think for the first time in our life, the challenge is more than just RAN." He mentioned that traditional radio access network (RAN) coverage is already very important for 4G. But with the current data demand, the fiber infrastructure that comes along with it becomes more essential.

He further added that in a typical city, citing Edmonton as an example that has 10,000 sqkm with a million and a half people, the old way of thinking would be to deploy at least 5 mobile edge computing (MEC) tiny data centers only. But in reality, to cater to the amount of data within stadiums and companies around the area, around 100 edges/cores should be deployed. This will be the challenge, Ibrahim said.

In terms of use cases, transportation and agriculture, among others, must leverage the existence of 5G technology. Otherwise, the purpose behind it hasn't been fulfilled. "Everybody will try it as an experiment... but if it will not be a part of their transformation and replacing what they do today, it's good for a press release."

GSMA CTO Alex Sinclair agrees that "there's a lot more than RAN these days." Based on the recent data they gathered, 83% think that the majority of the ROI will come from enterprises and government applications. While public services, healthcare, and education are also considered. Something that they expect to be lucrative as well are manufacturing, mining, retail, utilities, and cloud gaming.

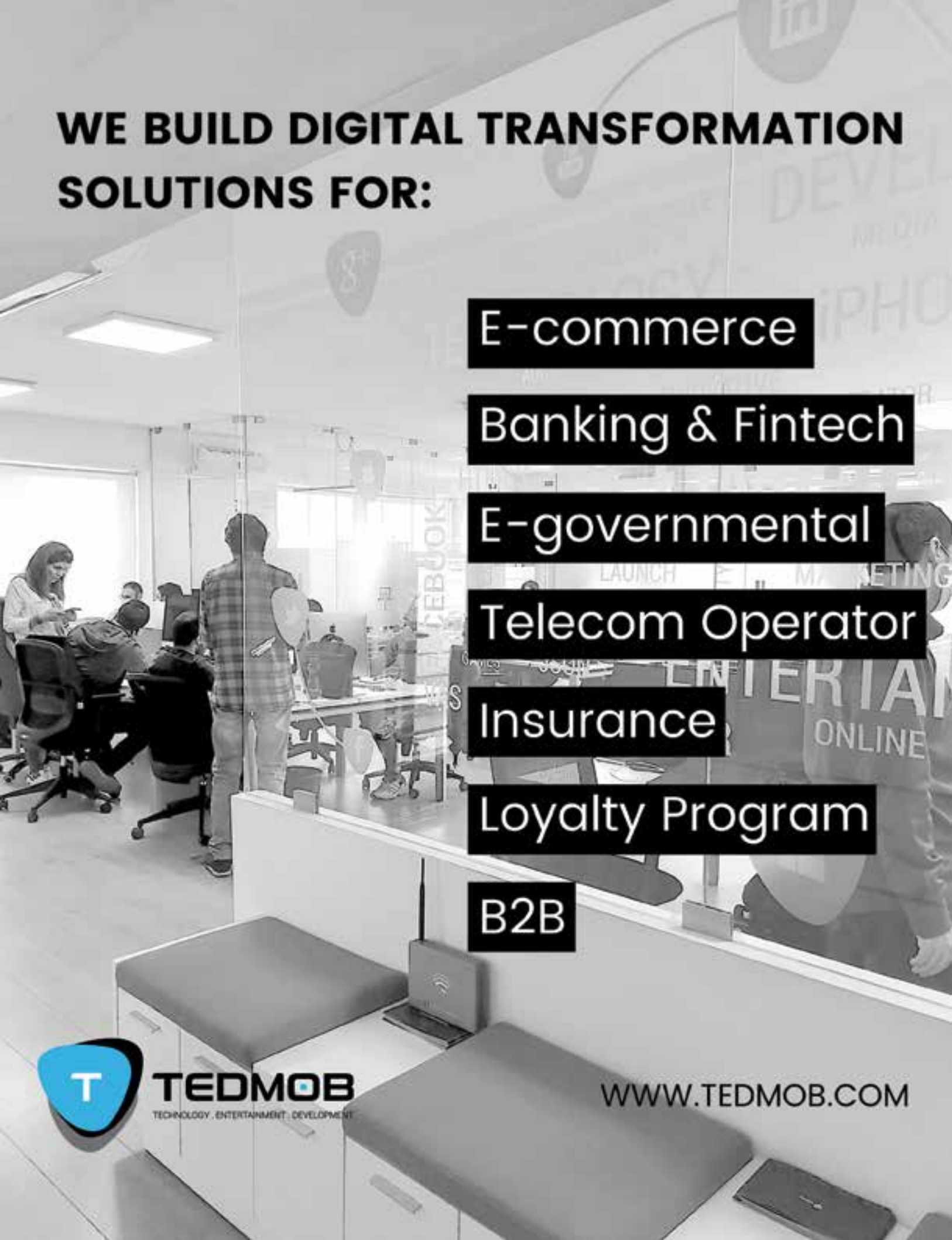
"The real problem is scaling all of these things." Similar to Ibrahim's take on the subject, Alex thinks that unless there's a real use case or application that shows scalability, the efficacy can't be proved.

Following this, Dr. Mohamed Madkour, VP Global Wireless Networks Marketing and Solutions at Huawei shared three dimensions that should be prioritized to be able to shorten the time needed for ROI. These are the business, operational, and network/technical aspects.

For business, he cited the two major events coming up in the Middle East — Expo 2020 and World Cup 2022. In this case, OTTs and premium applications would come up with tactics like smart shopping, 5G broadcasting, and playbacks. On the operational side, continuous investment in digital transformation is crucial. Additionally, Huawei came up with a new '5G Experience Benchmark' that includes three main indexes: speed, latency, and availability (SLA). By using the S*L*A formula, precise investment and improved user experience can be guaranteed.

Interestingly, Marzooqi brought up the question of 5G being an "evolution or a revolution." He said that being a part of the older generation, it is a revolution as he witnessed the 2G and 3G eras. Yet, for the young generation, the speed and low latency seem only an evolution. TR

> "5G not only provides technical benefits but also commercial benefits, societal benefits, as well as social responsibility benefits"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Etisalat's new Kalba data center landing point for Africa-1 subsea cable

Etisalat has added a third facility in its SmartHub data centers portfolio with the opening of state-of-art Tier 3 data centre facility in Kalba, which has been selected to be the landing for Africa-1, a new subsea telecom system connecting Africa, the Middle East and Europe.

The 10,000km subsea cable system will deliver 8 fibre pairs to connect Africa and the Middle East eastward to Pakistan and westward to Europe, increasing the available transmission capacity between Asia and Europe. The cable will also feature ASN 1620 Softnode transmission equipment, featuring high performance 200/300/400 Gb/s advanced coherent XWAV line cards.

SmartHub Kalba is Etisalat's third wholesale data centre, following the opening of 2 facilities in Fujairah and Dubai last year. The new data center will offer geo-redundant ecosystem for global players to expand their regional presence. This gives SmartHub Kalba a pivotal role in catering towards facilitating faster connectivity to various global partners.

With the launch of its latest facility, Etisalat's Carrier & Wholesale Services (C&WS) has set a benchmark in the region, and is a testimony to the company's strategy to 'Drive the digital future to empower societies'. It is also in line with UAE leadership's vision to continue leading as an ICT and data hub for the region addressing the diverse requirements of global telecom infrastructure. Commenting on the development, Ali Amiri, Group chief carrier & wholesale officer, Etisalat, said,"As one of the biggest neutral carrier hotels, Etisalat's SmartHub data centres will be an ICT bridge between continents always supporting critical business activities of global customers. SmartHub Kalba will enable us to increase our capabilities and global capacity to meet our international clients' expanding needs for infrastructure across Asia, Africa, Europe, Middle East and the Americas. We at Etisalat are committed to making 'SmartHub' a preferred location for carriers, cloud service providers, Internet exchanges and companies looking for a carrier grade data centres."

The new facility is scheduled to be operational by the first quarter of 2022 providing a robust data centre infrastructure evolving to meet future demands including landing of a new generation of submarines as well as becoming a disaster recovery hub for Etisalat's customers in the Fujairah SmartHub.

