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Ooredoo Group: Transforming the business to deliver stronger growth

Aziz Aluthman Fakhroo, managing director, Ooredoo Group

Telecom in metaverse:

A new space to
connect and monetize

Business in motion:

5G experience in the
Middle East

The next G wave:

6G is coming soon

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Editor in Chief & Senior ICT Analyst

Toni Eid
toni.eid@tracemedia.info

Senior Journalist & Content Manager

Christine Ziadeh
christine@tracemedia.info

Journalists

Elvi Correos
elvi@tracemedia.info

Jonathan Pradhan
jonathan@tracemedia.info

Editorial Team

Christine Ziadeh (Lebanon), Corrine Teng (Singapore), Elvi Correos (UAE), Elza Moukawam (Lebanon), Jeff Seal (USA), Jennifer Saade (Lebanon), Jonathan Pradhan (UAE), Marielena Geagea (Lebanon), Toni Eid (UAE)

Advertising Enquiries

Mohammed Ershad
ershad@tracemedia.info

Graphic Designer

Tatiana Issa

Responsible Manager

Nada Eid

News

Provided in cooperation with
AFP, the global news agency

Published by**Trace Media Ltd.**

Zouk Mikael, Lebanon
Kaslik Sea Side Road,
Badawi Group Building, 4th Floor,
P.O. Box 90-2113, Jdeidet el Metn
Tel. +961 9 211741
M. +961 70 519 666

Trace Media FZ.LLC.

Dubai Media City, UAE
Building 7, 3rd Floor, Office 341
P.O. Box 502498, Dubai, UAE
Tel. +971 4 4474890
M. +971 55 639 7080

Printing

United Printing and Publishing

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is prohibited

Year 16 | Issue 178



Toni Eid,
founder
editor in chief
Telecom Review International

5G maturity

5G is still shining and the focus of the ICT sector and governments is still in that direction.

This generation of wireless communication standards, arriving after 20 years of 3G, is allowing the smartphones to show their true capabilities and create the first real mobility.

Today, 5G is delivering speeds that enable smooth video streaming, thus, having a positive impact on multiple applications that require stable and reliable connectivity.

5G is indeed promising, but this technology still has a long way ahead before its global deployment as many countries are still behind and did not invest until today into the 5G era, seeing that the ROI of 4G is not yet saturated.

In early 2020, only 34 countries were recorded to have fully deployed 5G; and even in places where 5G is in full service, consumers are only enjoying that upgraded speeds neglecting other 5G benefits.

Nevertheless, we are witnessing now many vendors and countries pushing for 6G. But, as per industry analysts, no one is ready to nest in 6G even if the technology is ready.

Maybe in a few years, counting 2025 onwards, 5G maturity might reach a tipping point and only then, there will be room for another generation of wireless connectivity.



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Aziz Aluthman Fakhroo, managing director, Ooredoo Group

Ooredoo Group: Transforming the business to deliver stronger growth

In an exclusive discourse with *Telecom Review*, Aziz Aluthman Fakhroo, managing director of Ooredoo Group, talked about the most recent milestones the Group achieved, its optimistic outlook for the rest of 2021, and its continued commitment to digital transformation.

Ooredoo Group recently announced the merger of its Indonesia operations with those of CK

Hutchison. Can you tell us more about this transaction?

This is a landmark telecoms transaction in Asia, with a value of approximately US\$6 billion, and is undoubtedly a momentous event for Ooredoo Group.

The merger is still subject to approvals, but upon closing, it will bring together two of Indonesia's leading telco brands and two highly complementary businesses to create a new world-class digital telco for Indonesia and to form one stronger number-two player with revenue of around US\$3 billion.

This major transaction is perfectly aligned with our growth strategy and one which we believe will deliver great benefits for all shareholders, customers, employees, and for Indonesia.

Through economies of scale and the realization of synergies as we integrate the highly complementary networks and operations of the two businesses, we anticipate the merged company will deliver higher profitability and returns to shareholders.