BICS adds new voice API feature to its solutions portfolio

Leading international communications enabler BICS announces it is introducing voice APIs to its portfolio of programmable communications solutions, enabling enterprises to significantly improve their customer experience. This new feature allows companies to easily customize communications services to suit their individual requirements, giving them greater flexibility to scale and optimize their business.

The Communications Platform-as-a-Service (CPaaS) market is expected to be valued at USD 26 billion by 2026, according to estimates from Mordor Intelligence. However, siloed communications channels still act as a significant roadblock to customer engagement, and providers often struggle to guarantee connectivity across multiple geographies. BICS' suite of programmable communications solutions are unique to the market as they are underpinned by BICS' own global network, linking over 200 countries and providing unrivalled connectivity to customers. Encryption, anti-fraud capabilities, regulatory compliance and a fully resilient, wholly-owned network ensures end-to-end security for all enterprise communications.

Voice is becoming increasingly integral to services like two-factor authentication (2FA), to enable secure communication (via number masking) within sharing economy platforms, and within customer service centres. BICS' toolbox of programmable communications solutions already included SMS over 350 direct messaging routes and numbers-as-a-service in over 120 countries. By adding voice APIs to this offering, brands can benefit from a holistic and fully flexible range of ways to tailor their communications services to customers.

Digital communications have traditionally been a static environment, with enterprises purchasing specific tools requiring integration support. Utilizing APIs is a more flexible approach and provides companies with more options to tailor their communications for their end customers.

Divya Ghai Wakankar, head of digital communications solutions, BICS, said, "Over the past 12 months, brands have been under increased pressure to accelerate their digitalization projects, and provide the highest quality digital engagement with their customers. Businesses must have easily customizable solutions to engage their current and future customer, across a wide range of touch points".

"By introducing programmable APIs, BICS is empowering brands with the control to tailor their customer communications, whether through voice, messaging or cloud numbers services. With the flexibility to scale in line with increasing demands, we are enabling businesses to enhance customer experience, while simultaneously growing their business", he added.

Zain announces new wholesale vision

Kamil Hilali, the company's Chief Strategy Officer and the newly appointed CEO of Zain Global Services (Wholesale), announced a significant restructuring and new strategy of Zain Group's wholesale division, an essential part of Zain's '4Sight' strategy.

Hilali was the subject of an engaging fireside discussion during a virtual session at Capacity Middle East 2021 conference whereby he elaborated on Zain Group's new wholesale business vision and its enormous potential. Zain Global Services consolidates and manages the capacity, voice and roaming businesses across Zain operating companies and will ultimately evolve to become the single interface for all Zain operating company requirements as well as for other international carriers having requirements within Zain's footprint.

The aim of Zain Global Services is to become a truly regional carrier and open up new revenue streams for the Group through local, regional, and international activities. To this goal, the company has revamped its strategy and vision to create value for Zain operating companies by achieving efficiencies on their cost base. Zain's scale and aggregated demand is also set to allow the business to invest in new assets and better leverage existing ones across its operating footprint.

Looking to transform to become a truly regional carrier and open up new revenue streams, Zain Global Services stands ready to work with regional and international partners to identify and create new opportunities.

During his fireside conversation, Kamil Hilali commented, "Wholesale, and wholesale consolidation, offer a fantastic opportunity to face what has historically been a declining legacy business, and breath new, profitable life into it. Any telecom group willing to prepare for the future has to overcome underlying infrastructure challenges in order to become global in nature and establish vibrant international infrastructure that blends connectivity with computing power."

Hilali continued, "Zain Global Services can be the perfect partner to any business seeking connectivity or a presence in the Middle East. In the coming months, we look forward to announcing our participation in some exciting global projects that will define the entity's new business paradigm which integrates a distributed mesh architecture made up of subsea and terrestrial infrastructure with a state-of-the-art layer of hyperscale and edge Data Centers".

Over the last several years, Zain has been evolving to become a fully integrated service provider and has been focusing on enterprise and B2B segments for additional synergies and growth. Given that the wholesale industry has at its core the transformation of the infrastructure enabling global connectivity, Zain considers the development of its wholesale business as a key area to the telco's overall transformation.

MTN completes 1,822 km fiber cable project

MTN announced the completion of its part in the long-awaited coastal national long-distance (NLD) cable project, known as NLD 5 and NLD 6. The impressive 1,822 km fiber route coverage starts in Cape Town, runs along the N2, and leads up to Durban.

Commencing over 3 years ago, the NLD 5/6 project is constructed by Liquid Intelligent Technologies, with MTN as the key anchor investor. Apart from the benefits of fast, secure, and stable connectivity as well as more capacity and higher speeds, the NLD also plays a part in MTN's broader initiative to modernize its entire network in South Africa. This will ensure that the company is geared for the fourth industrial revolution and 5G future.

"The project gives MTN an opportunity to provide additional and significant capacity between coastal cities and the rest of SA, ensuring the digital world is brought one step closer for many more people," says Giovanni Chiarelli, chief technology & information officer at MTN SA.

Closing connectivity gaps remains a challenge across the sub-Saharan Africa region and the completion of this initiative will help connect the unconnected. It will have a huge impact on businesses and communities that are looking to harness the benefits of newly enabled services.

"NLD 5/6 will enable us to deploy fiber-related connectivity to a wider SA population, particularly to previously disadvantaged rural and township communities. This is an addition to ACE (East Africa cable) and WACS (West Africa) cable projects that MTN Group is already driving as a key partner," added Giovanni.

The high-capacity transport network interconnects the east and west coast undersea cable systems located in Mtunzini (EASSY), Dynefontein (ACE), and Yzerfontein (WACS), enabling seamless connectivity to the MTN network. Giovanni pointed out that despite being a complex project to finish, the dedication and expertise of technicians and engineers made it possible to light up the digital highway of South Africa.

Moreover, already established paths have experienced up to 50% improvement in latency with respect to previously provided links from third-party providers. "MTN believes everyone deserves to enjoy the benefits of the modern, connected world and we are therefore extremely pleased to have reached this important milestone to enhance connectivity and provide more digital opportunities."

In conclusion, Giovanni affirms that the work of MTN does not stop now, as future network requirements must be fulfilled. These include new technologies such as Segment Routing for efficient routing and network computational resource usage.

Telcos journey: Will digital transformation happen by 2030?

Over the years, we've gained a perspective on just how intensive and complex it is to achieve a complete digital transformation. What it takes to succeed requires a lot of time, money, and effort and not everyone can deal with that.

Digital transformation involves various players within society. May it be service providers, telcos, enterprises, and governments — success requires bringing together technology, data, process, and organizational change capability altogether. Being part of a larger whole, technology is the engine, data is the fuel, the process is the navigation, and the organization serves as the landing gear.

With these four functioning well together, creating and bringing to life a compelling vision for a digital future become feasible. The main key is to have a clear strategy and people working hand-in-hand to attain it.

GCC nations aim for ICT and digital innovation

Digital has made a fundamental impact on the world's economies and societies. The new era of hyper-connectivity is driven by broadband, mobile, and digital technologies such as smartphone devices, big data, cloud, and the Internet of Things (IoT).

Governments across the Middle East have launched ambitious national transformation plans that focus on enabling information communication technology (ICT) and digital transformation technologies. On a ten-year scale, they aim to address their own economic, social, and environmental challenges.

Digital Oman 2030

The eOman 2030 strategy aims at building a strong foundation to prepare the community, manpower, businesses, and the government for the impacts of technology and digitalization. Shaping Oman's future, the country is a high-income society with a geographically strategic position in the Gulf region.

In fact, Oman has developed a robust ICT infrastructure supporting connectivity across regions and globally. According to Arthur D Little, Oman's digital development is evident as it has a high smartphone penetration of 92%, 4G coverage of 99%, and widespread high-speed Internet.

Cited as an example, regulatory liberalization would allow innovative business models and emerging technologies to compete fairly, generating an additional US$50 million from additional telco investment alone. Operators in Oman's IT sector have made big strides as they move beyond infrastructure to new business solutions. This is in line with the government's vision of putting ICT as a key priority in improving the standing of Omani businesses in the international arena.

The drive to improve network connectivity across the sultanate is supporting the expansion of fixed broadband infrastructure under the National Broadband Strategy (NBS). A recent initiative on this involves the state-owned telecom infrastructure services provider Oman Broadband Company. Its 'Fibre Over Electricity Poles' project aims to utilize the existing electricity poles to lay fiber optic cable in providing broadband services by backhauling mobile sites.