For customers and for Indonesia, we will create a digital telco ready to drive the innovation and investment that will deliver improvements in network performance, customer experience and support Indonesia's digital transformation.

Importantly, the merged company will be backed by not just one, but two strong and committed partners in Ooredoo Group and CK Hutchison. I believe our combined strength, experience and expertise will set the merged company up for great success in the future.

Based on its reported H1 2021 results, Ooredoo had a good first half of the year. Can you expound more on this performance and how it can impact FY's outlook?

Indeed, we had a strong first half 2021, with a rewarding revenue increase of 3% compared to the same period last year. This positive trend is mainly supported by the continued implementation of our strategy and the growth of our business across different markets.

Following on from a potentially difficult period amid the pandemic, Ooredoo Group continues to enjoy resilient operations thanks to our balanced and diversified portfolio of assets and a clear focus on digital services. The company continues to build upon two of the cornerstones of our operations; deploying powerful technologies and providing reliable connectivity and innovative products to our customers. As a result, our customer base grew by an additional one percent, reflecting customer confidence in our offering.

A major achievement in the first half of 2021 was Indosat Ooredoo's sale and leaseback agreement with Edge Point Indonesia for more than 4,200 telecommunications towers. The transaction was valued at USD 750 million, making it one of the largest deals of its kind in Asia. This came as part of our strategic endeavors to become more asset-light, extracting optimal value from our infrastructure by executing network sharing and other infrastructure deals.



It is of note that the investment and roll out of our networks, including 5G in a number of markets, is proving essential to developing community resilience, particularly with the pandemic-induced rapid shift to working from home and virtual learning. Clearly in many countries, both business and education are evolving, and as Ooredoo Group is ideally placed to facilitate changes involved in this evolution, a natural outcome will be a positive impact on our financial results.

In Qatar, our home market, we recorded a strong performance with growth in terms of revenue (+5%) as well as EBITDA (+2%). Indosat Ooredoo continues to deliver robust results across the board, contributing significantly towards Group growth, with a 14% increase in revenue and an improved EBITDA margin of 50%.

Cost control and efficiency measures resulted in a 13% improvement in EBITDA for Ooredoo Kuwait and 8% for Ooredoo Algeria. We recorded 8% more customers for Ooredoo Oman and 9% more customers for Asiacell, Iraq. Ooredoo Tunisia recorded positive trends for revenue (+8%).

We have continued to execute our active portfolio management strategy as demonstrated by the announced agreement with CK Hutchison to merge Indosat Ooredoo with Hutchison 3 Indonesia. This landmark transaction gives us great confidence that our strategy of digitalization, streamlining our operations, maximizing efficiencies and extracting optimal value from our infrastructure is paying off.

As we look ahead into the coming months, we remain optimistic. Given that our start to the year has been so positive, we expect this positive momentum to continue to drive our success as the year progresses. We believe we have made the right investments to continue delivering long-term value for our shareholders, customers and countries in which we operate.

To what extent does Ooredoo's transformative 5G roadmap match



We had a strong first half 2021, with a rewarding revenue increase of 3% compared to the same period last year



the growing expectations of dynamic connectivity and enriched digital experiences?

As technology develops, so does customer demand. Networks have progressed tremendously – 2G to 3G, the 4G on which we rely as a matter of course nowadays, and of course the rapid enablement of 5G – and so our customers realize the potential of the technology harnessed, and expectations increase accordingly.

Having taken the early lead in testing, trialling, and launching 5G in Qatar – before taking it to Kuwait, Oman, the Maldives and Indonesia – I can confidently say that we are very well placed to roll out this technology and the wide range of use cases that comes with it.

In fact, this is how we are keeping our promise to enrich people's digital lives and enhance their experiences. Ooredoo is building a strong 5G ecosystem across its footprint, one that matches the growing expectations of a more connected world.