Thus, the expansions laid out in this strategy are already showing results such as boosting the quality and speed of broadband connections and facilitating a pivot among the country's telecom operators, with Omantel and Ooredoo leading the charge. The country's ICT sector is indeed rapidly moving beyond advisory services and email hosting into cloud applications, security, and the IoT.

New Kuwait 2035

Kuwait's 2035 vision aims to transform Kuwait into an international financial and trade hub. This is where the private sector, including telcos, can contribute to the economy, create competition, and promote efficiency.

stc has been progressing with major 5G standalone (SA) developments to advance its 5G network architecture. This enables the radical transformation of the telecom industry into an as-a-service model. In line with Kuwait's 2035 vision, 5G SA technology caters to specialized use scenarios such as enterprise applications where uplink throughput is important.

5G SA will also feature higher levels of security that provide robustness to telecom networks. On the other hand, Ooredoo Kuwait and the Public Authority for Civil Information (PACI) collaborated on the implementation of the Kuwait Mobile ID.

This will reshape the way of delivering services through fostering digital transformation. Through this constructive cooperation, innovation and collaboration between the government and private sectors are observed. Zain Kuwait has also collaborated closely with government entities such as the Ministry of Electricity and Water for a smart meters project and the Ministry of Health for the "Shlonik" app that enforces home quarantine measures.

Fiber optic networks, a key technology in the telecommunications sector, are also an essential part of the smart cities strategy being developed as part of the New Kuwait 2035 economic diversification vision. Kuwait's Ministry of Communications has been laying out the fiber infrastructure across various governorates in a move to expedite the possibilities of IoT, with 5G being the enabler of smart interconnectedness.

Qatar National Vision 2030

Qatar's National Vision aims to make the country an advanced society by 2030; capable of sustaining its development and providing a high standard of living to its citizens. In line with this long-term vision, the Qatar National Broadband Network (Qnbn) is committed to being the major conduit for Qatar's progress.

By providing the very latest technology platforms to help achieve a knowledge-based ICT economy, Qnbn's state-of-the-art fiber-optic network will enable the country to be one of the fastest-growing economies in the region.

By providing high-speed communications infrastructure and increased fiber capacity, the fiber optic network will improve the quality of life for Qatar's citizens and reduce Qatar's carbon footprint. Moreover, Qatar recorded one of the highest fixed and mobile penetrations in the Middle East region as well as one of the most progressive countries globally in terms of 5G. This is the reason behind its reputation as one of the regional leaders in terms of telecoms maturity.

The mobile sector is led by Ooredoo Qatar, which deployed the first commercial 5G network in the world in 2018, and Vodafone Qatar, which has also deployed 5G networks based on New Radio (NR) in the 3.5GHz frequency.

With this regard, increasing international capacity will assist in Qatar's long-term development goals and Qatar's telecom market has already witnessed strong growth in recent years. This is driven by the increasing population and demand for premium connectivity and content services in the country.

UAE Vision 2021

Realizing UAE's Vision 2021, the UAE ICT 2021 Strategy and the National Innovation Strategy (NIS) prioritize digital technology including the application and rapid adoption of new disruptive technologies across sectors.

According to the data from the World Economic Forum (WEF), the country maintained first place in the Arab region and came second globally for the second consecutive year in the "use of telecommunications/ICTs."

The achievement also reflects the efforts of the Telecommunications and Digital Government Regulatory Authority (TDRA) in implementing the directives allowing the telecommunications sector to leverage modern technology in the country, especially 5G.

The continued work and collaboration of leading telcos in the country, particularly Etisalat and du, to develop the telecommunications infrastructure in keeping pace with future requirements contribute to the ongoing global leadership of the UAE in this sector.

A testament to UAE's vision, UAE's access infrastructure to carry data traffic is among the world's best, targeting the planned rollout of 5G by 2025. Similar to other GCC countries, the UAE has made substantial efforts as well to move government services online, with many countries now moving towards the cloud.

In parallel to this, the UAE seems to be the most advanced GCC country in its adoption of smart classrooms. A good example of this is the partnership between the UAE Ministry of Education, Etisalat, and Microsoft. By establishing the Etisalat Education Technology Center, they focus on doing continuous efforts in research and development (R&D) in line with the country's goal of implementing digital schools and smart learning.

Saudi Vision 2030

Saudi Arabia's Vision 2030 upholds that a sophisticated digital infrastructure is integral to today's advanced era. Aiming for a digital infrastructure that would attract investors and enhance the competitiveness of the economy, the government will partner with the private sectors, including telcos, in order to help develop the telecommunications and information technology sectors.

This will result in providing high-speed broadband, expanding its coverage and capacity within and around cities and improving its quality. With a specific goal of exceeding 90% housing coverage in densely populated cities and 66% in other urban zones, they also want to facilitate the extension of broadband networks.

Hence, the development of a robust national communication infrastructure is critical to the success of the Vision 2030 initiative. It must be equipped to handle zettabytes of data, high-definition video, and millions of connected devices and things. Next-generation networks and high-speed fiber must be deployed to carry massive amounts of data transmission involved as the nation moves forward.

Ultimately, 5G is a technology that will cater to the demand of netizens in Saudi Arabia. Thus, continuous investments in the rollout, upgrade, and optimization of 5G will be crucial. Accordingly, the Communication and Information Technology Commission (CITC) aims to empower the telecom sector, especially through building and strengthening infrastructure.

The billion-dollar Saudi ICT market pushes CITC to responsibly act upon ensuring adequate spectrum allocation for international mobile technologies (IMT) usage, fair competition, affordable prices, and connectivity, as well as removing barriers and promoting localization within the sector.

As technologies evolve to touch many more sectors of the economy, CITC is also exploring new and emerging technologies and their related markets, including quantum computing, IoT, automated vehicles, blockchain, AI, media convergence, and fintech for total digital transformation.

Bahrain 2030

The ongoing national digital transformation, in harmony with Bahrain's Economic Vision 2030 strategies, is on track. By prioritizing strong ICT infrastructure to support the growth of the digital economy, it intends to strengthen Bahrain's readiness in harnessing innovation.

In line with the kingdom's economic diversification efforts, Bahrain's ICT sector now accounts for nearly 3% of the national GDP. The Kingdom has actively pursued a strategy of flexible regulation to encourage investment in the telecoms sector. In fact, Bahrain was the first GCC member to open

and liberalize its telecoms market and remains one of the region's only telecoms markets with no restrictions on VoIP services.

Bahrain has become the first country in the Middle East and in the world to secure 5G coverage for its entire population. It is forecasted that there will be more than 1 billion 5G connections in Bahrain by 2023. This brings the nation to the forefront of B2B and B2C technological advancement.

Bahrain's newfound 5G connectivity is expected to encourage the deployment of emerging technologies like AI, machine learning, IoT, and edge computing. With enhanced reliability, significantly reduced latency, and bandwidth capacities in the gigabits, 5G networks will bring efficiency to edge devices and cloud-based servers. TR

> Governments across the Middle East have launched ambitious national transformation plans that focus on enabling ICT and digital transformation technologies

Huawei, Emirates expand together as ecosystem partners

Emirates has signed a Memorandum of Understanding (MoU) with Huawei, one of the world's global tech giants, to further extend its existing partnership, allowing both brands to expand their reach in China and the Middle East and Africa (MEA) markets. Apart from joint promotions designed to build brand awareness for Emirates and Huawei within their home base, the enhanced collaboration will also encompass the launch of customer-centric initiatives. These include enhanced and engaging experiences for Huawei smartphone users while booking tickets and making travel plans through the Emirates app.

This move was built on top of an already successful collaboration of the two brands established in early 2020. The Emirates app was made available on Huawei's smartphone devices on its AppGallery from this time. With the newly signed MoU, the Emirates Mobile App on AppGallery will undergo further development. To date, the Emirates app has over 1 million installs from the AppGallery. The airline strives to elevate its digital customer experience by leveraging cutting-edge technology, making the Emirates app a better travel companion to ensure a seamless customer journey on the go. Thus, the integration into Huawei's ecosystem will allow the airline to tap into a wider target audience, especially in China which has been regarded as one of the key strategic markets for Emirates worldwide.

The Emirates app includes innovative functions such as the ice playlist creation, the ability to synchronize to aircraft seats prior to travel, and gain direction guides via the Airport Wayfinder around the Dubai International Airport.

The agreement was signed at the recently concluded Arabian Travel Market 2021 by Orhan Abbas, Senior Vice President of Commercial Operations – Far East at Emirates and Lu Geng, Vice President Middle East and Africa of Huawei Global Partnerships & Eco-Development.

The joint cooperation will also see Emirates providing support for the Huawei search engine, Petal Search, on smart devices in the MEA region. Previously, the two companies have revealed future plans to integrate the Emirates app with the Huawei Wallet platform, enabling Skywards members to store membership details and loyalty points in the digital wallet.

Nokia's Quillion-based broadband solutions complete 100-customers milestone

Since shipping the inhouse-designed Quillion chipset-based broadband solutions for next-gen fiber and copper telecommunication networks in 2020, Nokia has achieved the 100-customer milestone for the Quillion which now being deployed in more than 40 countries around the world.

First customers for GPON or XGS-PON include Proximus, Chorus, Telefonica, KPN, Oi Brazil, TDS Telecom, Hotwire Communications and TIM.

Most of Nokia's fiber shipments are based on the Quillion 'Multi-PON' solutions which support today's 10Gb/s passive optical networks and is the only solution on the market that enables 25Gb/s for high capacity applications, for instance for 5G transport.

Quillion based solutions use 50+% less power in fiber installations than previous generations and are two years ahead of the Codes of Conduct for Broadband Communication Equipment targets, helping operators to meet their emissions goals.

Commenting on the achievement, Sandra Motley, president, fixed networks division at Nokia, said, "Next generation access is accelerating. Consumers and businesses need more broadband, and that trend will continue. Operators need innovative solutions that will enable them to keep up with the demand, keep cost under control and future proof their networks, including using fiber for 5G transport. We have developed Quillion to ensure we can bring state-of-the-art solutions that our customers need."

Meanwhile, Ed Hyde, chief customer officer, Chorus said, "New Zealanders have wholeheartedly embraced fiber broadband and are increasingly opting for full-speed gigabit plans. To stay ahead of the curve, we recently launched our next generation of wholesale fiber plans, the Hyperfibre product family. With Nokia's Multi-PON solution we can offer a range of high symmetrical speeds – up to 8Gb/s – to businesses, schools, and consumers."

Copper infrastructure can boost consumer speeds in areas where fiber is not yet available. Used in copper cabinets, Nokia's Quillion family equipment reduces rack space by half by supporting twice the number of customers. It also increases line speeds using advanced noise cancellation techniques.

Huawei launches first-ever one-stop shop for startups, developers

Global tech giant Huawei has launched its first-ever one-stop shop for startups and developers in the region. Through this initiative, Huawei aims to empower innovative entrepreneurs in the region by accessing advanced capabilities and enabling technologies.

To kickstart the initiative, Huawei will be hosting a series of workshops, programs, and one-to-one interactions during the HUAWEI Innovation Week happening this June at DIFC Innovation Hub. Startups and developers alike can accelerate their go-to-market and scale by diving deeper into Huawei's kits, tools, and capabilities while gaining valuable industry knowledge from leading experts.

"We are honored to participate at the DIFC Innovation Hub and launch our first of its kind one-stop-shop for startups, developers, and entrepreneurs in the region. A thriving tech and entrepreneurial community is a marker of a vibrant, open economy, and we believe that it is the responsibility of those with resources and reach to help foster the unicorns of tomorrow," said Adam Xiao, managing director of Huawei Mobile Services in the Middle East and Africa, Huawei Consumer Business Group.

Huawei also seeks to make its technologies and kits more accessible for developers to foster and catalyze the region's tech innovation ecosystem while startups are welcome to experience hands-on training with on-site support throughout their tech journey. This aligns with Huawei's commitment to promoting an open collaboration ecosystem under its all-scenario, seamless artificial intelligence (AI) life strategy.

Li Shi, president of the Cloud and AI Business Group for Huawei Middle East, commented, "We believe that cooperation delivers fruitful results, and it is a win-win situation for all. We work with startups and developers to build a prosperous ecosystem, with the goal of contributing the region's innovation ecosystem, building success, and achieving higher levels for tech advancement."

Nokia to act with UN Women on inclusion and diversity in the MEA region

Nokia and UN Women have together launched four pilot projects to bolster inclusion and diversity for equality. These pilots aim to address four different areas such as increasing the number of women employees, raising awareness of cervical cancer and uterine fibroids, promoting STEM (science, technology, engineering and mathematics) education, and empowering gender-based violence victims. After the successful execution of the pilots, the two organizations plan to roll these projects out in more countries across the Middle East and Africa region.

The current collaboration follows a Memorandum of Understanding signed recently by Nokia and UN Women, the United Nations entity for gender equality and women's empowerment, which will guide the global partnership. Nokia has also become a signatory to the Women Empowerment Principles (WEPs), a set of Principles offering guidance on how to promote gender equality and women's empowerment in the workplace, marketplace and community. This collaboration builds on the ongoing partnership of Nokia and UNICEF to increase equitable access to digital literacy, particularly for girls and children with disabilities in Kenya.

As part of the current collaboration, Nokia will work on implementing the WEPs, and UN Women will involve Nokia in its outreach initiatives to promote inclusion and diversity in society. Under this collaboration, the two organizations have launched the following four different pilot projects.

- Increasing the number of women employees: This project aims to increase the number of women employees in Nokia Saudi. As part of this project, the company will continue to foster a fair and dynamic working environment for female employees. Nokia employees will also reach out to female students in universities through events, panel discussions and technology talks to create awareness and motivate them to join the workforce.
- Raising awareness of cervical cancer and uterine fibroids: This project aims to help women in addressing cervical cancer and uterine fibroids by creating awareness among them in Tanzania. In this project, Nokia will employ a suitable application with chat and information exchange functions to provide real-time support to women for early prevention of these diseases.
- Promoting STEM education: This pilot aims to promote STEM education in Kenya. As part of this pilot, Nokia will guide and educate primary and high school girls in the country. The company's volunteers will curate technical content, manage career talks and organize family events to create awareness about technology and the opportunities it provides.Empowering gender-based violence victims: This project aims to empower gender-based violence (GBV) victims in South Africa by including them in the ongoing certification program of the South African Innovation Hub. Also, in the country, Nokia recently joined hands with Johannesburg-based Forge Academy to provide select victims from underprivileged backgrounds with theoretical, laboratory and on-the-job training to seize opportunities in the fourth industrial revolution (IR 4.0) economy.

Nokia selected for 5G expansion in Sweden

Nokia announced that it has been selected by Net4Mobility, the joint venture between Swedish mobile operators, Tele2 and Telenor, to roll out commercial 5G services across significant areas of Sweden in a five-year deal. Nokia will supply equipment from its comprehensive AirScale portfolio helping Net4Mobility to deliver game-changing ultra-high-speed, low-latency, and highly secure 5G connectivity to its subscribers. The move will also enable a range of new use cases across Industry 4.0, entertainment, cloud gaming, transportation, education, and healthcare. Nokia will replace the incumbent vendor with deployment already underway.

The deal will improve legacy 4G performance while increasing capacity with 5G services introduced at the majority of sites within awarded areas. Net4Mobility will also take advantage of the 3.5 GHz spectrum band, ideal for dense urban coverage. Nokia will replace the incumbent vendor's 4G network and it is also expected that a significant number of new sites will be added every year. Nokia's secure and future-proofed solutions will also ensure Net4Mobility's network meets industry standards for security.

Net4Mobility, which was formed in 2009 to support the deployment of 2G and 4G networks, is Sweden's largest RAN network and carries approximately 60% of network traffic in the country. Its 4G network covers 90% of the country and 99.9% of the population. The collaboration will continue with the development of a 5G network. Nokia has previously been selected by both Tele2 and Telenor for its cloud core network.

Nokia will supply equipment from its comprehensive AirScale portfolio, including AirScale Base Stations, AirScale massive MIMO Adaptive Antenna solutions as well as other radio access network (RAN) solutions and state-of-the-art tools to drive operational efficiency. Nokia will also provide professional services, including integration, implementation, and network optimization services, as well as technical support for operations and maintenance.