Online gaming and eSports are timely examples of pent-up demand on faster speeds and lower latency. As you know, eSports now constitutes a multi-billion-dollar industry of global significance. Its emergence has led industry analysts to identify eSports as both a key economic trend in markets for data and as a future driver of strategy in the telecommunications business.

Gamers and eSports professionals need advanced networks and stable connections to be able to compete. This network reliability can mean more chances of winning for the players and a transformed fan experience for watchers, particularly as Virtual Reality (VR) and Augmented Reality (AR) features are gaining momentum with 5G.

To cater to the rapidly emerging eSports domain, Ooredoo Qatar has recently launched its own eSports brand, "Ooredoo Nation – Gamers' Land". The brand is a fraternity which is beyond geographical boundaries; a community of gamers that grows



faster by the minute, inventing, innovating, creating, evolving and raising the game.

By positioning itself as the go-to brand for this youthful, data-intensive, high-revenue activity, Ooredoo aims to establish leadership in the eSports domain and build the activity into an important revenue stream.

Other additions to the milestones achieved in our 5G roadmap would include the immersive 5G experience that football fans got to live remotely - while getting a taste of VR while watching the Amir Football Cup final match LIVE at a Virtual Stadium in the Mall of Qatar - and the future of healthcare that we showcased with a pilot 5G connected ambulance. These are just a few examples of how we are staying ahead of the curve.

Ooredoo Qatar has continued its commitment to digital transformation. How does building the Qatar Smart Program (TASMU) platform respond to the demands of smart cities?

It used to be said jokingly that there were more people writing about Smart Cities than actually living in them; it is evident this is now changing, and it is vital to give smart cities the tools needed in order to progress and meet the needs of their citizens.

Qatar's digital transformation will lean heavily on the TASMU Platform, the single point-of-contact for public use. This platform will harness advanced technology and innovation to provide smart solutions and applications, mainly across the sectors of transportation, healthcare, logistics, environment and sports.

Thanks to Qatar's wise and visionary leadership, a great focus was put on investing in emerging technologies and innovation, which will drive sustainable development and economic diversification.

With this in mind, the TASMU Platform was designed to create and foster an enabling digital environment for citizens, residents, service providers



Ooredoo is building a strong 5G ecosystem across its footprint, one that matches the growing expectations of a more connected world



and other players, by powering and linking all sectors, smart solutions and digital services in Qatar. Ooredoo aims to help all involved to experience the provisions of a smart city end-to-end, by providing support in the areas of innovation and research for entrepreneurs and businesses.

Another major advantage of the system is that its open-ended architecture allows it to scale up as the needs of the smart city change, in line with new technologies, population growth or changing customer expectations.

Ooredoo was hailed as "Kuwait's Fastest Mobile Network" in 2021. What were the proactive steps taken by the company in providing the best and fastest coverage?

As you know, Ooredoo Kuwait was the first company to roll out a 5G network in the country in 2018 and this roll out was completed in 2020, with a huge investment in advanced networks. Ooredoo Kuwait has also invested heavily in the fiber roll out and transport network modernization during the same period.

Providing the fastest, most reliable networks has long been a key aim and priority for Ooredoo Group and its operating companies. Indeed, we have been recognized for our performance by a leading global provider of fixed broadband and mobile network testing data and analysis.

Of course, behind the scenes of network development lies a raft of processes and procedures, including regulatory requirements, testing and infrastructure. We leverage our previous experience of network development and apply it to new projects, and rely on our many partnerships with world-leading technology providers to ensure we are working with the absolute latest cutting-edge innovations that allow us to provide a service second to none.

We also research and learn from our counterparts around the world, to allow us to benefit from their experience and expertise, and adapt technologies and methodologies that suit our markets and consumer demands.

In line with Ooredoo's digital transformation agenda, Ooredoo

Kuwait launched its Cloud Connect service in partnership with Microsoft Azure. What is the importance of boosting cloud adoption in this area at the present time?