Jonas Edén, CTO of Telenor Sweden, said, "We continue to expand our 5G offer to our subscribers in Sweden. 5G is already available in our biggest cities and we aim to offer the service to 99.9% of Sweden's population by the end of 2023. We are delighted to extend our partnership with Nokia and have them as one of our vendors going into the 5G era with an emphasis on quality and innovation."

Qualcomm reveals 5G mmWave connectivity 16 times faster than sub-6 GHz

Qualcomm Technologies, Inc. announced real-world test results demonstrating that 5G mmWave connectivity speeds on commercial devices is 16 times faster than 5G operating solely in sub-6 GHz frequencies. These results were based on Ookla® Speedtest Intelligence® data* from user-initiated tests on commercial devices in the United States. 5G mmWave uses ultra-wide channels to deliver exponentially faster speeds and greater capacity compared with lower frequency 4G or 5G bands. 5G mmWave momentum continues through the world, with deployments from all major operators in the U.S. and Japan, recent deployments in Europe and South East Asia, and more coming soon in regions such as Australia and Latin America. China is also expected to deploy 5G mmWave for the Winter Olympics early next year.

5G mmWave is critical to dramatically improving the performance and advancing the variety of connected experiences in every setting. This advanced technology delivers massive bandwidth whether you're at home with 5G fixed wireless access, on-the-go in a train station streaming TV shows, at work or school with a need for enterprise-grade connectivity, or in heavily crowded venues and similar public settings. Qualcomm Technologies made 5G mmWave technology a reality and it is building breakthrough technologies and products to ensure its availability to users. Qualcomm Technologies, along with leaders in the mobile ecosystem, began this work years ago prior to standardization efforts, then moved to interoperability tests in 2017 and 2018, and ultimately commercialized mmWave in 2019 launching multiple flagship smartphones. Last year, the Company showcased 5G mmWave speeds of over 5 Gbps.

Qualcomm Technologies is to making ultra-fast 5G mmWave connectivity rapidly available to a wide array of users, and have already undertaken multiple initiatives to spread the advanced technology's footprint

Ericsson to settle damages claim of EUR80 million to Nokia

Ericsson has reached an agreement with Nokia for settling a damages claim of 80 million euros ($97 million). The settlement relates to events that were the subject of a 2019 resolution with the U.S. Department of Justice (DOJ) and U.S. Securities and Exchange Commission (SEC) of investigations into Ericsson's violations of the U.S. Foreign Corrupt Practices Act (FCPA).

As communicated in 2019, the resolution with DOJ related to criminal charges of books and records and internal controls violations of the FCPA in five countries including in Djibouti and a guilty plea to one instance of bribery in Djibouti. The resolution with the SEC related to allegations of violations of the books and records and internal controls provision of the FCPA in six countries and of the bribery provision of the FCPA in three of these six countries.

The agreement with Nokia contemplates the payment by Ericsson of a total settlement amount of EUR 80 m (SEK 0.8 b equivalent). Ericsson stated that the amount reflects uncertainty, risk, expense, and potential distraction from business focus associated with a potentially lengthy and complex litigation.

According to the Swedish vendor, the settlement will have an impact of EUR 80 m on EBIT and EUR 26 m on cashflow in Q2 2021. The remainder of the settlement amount will be made in similar installments in 2022 and 2023 respectively, impacting cash-flow. The settlement amount will be recorded as Other Operating Expenses under Segment Emerging Business and Other.

Cisco reports a "great quarter"

Cisco reported third quarter results for the period ended May 1, 2021 with revenue of $12.8 billion, net income on a generally accepted accounting principles (GAAP) basis of $2.9 billion or $0.68 per share, and non-GAAP net income of $3.5 billion or $0.83 per share.

"Cisco had a great quarter with strong demand across the business," said Chuck Robbins, chairman and CEO of Cisco. "We are confident in our strategy and our ability to lead the next phase of the recovery as our customers accelerate their adoption of hybrid work, digital transformation, cloud, and continued strong uptake of our subscription-based offerings."

"We executed well with strong product orders, and solid growth in revenue, net income, and EPS," said Scott Herren, CFO of Cisco. "Our investments in innovation and accelerated shift to more software offerings and subscriptions led to double-digit growth in deferred revenue, remaining performance obligations and higher levels of recurring revenue."

Total revenue was up 7% at $12.8 billion, with product revenue up 6% and service revenue up 8%. Revenue by geographic segment was: Americas up 2%, EMEA up 11%, and APJC up 19%. Product revenue performance was broad-based with growth in security, up 13%, infrastructure platforms up 6%, and applications up 5%.

On a GAAP basis, total gross margin, product gross margin, and service gross margin were 63.9%, 62.6%, and 67.4%, respectively, as compared with 64.9%, 63.7%, and 67.7%, respectively, in the third quarter of fiscal 2020.

On a non-GAAP basis, total gross margin, product gross margin, and service gross margin were 66.0%, 64.9%, and 68.7%, respectively, as compared with 66.6%, 65.8%, and 68.9%, respectively, in the third quarter of fiscal 2020.

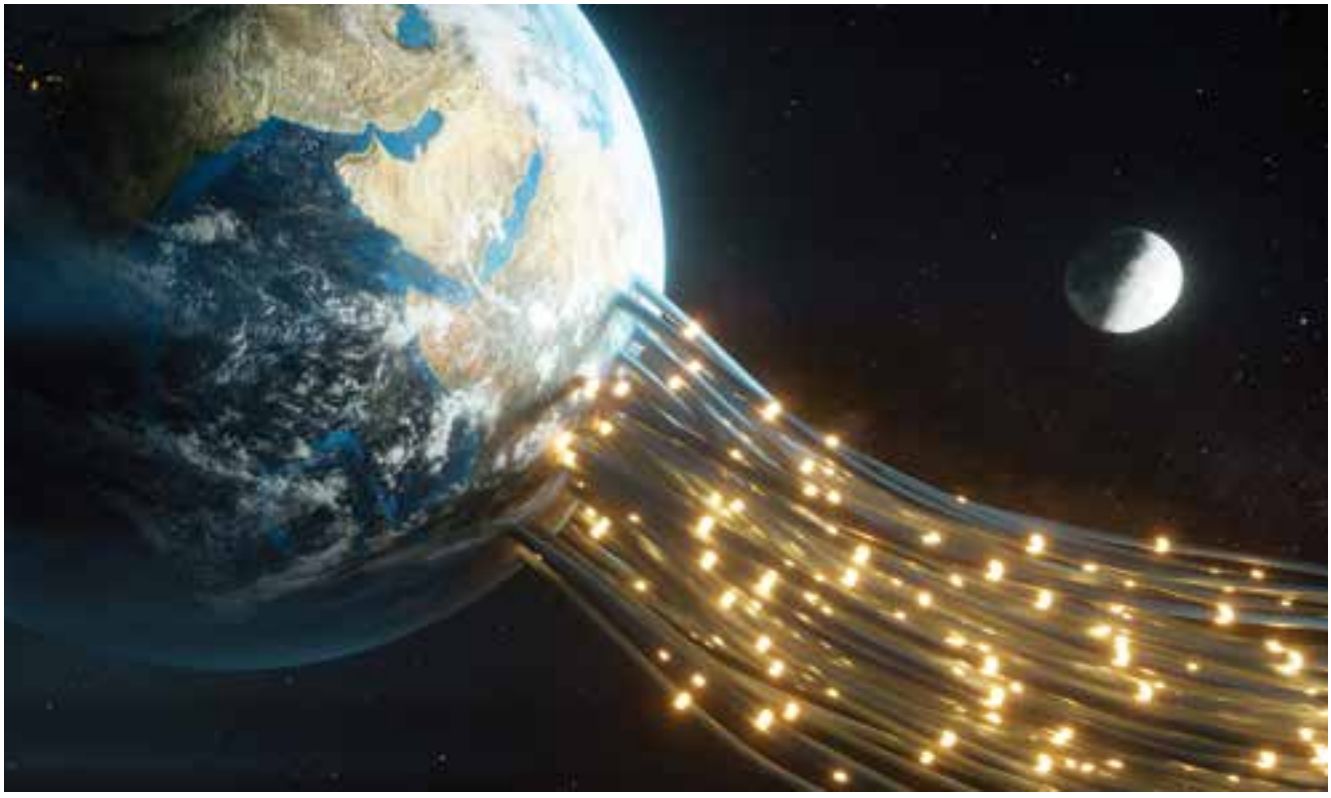
Total gross margins by geographic segment were: 66.5% for the Americas, 65.6% for EMEA and 64.7% for APJC.