Cloud computing for businesses has gained increasing importance in past years. According to Gartner, end-user spending on public cloud services is expected to grow over 20% in 2022, with predictions that it will exceed 45% by 2026.

This technology has become an imperative to businesses, as it ensures business continuity, accelerates digital transformation, improves the security of the IT environment and can significantly reduce IT-related expenses.

As Ooredoo pushes forward with digital transformation plans across the markets we serve, moving to and offering more resilient solutions that provide flexibility, accessibility and scalability has become a strategic necessity.

We have partnered with Microsoft in a number of our markets, including



Kuwait and Qatar, to offer our business customers the latest cloud solutions that will enable them to better engage with customers, empower their employees, and optimize operations. By moving to cloud computing, our business customers of all sizes are able to benefit from technologies such as business intelligence, machine learning, predictive analytics, smart bots, and IoT field-connection services, thereby leapfrogging their digital transformation.

Forming such partnerships is a way of staying ahead of the curve in this challenging digital environment.

Delivering industry-leading innovation is a continuous process, especially in the mobile operators' industry. How does Ooredoo plan to advance its services and offerings across its global footprint?

Indeed, we are still seeing phenomenal growth in the telecoms industry across the globe, particularly post-pandemic. New opportunities in new industry sectors are arising as a result of the rapid technology evolution.



As a leading telecoms operator, we continue to remain vigilant while continuously updating and adapting our services and offerings, as well as our ways of working.

This was demonstrated by Ooredoo's high preparedness to manage the impact of a shock like the global COVID-19 pandemic. Through the strong foundations we have built over time, we were able to respond quickly and introduce new digital services to ensure people stayed connected and engaged throughout a very turbulent period. In particular, Ooredoo's networks provided a vital lifeline for organizations that required employees to work remotely, which ensured business continuity and helped build economic resilience.

Today, we are contributing to the economic recovery of the markets we operate in, thanks to these same strong foundations and ever-growing agility.

Our focus for the next period will be on forging new partnerships and strengthening existing ones with key players to continue to offer our



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customers the latest products and services.

A key area of focus here is building leading digital services. We are always exploring new, previously unaddressed areas, to make it easier for our customers to find, buy and use our products online. Ooredoo's activities are converging on a digital-first ecosystem, which will become integral in our customer' daily interactions.

A few examples of what we were able to achieve so far include our partnerships with top fintech players Mastercard and VISA; premium entertainment services providers Netflix, Disney+, HBO, beIN and OSN; gaming leaders such as PUBG, FreeFire and Quest; music providers like Anghami and Spotify; and direct carrier billing partnerships with Google, Apple and Huawei.

Ooredoo has welcomed its first female CEO in Oman. How can this be empowering to women in the ICT sector and in general?

The appointment of Noor Al Sulaiti as the CEO of Ooredoo Oman can and should inspire women across the sector. I have to add here that this event was preceded by the appointment of two female colleagues in key positions. Fatima Sultan Al-Kuwari was appointed as group chief human resources officer and Eman Al Khater as chief human resources officer in Ooredoo Qatar.

Ooredoo has a firm commitment to recruit, train and develop the next generation of talent from within the organization and the markets in which we operate.

Selection of this talent is based on merit, and it's great to see that many young leaders, male and female, have stepped up and delivered during the most difficult times. We will continue to invest in them and push their careers forward.

Numerous women are now coming through the industry and being appointed in C-suite roles. This will translate into a new generation of company leaders, committed to bringing about real change across the sector as a whole. **TR**

Huawei to invest \$15 million in localized, innovative cloud ecosystem



Huawei plans to invest \$15 million over the next three years in the newly-launched Huawei Cloud Oasis Program to accelerate the development of technology enterprises and ecosystems in the Middle East.

Countries across the region have witnessed an acceleration in cloud adoption and investment in recent years. Leveraging Huawei's 30-plus years of expertise in ICT solutions, Huawei Cloud is now a leading cloud service provider globally that provides

reliable, secure, and cost-effective services to empower organizations of all sizes to grow in an increasingly digital world.

The Huawei Cloud Oasis Program targets to assist 3,000 experts in the region, support over 1,500 consulting and technical partners, and empower more than 100 SMEs to develop their cloud capabilities. The program will also support more than 100 marketing events during this period to help cultivate a thriving cloud ecosystem within the business community. The latest investment includes \$7.5 million being allocated for partner development, over \$2.5 million to be put behind credits and other cloud resources, and more than \$4.5 million in marketing support for program projects.

Within the program, the Huawei Cloud Partner Network (HCPN) has designed three different programs for consulting partners, technology partners, and talent. Participants

benefit from various incentives and privileges to maximize their cloud projects, while also being provided with marketing, sales, and branding support to enhance business development.

Technology partners are offered training, marketing, technical, and business support so that they can focus on technology innovations within their field. As part of its talent development goals, Huawei Cloud will host various tech summits and introduce cloud training to more than 1,000 students, provide more than 130 courses for prospective learners, and host skill contests accessible to more than 400 students and ten universities in the region.

Currently, Huawei Cloud has more than 220 services available within one local and 18 global data centers. In less than a year, Huawei Cloud had more than 80 offerings in the marketplace, with more than 100 esteemed partners.

TDRA launches cloud computing national capacity development program

The TDRA Virtual Academy launched the cloud computing national capacity development program that aims to qualify national human resources and support entrepreneurs in cloud computing.

In collaboration with Amazon Web Services (AWS), this new training program consists of 36 training hours over 2 weeks, during which participants will obtain a range of knowledge and skills related to cloud computing. The hours were distributed between direct distance training and self-training.

Commenting on the newly introduced program, Engineer Majid Almadhloum, director of CoDI at TDRA, said, "We at TDRA Virtual Academy are keen to provide training programs that support UAE's vision and future goals in preparing

a 4IR-ready generation capable of dealing with technologies such as artificial intelligence, Internet of Things and big data in order to provide innovative projects and services supporting the development process in the UAE and contributing to the happiness of the Emirati society."

Eng. Almadhloum confirmed that the program will provide trainees with an opportunity to learn about the latest cloud computing technologies. "Cloud computing is a key tool of the current technological age, as it provides easy solutions for large volume data storage, and subsequently uses the same in providing smart services, data analytics, and other technologies. And to make the most out of the program, we have been eager to cooperate with Amazon Web Services, the world leader in this

technology, whereby participants will receive their knowledge by international experts," he added.

At the end of the program, participants will take internationally accredited exams enabling them to be professionally certified by AWS, which in turn would help them move up the career ladder and achieve success in their careers.

The TDRA Virtual Academy is an integrated training platform providing online and traditional courses in business, technology, and special skills. Created as a key initiative of the government's transformation program, the platform has received thousands of trainees from across the world, offering the latest training programs in Arabic and English conducted by international instructors and experts in training.

Netcracker redefines customer experience and accelerates 5G monetization for Zain Saudi Arabia



Netcracker Technology announced that Zain Saudi Arabia, a leading innovator of mobile services in the Middle East and Africa, has selected the cloud-based Netcracker digital BSS and Netcracker customer engagement for its digital transformation program. Zain Saudi Arabia will also utilize Netcracker service management and orchestration, part of Netcracker digital OSS, to create the foundation for automated network slicing within its 5G core environment and across its entire network for 5G monetization. The Netcracker digital OSS portfolio will also help Zain to manage its virtualized network and deliver multivendor services.

Netcracker digital BSS and customer engagement encompass a wide variety of domains, including customer management, revenue management, product management and channel management, and will be hosted on premises with Zain's advanced cloud infrastructure. The solution will provide the operator with a single platform for transformation and convergence across all payment types and optimize support for B2C and B2B customers.