On a GAAP basis, operating expenses were $4.7 billion, up 8%, and were 36.9% of revenue. Non-GAAP operating expenses were $4.1 billion, up 9%, and were 32.4% of revenue.

GAAP operating income was $3.5 billion, up 1%, with GAAP operating margin of 27.1%. Non-GAAP operating income was $4.3 billion, up 3%, with non-GAAP operating margin at 33.6%. The GAAP tax provision rate was 20.3%. The non-GAAP tax provision rate was 19.0%.

On a GAAP basis, net income was $2.9 billion, an increase of 3%, and EPS was $0.68, an increase of 5%. On a non-GAAP basis, net income was $3.5 billion, an increase of 4%, and EPS was $0.83, an increase of 5%.

Cash flow from operating activities accounted for $3.9 billion for the third quarter of fiscal 2021, a decrease of 8% compared with $4.2 billion for the third quarter of fiscal 2020.



State of being connected: How fiber optics and satellites work

When it comes to the transmission of signals and connectivity, telecom providers nowadays provide a more flexible and robust model where fiber is backed up by satellite. These two work side-by-side to ensure that downtime and outages can have no adverse effects. So in case fiber interruptions happen due to uncontrollable or unexpected factors, satellite connectivity enables enterprises, governments, and facilities to continue functioning smoothly.

Mainly depending on the geographic location and coverage area, there may be several options to connect to the Internet or television. In more remote locations, there may be only one option, but throughout most parts of the world, this has been changing.

Let us see how fiber optic and satellite communications differ and can be utilized efficiently to provide better connectivity to those in need.

Fiber optics

Fiber optics, or optical fiber, is associated with the transmission of information by sending pulses of light through a long fiber, usually made of plastic or glass. Using fiber optic cable, telecommunications links are made possible over much greater distances and lower levels of loss in the transmission medium. Most importantly, fiber optics have enabled much higher data rates to be

accommodated allowing more data to be transmitted in a shorter period of time.

Among the key advantages of optic fiber communication are extremely high bandwidth, immunity to electromagnetic interference, non-existent delays, and immunity from interception by external means. Hence, fiber optic systems are widely utilized as the backbone of major telecommunications infrastructure, catering to Ethernet systems, broadband distribution, and even general data networking.

By 2019, the global fiber optics market was worth roughly $4.3 billion but due to the growing demand for internet access and telecom services, the fiber optics market is projected to reach nearly $7 billion by 2024, according to MarketsandMarkets. Considering the numbers, >4 billion km is the length of optical fiber installed worldwide, roughly the distance between Earth and Neptune while >20 terabits/s is the data transfer rate of a single fiber-optic link, equivalent to streaming roughly 4 million HD videos.

Satellites

A satellite basically receives signals from Earth and retransmits those signals back with the use of antennas and transponders. Through satellite communications, signals between a transmitter and a receiver can be transmitted at different locations. As a matter of fact, there are thousands of communications satellites being used for radio, TV, telephone, Internet, military, and other applications.

Comparison	Fiber Optics	Satellites
Signal distribution	Fixed point-to-point	Point-to-multipoint
Area of coverage	Ideal for urban areas	Ideal for under-served, isolated areas with dispersed populations
Data transmission rate	Higher	Lower
Bandwidth	Higher	Lower
Reliability	Can be susceptible to damage, less risk for tapping/hacking	Can reroute traffic in case of failure, military-grade encryption
Interferences	Low to none	Mid to high
Delays	Minimal	High
Cost	Depends upon the distance between the links and the number of points	Equipment and installation with high recurring expenses

New technology and increasing demand have changed the way communications satellites are used, with more powerful satellites and the use of higher frequencies allowing everyday activities to rely on telecommunication satellites that are in orbit, located almost 36,000 kilometers away. One good example is when Internet service providers (ISPs) often link their servers to the satellite. With the existence of powerful broadband satellites, Internet access can be obtained regardless of consumers' distance from the nearest terrestrial node.

The large distance of satellites from the Earth typically results in delays, making two-way communication like mobile conversations unpractical. On the other hand, advancements in miniaturization and digitalization have substantially increased satellite capacity over the years. In detail, Ku-band and Ka-band spectrums are suitable for direct-to-home (DTH) broadcasting as well as broadband data communications.

Correlation between fiber optics and satellites

Satellites and fiber optics in

telecommunications should not be seen as competitors with each other. In common analogy, it's similar to how we can't argue the essence of airplanes and cars as they function in different landscapes with the common ground of being a form of transportation.

Thus, these two complement each other as "gap fillers," wherein the satellite is commonly used to fill the gaps in the coverage areas that did not yet have access to fiber. The comparison table below sums up the differences in terms of signal distribution, area of coverage, data rate, and bandwidth, among others. Both optical fiber and satellite communication are the leading technologies that are making far-reaching changes in the telecommunication industry. One as well as the other have their fair share of gains and losses, making them suitable for specific types of cases.

Their properties are distinct from one another and consequently, their usage varies. Satellite communication is best suited for poorly connected areas and places where it is difficult to lay wires like fiber optics. On the contrary, fibers are suited for urban areas with good infrastructures.

In terms of bandwidth, fiber optic promises an extremely high amount with negligible electromagnetic interference. Standard fiber cables can handle 10 Gbps, 40 Gbps, and 100 Gbps. Conversely, satellites have lesser bandwidth and are prone to interferences.

The data transmission rates in fiber optics are high with minimal propagation delays while the large distance from the Earth to the satellites results in inadvertent delays in transfer. For example, single-mode fibers can transmit 100 Gbps on up to 100 closely spaced wavelengths, for a total of 10 terabits per second.

Although, there's a common misconception that latency has an effect on the speed at which you can transfer a file, in fact, a one Megabyte file will transfer just as quickly over a 5 Mbps (Megabits per second) satellite connection as it does over a 5 Mbps terrestrial connection. The satellite connection will just have a delay in beginning the file transfer.

It has been debated that communication using fiber optics is more reliable than satellites and is less prone to errors. Yet, the terrestrial nature of the services from fiber internet providers means they can become damaged as cables can be cut accidentally or damaged through an environmental issue. With satellite internet, as it widely covers a large area of the world, creating built-in options to reroute traffic for continual service is done to minimize impact in case of satellite failures.

Taking into account the costs, internet over fiber will vary based on the current infrastructure and the location of the fiber optic line to the desired location of transmission. As a result, the more distant the area is, the more expensive the cost will be. With satellite costs, particularly for the Internet, location is not a significant factor. Instead, the initial equipment and installation can be subject to high charges.

Due to minimal delays in communications, fiber optics are more suitable for real-time communications while satellites are intended for broadcasting. Moreover, fiber internet providers require a terrestrial infrastructure giving them a stable point for transmission and reception. From another point of view, satellite coverage includes the mobility factor, making it viable for mobile operations, shipping lines, and military applications where the end-use point of the system can be remotely done on a regular basis.

Strong and resilient connectivity for everyone

Telcos should consider delivering resilient connectivity by leveraging high-performance GEO satellites, low-latency MEO services, advanced ground systems, and IP-based terrestrial networks. In this way, fiber is backed up by a connection that can be sustained in terms of coverage, throughput, and latency, as well as guaranteed uninterrupted service in case of emergency.

As more services go digital, the reliance on a single route fiber connection is no longer sustainable for telecommunication providers. It will be a significant edge to have a system that can withstand failures of fiber optic networks. Thus, service providers should have diversity in internet access technologies.