Netcracker will deploy converged rating & charging, online charging system (OCS), product catalog, configure, price, quote (CPQ), partner management, sales automation, self-service portal, CSR desktop, customer journey management, loyalty management and other components to lower TCO, accelerate time to market and provide a premium digital experience.

Commenting on the project, Zain Saudi Arabia's chief executive officer, Eng.

Sultan Bin Abdulaziz Al-Deghaither, said, "We want to ensure that the customers' digital experience matches our multi-award-winning 5G network. We are therefore looking forward to updating our legacy BSS infrastructure to unlock transformation and accelerate our evolution for years to come. Netcracker's full suite of pre-integrated solutions, precise delivery and extensive expertise will enable us to sustain rapid growth, achieve improved customer experience and deliver new innovative products in the 5G era."

"Zain Saudi Arabia exemplifies innovation, disruption and growth in its exploration of 5G," said Benedetto Spaziani, general manager at Netcracker. "We are very excited to embark on this new chapter as we help Zain Saudi Arabia redefine customer experience, create new revenue streams and fully leverage 5G."

Formula 1 Ooredoo Qatar Grand Prix is the new name for Qatar's first-ever F1 Race



Ooredoo Group will be the title sponsor of Qatar's first-ever Formula 1 race, which will be officially named the Formula 1 Ooredoo Qatar Grand Prix. The announcement was made at a press

conference at the Losail International Circuit in the presence of Sheikh Mohammed Bin Abdulla Al Thani, deputy group CEO and CEO of Ooredoo Qatar, Abdulrahman Al-Mannai, president of Qatar Motor and Motorcycle Federation (QMMF), Stefano Domenicali, CEO of Formula 1, and Jean Todt, president of the Fédération Internationale de l'Automobile (FIA) who joined the event virtually.

The Formula 1 Ooredoo Qatar Grand Prix, set to be held at Losail International Circuit in Doha on 19-21 November 2021, will be the inaugural event of an 11-race hosting deal between QMMF and Formula 1. Excluding 2022, when Qatar is set to host a major international football event, the hosting deal will take place over 12 race seasons.

Commenting on the sponsorship, Aziz Aluthman Fakhroo, managing director of Ooredoo Group, said, "We are delighted that Qatar will be the host of such an important event on the global sporting calendar. As Title Sponsor, Ooredoo is honoured to have been given the opportunity to support the QMMF in bringing Qatar its first ever F1 race. We have a long history of supporting major sporting events, in line with our corporate social responsibility strategy, and we are tremendously proud this history will now include the Formula 1 Ooredoo Qatar Grand Prix. We extend our thanks to our partners Formula 1 and QMMF for their trust in Ooredoo and look forward to an incredible race weekend. I wish all the talented competitors the best of luck."



An Jian, president of carrier network, business group, Huawei Middle East

Build networks at the lowest OPEX and deploy 5G without extra OPEX

In recent years, carriers in the Middle East have launched ambitious digital transformation strategies. These are largely in line with national digitization agendas, such as the UAE Digital Government Strategy 2025 and programs within Saudi Arabia's Vision 2030.

Large-scale 5G construction is an important part of this digital transformation. However, within 5G network development, carriers often face challenges such as high energy consumption in a growing number of 5G sites, as well as greater network management complexity. According to our studies, the energy consumption of each 5G site has increased by around 30%-40% on average compared with that of a 4G site. Furthermore, today 2G, 3G, 4G, and 5G devices often coexist on a carrier's network, making it increasingly complex.

As a result, achieving network evolution at low OPEX while reaching carbon-peak and neutrality targets has become a vital strategic objective for Middle East carriers in the 5G era. We at Huawei have identified a number of strategies to help carriers on this transformation journey.

The reality is that OPEX reduction is not a single-point issue. It requires systematic insight, analysis, and implementation. Traditional carrier networks mainly rely on third-party

consulting firms to gain insights into OPEX. However, consulting firms may not have a deep enough understanding of a carrier's network.

Often, the biggest challenge in reducing OPEX is to accurately identify live network issues. The NOHI (Network OPEX Healthy Index) model classifies carrier network OPEX into seven categories – electricity, air conditioning, fuel, FLM (First Line Maintenance), NOC (network operations center), NPM (network performance management), and rent. It has identified 14 key factors that affect network OPEX and has developed benchmarks applicable to the Middle East to gain refined insights into OPEX. Compared with traditional insight methods, this innovative approach increases insight accuracy by 50%–80%, shortens the analysis period from 20 days to three days, and controls the evaluation error to below 5%.

In addition to the model, we have also looked specifically at how to best deploy 5G without extra energy consumption. The Huawei PowerStar Platform, for example, identifies 30% more cells for energy saving with MR-based inter-site coverage

identification. In addition, the AI-enabled dynamic network energy saving algorithm achieves an optimal balance between energy-saving and user experience, helping carriers improve site energy efficiency without compromising KPIs.

By simplifying networks, 5G can be deployed without extra rents or frequency spectra. Now, one cabinet can house 2G/3G/4G/5G devices at one site, facilitating site acquisition and reducing rent. Indoor sites can be changed to outdoor sites, negating the need to rent equipment rooms and auxiliary facilities. Huawei has also launched the ADN (autonomous driving network) and GDE (General Digital Engine) intelligence platform to help carriers achieve cloud-network synergy and reduce OPEX in the 5G era.

Reducing OPEX and achieving carbon neutrality means that carriers need to innovate and explore target networks from multiple dimensions. In the end, carriers in the Middle East will find that Huawei end-to-end business solutions help them to build target networks at the lowest OPEX to promote the healthy development of the telecom industry. **TR**



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Etisalat highlights rapid growth of SmartHub data centres

Etisalat's SmartHub community of customers is witnessing a massive growth, mainly due to its diverse and complete ecosystem offering an ideal environment for interconnecting and its proximity to regional end users, said Ali Amiri, Group Chief Carrier and Wholesale Officer, Etisalat.



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. 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," Amiri said.

SmartHub is a trusted digital enabler for global customers from various industry verticals including, telcos, OTTs, cloud players, content delivery networks, financial services, and gaming platforms. It also has direct access to multiple independent subsea cable system, interconnecting Europe, US, Asia, Middle East and Africa, which makes it capable of serving more than two billion people within 30 milliseconds latency to guarantee a superior customer experience.

SmartHub is the largest hub of submarine cable landing station in the region, allowing access to a list of wholesale services including data, voice, mobile, and satellite teleport

services as well as Internet and IPX Exchange and offers flexible services and pricing models.

Recently, Etisalat was recognised as 'Best Regional Data Centre Operator' at the fifth annual Carrier Community (CC) Global Awards ceremony in Berlin.

The 'Best Regional Data Centre Operator' award recognises an entity with a unique service or an initiative that demonstrates the most effective and new service or solution and can illustrate the business benefits derived from it.

Commenting on the award, Amiri said, "Through our commitment to excellence and innovation, Etisalat's SmartHub became one of the fastest-growing wholesale data hubs in the regions it serves including the Middle East, Africa and Europe. SmartHub is a key element of the digital infrastructure in the region, and will continue to offer its customers a world-class service that meets their evolving requirements."

Etisalat SmartHub is a multiservice carrier-grade wholesale data centre in Fujairah, The SmartHub ecosystem currently has three facilities, namely

SmartHub Fujairah 1, SmartHub Fujairah 2, and SmartHub Dubai.

Etisalat is currently building a fourth SmartHub facility in the UAE, which is expected to enter service in the first quarter of 2022. The new facility is set to increase Etisalat's capabilities and global capacity to meet its international clients' growing needs for infrastructure across Asia, Africa, Europe, Middle East and the Americas.