Satellites and fiber optics are not mutually exclusive. A combination of both may just be what's needed to establish stronger and more flexible connectivity for everyone. TR

These two – fiber and satellites - complement each other as "gap fillers," wherein the satellite is commonly used to fill the gaps in the coverage areas that did not yet have access to fiber

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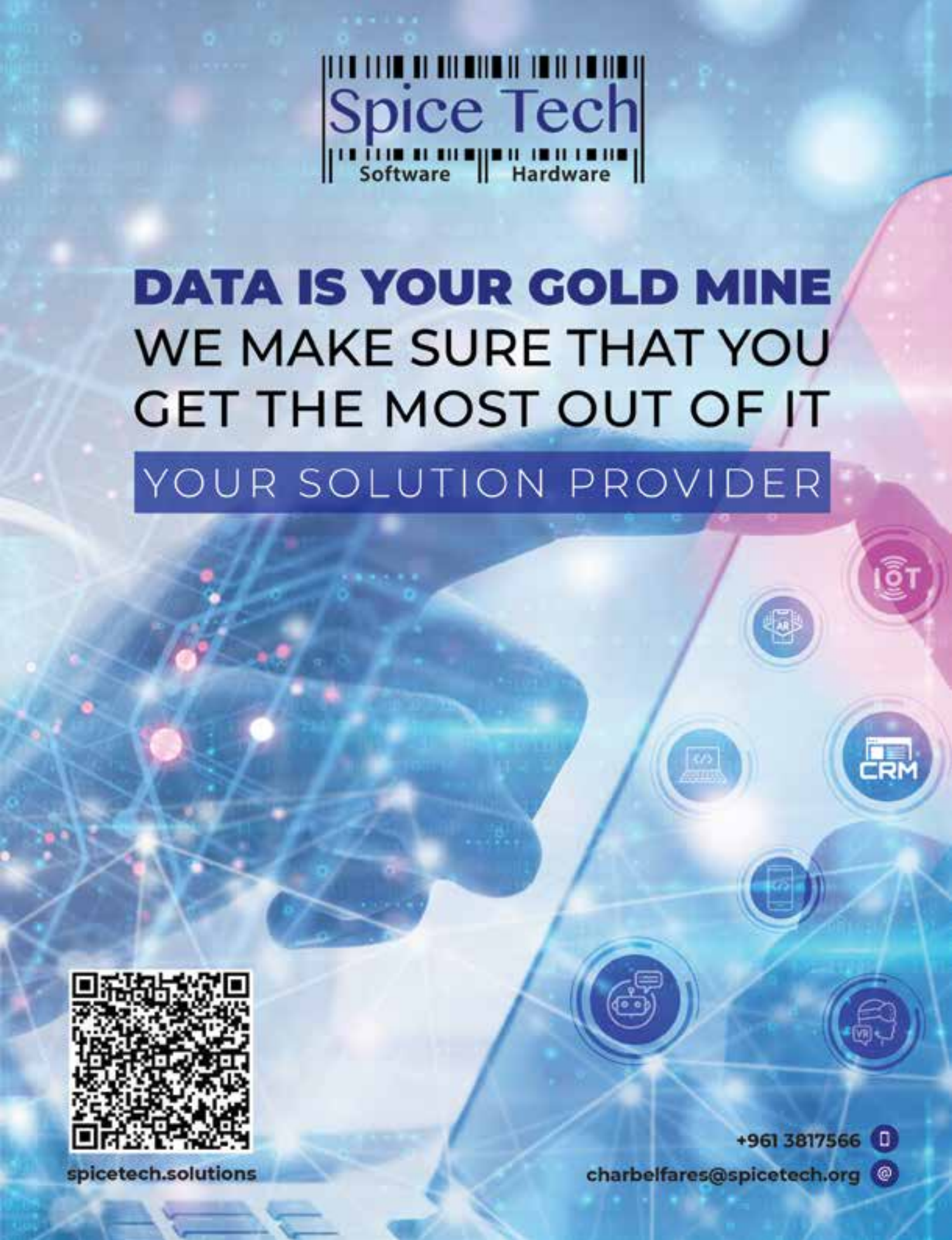

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Canada triples spectrum access with 6Ghz band

The government of Canada has finally decided to open the 6GHz band of spectrum that would triple the current amount available for Wi-Fi. This will lead to faster speeds and greater coverage.

"High-quality and affordable wireless services have never been more important in the everyday lives of Canadians," Minister Francois-Philippe Champagne said. "This decision will make staying connected easier for Canadians who rely on their Wi-Fi for accessing school, work, and health care from home."

Based on the document that initiated a consultation on the technical and policy framework for license-exempt use of the 6 GHz band, in the Canadian Table of Frequency Allocations (CTFA), the 6 GHz band is allocated to fixed service and fixed-satellite service on a co-primary basis.

The increased spectrum will also allow for affordable broadband in rural Canada, which is in line with Prime Minister Justin Trudeau's Liberal government's commitment to improving internet access for rural Canada.

The decision comes ahead of Canada's long-awaited 3500Mhz spectrum auction in June, with more than 20 companies eligible to bid. These include Bell, Telus, Rogers Communications, and Cogeco Communications.

Moreover, it is a timely response to the GSMA call-to-action for governments regarding 6 GHz licensing for a scalable and efficient 5G network deployment.

New Ethiopian license faces criticism

After the international consortium won the telecom license in Ethiopia, various concerns have arisen regarding the geopolitical context of the decision. The Ethiopian government selected the Global Partnership for Ethiopia (GPE) after showing the upper hand against MTN Group. The former made an $850 million bid for the license, with the latter offering a bid of $250 million lower. Despite going through a transparent and fair process, the decision now faces criticism due to the players involved in the licensing competition.

Safaricom, Sumitomo are biggest shareholders

Regardless of taking the spotlight among media headlines, Vodafone will not take any direct control of the GPE. Although the preconditioned loan from IDC was offered to the telco, Kenya's Safaricom has the largest stake accounting 55.7%, followed by Japan's Sumitomo Corp with 27.2%. UK's CDC Group takes 10.9% while South Africa telco Vodacom holds 6.2%.

Vodafone is missing from the list of shareholders but presumably, due to its global reputation, it gets to be at the front line. On the other hand, operations-wise, Safaricom disclosed setting up the Vodafamily Ethiopia Holding Company where it owns a 90% stake and Vodacom International has 10% of the SPV. Vodafone International Operations said to have a single share on this entity.

By 2022, the commercial operations of GPE are expected to begin.

US aligns with Africa

The telecom license winner is known to be backed by the US International Development Finance Corporation (DFC). An up to $500 million loan is approved to finance the design, development, and operation of GPE.

This shifts the paradigm to the US successfully challenging China on the Ethiopian grounds. Established in 2019, CEO Adam Boehler affirmed that telecom is a priority for DFC as the US is very focused on ensuring that there are non-Chinese vendors to be alternatives for Huawei and ZTE.

With the newly-formed GPE venture consisting of reputable telco companies namely Safaricom, Sumitomo, Vodafone, and Vodacom, there might be an increased likelihood that equipment from Japanese companies such as NEC and Fujitsu will be used. In contrast, the state-owned Silk Road Fund of China backed MTN Group, the licensing competitor. Regardless of losing this round, once the Ethiopian government opens up the floor again for the second license, MTN and other interested parties can present fresh bids again.

Morocco adopts the Wi-Fi 6E

From June 2021, it will be possible to use the latest evolution of the Wi-Fi standard which displays speeds much higher than those currently offered. More precisely, Wi-Fi 6E will allow a 40% increase in speed compared to its predecessor, through additional spectrum intended for these new uses.

Wi-Fi 6E thus makes it possible to have high browsing speeds (up to 1.2 GB / s per frequency carrier and 9.6 GB / s for a hotspot) and reduced latency for activities such as teleworking, videoconferencing, e-learning and augmented virtual reality. Morocco is thus the first country in Africa to have authorized Wi-Fi 6E technology which is now gradually equipping all new smartphones, laptops, tablets, etc.

The use of Wi-Fi 6E is made possible following the publication of Decision ANRT / DG / N ° 07/2021 modifying and supplementing the technical conditions of use of radio installations made up of low power devices and low range. This new decision brings some other novelties such as the use of omnidirectional obstacle detection radars in the 24-24.25 GHz band, low power low range portable devices operating in certain frequency bands.

GSA welcomes India's 3GPP-compliant 5G trials

GSA (Global mobile Suppliers Association) today welcomed the decision of India's Department of Telecommunications (DoT) to give the go-ahead for 5G spectrum and trials of 5G uses and applications in the country using 3GPP-compliant technologies. The applicant mobile operators include Bharti Airtel Ltd., Reliance JioInfocomm Ltd., Vodafone Idea Ltd. and MTNL. India's four major mobile operators, between them accounting for over 1.1 billion mobile subscribers, will join over 436 operators in 133 countries/territories that are investing in 3GPP-compliant 5G networks in the form of tests, trials, pilots, planned and actual deployments. As of April 2021, GSA data showed that there are already 162 mobile operators in 68 countries/territories that have launched one or more 3GPP-compliant 5G services, including both mobile and fixed wireless access.

To meet this global demand for 5G mobile and fixed wireless access services, the number of announced 5G devices has now passed 756 devices spanning 22 form factors from 124 vendors. This growth in announced 3GPP-compliant 5G devices is also reflected in the continued rapid growth in commercially available 5G devices which, as of April 2021, stands at 468 and represents 61.9% of all announced 5G devices.

Joe Barrett, President of GSA, commented: "The commercial momentum behind 5G spectrum, networks and devices is truly global and built on the foundations of cooperation between industry, regulators and standards bodies. Spectrum harmonisation and technology standardisation are central to the ability of the global mobile ecosystem to deliver 5G services and unlock the wider economic and social benefits that it promises. GSA welcomes the decision of the Indian Government to support their mobile operators in investing in 3GPP-compliant 5G technology and in globally harmonised spectrum."

Kenmei Technologies now part of Vodafone's Digital Network Program

Network intelligence and automation company Kenmei Technologies announced that it has partnered with Vodafone Group on its "Digital Network Program", with the aim of reducing operational costs, improving customer experience and increasing revenues.

Vodafone Group, the global leader in voice and data services, launched a well-defined strategy to keep its market leadership position with the introduction of the Digital Network Program initiative.

Under the program, Vodafone will be using advanced technologies to deliver next generation digital products to network engineers enabling networks to be more agile, efficient and secure, critical to meet the real time demands of cloud services, digitisation and mobility.

As part of the Digital Network Program strategy, Kenmei Technologies will deliver network intelligence and automation use cases by integrating its ADELE® platform with Vodafone's analytics platform running on the cloud. As part of the agreement, the ADELE® solution from Kenmei will be expanded to all European markets.

"The ADELE® platform which has been designed from the ground up with a native big data architecture has allowed Kenmei to deliver an innovative solution to automate many operational tasks reducing costs and improving customer experience," commented Ali Wansa, global VP sales at Kenmei Technologies. "This is in line with Vodafone Group strategy and we are very proud to become a key partner within the Digital Network Program at Vodafone Group," added Ali.

CSG acquires Tango Telecom to accelerate growth of CSPs

CSG announced that it has formally acquired Tango Telecom, culminating its decade-long relationship, to form a complete end-to-end solution for converged voice and data services across 3G, 4G, and 5G networks and deliver enhanced monetization of B2B2x business models. Taking over the leading supplier of convergent policy control and messaging solutions would now arm CSG with real-time, dynamic policy, and call control management. This is beneficial alongside CSG's industry-leading charging and digital monetization capabilities.

"Tango Telecom and its core policy control and messaging capabilities are a natural extension to CSG's innovative digital monetization portfolio, aligning with our growth strategy and leadership in the wireless space," said Ken Kennedy, COO and head of revenue management & digital monetization at CSG.

"5G is accelerating the number of digital services CSPs can deliver over next-generation networks. This new paradigm opens the doors to new data revenue streams that will enable CSPs to monetize every aspect of their customers' at-home and on-the-go experience," added Kennedy. The addition of Tango Telecom to the CSG platform means that CSP customers can more effectively manage data transactions that are crucial for delivering dynamic and exceptional end-customer experiences.

"Unless CSPs urgently modernize their monetization stacks, they will be unable to support the emerging business models that 5G will trigger," said John Abraham, principal analyst at Analysys Mason.

GSMA: Governments to license 6 GHz to tap 5G potential

The GSMA called on governments to align licensing for 6 GHz spectrum, so as to avoid placing the global future of 5G at risk.

The 6 GHz band is essential not only for mobile network operators to provide enhanced affordable connectivity for greater social inclusion, but also to deliver the data speeds and capacity needed for smart cities, transport, and factories. It is estimated that 5G networks need 2 GHz of mid-band spectrum over the next decade to deliver on its full potential.

The full speed and capabilities of 5G depend on the 6 GHz mid-band spectrum. However governments are divided in their 5G approach. China will use the entire 1200 MHz in the 6 GHz band for 5G. Europe has split the band, with the upper part considered for 5G, but a new 500 MHz tranche available for Wi-Fi. Africa and parts of the Middle East are taking a similar approach.

At the other extreme, the US and much of Latin America have declared that none of this valuable resource will be made available for 5G, but rather will be offered to Wi-Fi and other unlicensed technologies.

The World Radiocommunication Conference in 2023 will provide the opportunity to harmonise the 6 GHz band across large parts of the planet and help develop the ecosystem.

5G is accelerating the digital transformation of all industries and sectors, unleashing new waves of innovation that will benefit billions. This technology is crucial for the environment and climate goals as connectivity replaces carbon. In order to reach all users, however, industries will require the extra capacity that the 6 GHz band offers.

Nokia and Optus deploys Australia's first integrated antenna

Nokia announced the deployment of Australia's first Interleaved Passive Active Antenna (IPAA) in collaboration with Optus. Together, Nokia and Optus deployed the first IPAA in Yeerongpilly, Brisbane. The solution helps ease site related challenges which accelerates the introduction of 5G services across the country.

As operators look to rollout 5G, finding space on existing towers and rooftops for new massive MIMO active antenna equipment poses a significant deployment challenge for operators. Long delays in acquiring permission for site upgrades; the potential strengthening of the supporting structures and potential higher rental payments to landlords, can in combination seriously delay operators, such as Optus, in getting 5G services to their customers.

Nokia's IPAA solution was developed in collaboration with CommScope. It will allow Optus and other operators to upgrade existing sites to 5G by simply replacing their existing antennas with a similar sized unit that supports all legacy technologies as well as 5G massive MIMO active antenna, all in a single compact solution. By utilizing this solution, Optus can overcome many deployment challenges that can typically hinder the introduction of 5G.

Lambo Kanagaratnam, Managing Director of Networks at Optus, said: "We're committed to keeping our customers connected and at the forefront of 5G. By partnering with global technology leaders like Nokia, we continue to bring the best global innovations to our customers. The introduction of the IPAA into our network infrastructure will help us speed up the deployment of our 5G network by addressing space and structural capacity constraints."

ZTE provides wireless coverage to the second highest peak in the world

ZTE Corporation, a major international provider of telecommunications, enterprise and consumer technology solutions for the mobile internet, together with a local operator in Pakistan, has built a base station and completed several kilometers of wireless coverage around the station at the K2 base camp for the world's second highest peak on the border between China and Pakistan, with the aim of building a strong communication network for climbers.

The altitude of K2, the second highest peak in the world after Mount Qomolangma, is 8611 meters. It's about 200 kilometers from the villages at the foot of the mountain in northern Pakistan to the K2 base camp. On the way to the K2 base camp, the mountain is steep and the environment is harsh. Compared with Mount Qomolangma, its difficulty and risk for climbers are higher and more challenging. It is one of the most popular peaks that climbers hope to conquer. However, there was no signal coverage along the K2 before April 2020, so it was very difficult for climbers to communicate in case of emergency. The death rate of the climbers, who trek toward the K2's summit, is as high as 25%.

In order to fill the signal gap along the climbing route of K2, ZTE assisted the local operator in completing the construction and provisioning of the base station at the K2 base camp with an altitude of 5100 meters before the peak climbing season in 2021, so as to provide 24x7 stable network services for climbers in the area. The signal strength, speed rate, effective coverage distance and other technical indicators of the base station have reached the desired level, providing stable and high-speed communication experiences for climbers, and effectively guaranteeing the high-quality communication and timely information transmission for climbers.

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MWC Barcelona will still be the place where our industry gathers to create connected impact for a thriving society. But now, it's also the place where you can connect with industry decision makers attending in-person and logged on online too.

Place: Fira Gran Via, Barcelona, Spain

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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

10 AUGUST

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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

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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

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