With the expansion, Etisalat's Carrier and Wholesale Services 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. **TR**

The SmartHub ecosystem currently has three facilities, namely SmartHub Fujairah 1, SmartHub Fujairah 2, and SmartHub Dubai



Dr Alper Turken, senior vice president service provider, Asia Pacific and Europe, Middle East & Africa

Modern FTTH challenges require a fresh look at infrastructure

The appetite for FTTH networks seems unlimited right now. The ongoing trend of more powerful network connectivity in the home was greatly accelerated by the global pandemic, as homes became offices, schools, shopping malls and more—all connected to the world by their provider's infrastructure. Exponential growth of FTTH deployments is key to meeting these needs.

Extending the fiber network is a massive undertaking, one magnified by ongoing labor shortages and the complexities inherent in neighborhood deployments—and no two deployments are exactly the same. Operators are caught between skyrocketing demand and limited deployment labor. CommScope has engineered a new way for these operators to increase FTTH deployments right away, quickly and economically, with a new fiber enclosure and terminal solutions that are built for simplicity and extremely high levels of customization.

75% fewer components, 50x the configuration options

Our NOVUX™ portfolio is the only end-to-end FTTH platform with an inherently modular architecture that allows operators to scale and shape their networks as they evolve. This portfolio leverages a flexible, modular, and backwards-compatible architecture that allows operators to adapt and scale to a wide variety of field applications, and includes hardened terminals and compact closures, as well as SEC and SRC specialty closures.

NOVUX enables operators to use 75% fewer components than existing solutions—and delivers 50 times the number of configurations available today, reducing deployment costs and complexity at the same time.

The system is designed with sustainable practices for packaging, labeling, and installation equipment, and it features class-leading innovations like CommScope's Octopus sealing gel, which offers

protection in harsh environments while allowing easy access for upgrades and regular maintenance.

NOVUX builds on tried and tested technologies

NOVUX closures and terminals are built on the tested foundation of CommScope's Fiber Optic Splice Closure, FIST Modular Splice Closure, and Multi-Service Terminals (MST) solutions, which have earned the trust of leading operators around the globe.

NOVUX is designed from the ground up for optimal simplicity and customization to help operators deploy FTTH quickly, with less skilled labor and reduced cost complexities. James DeCoe, CommScope VP, Network Connectivity, had this to say about the NOVUX introduction last June: "Our NOVUX portfolio is all about giving our operator customers the highest degree of agility and flexibility in their growing fiber deployments. The new NOVUX range allows operators to maximize their network and respond quickly to changing market conditions and high-volume demand. These solutions deliver unprecedented ease of installation today, with the flexibility to ensure that the network meets tomorrow's needs. Furthermore, CommScope offers our customers the security of a dedicated, agile global supply chain built on common platform designs and processes."

The NOVUX portfolio was designed with direct input from multiple network operators around the globe. It represents a step forward in fiber deployment solutions and is made possible by CommScope's ongoing process of feedback and innovation for the world's leading networks.

This customizable portfolio covers every connection, everywhere it's needed. It includes:

- NOVUX hardened terminals offer the widest variety of technologies available from a single platform: single and multi-fiber, splitters, optical tap, fiber indexing, and on-demand hybrid configurations in a minimized footprint for optimal port count and terminal size.
- NOVUX compact closures are the ideal solution for FTTH distribution and drop applications, helping providers prepare for the future. Using state-of-the-art technology, the closure is protected from harsh conditions by CommScope's Octopus gel seal, which simplifies re-entry for field installers and gives operators peace of mind.
- NOVUX SRC closures are the ideal fiber closure for repair, network extensions, and house demarcation, enabling the agility and flexibility to use it in last-mile fiber network applications, both above and below ground.
- NOVUX SEC closures provide an ideal solution for applications where underground work is difficult or impossible. When used with the new CommScope retractable fiber cable, this solution brings together advanced patented technologies and proven high-performance standards, while enabling rapid deployment for horizontal mounting on a building's outer façade.

As the portfolio expands, CommScope will roll out additional NOVUX fiber solutions to meet the needs of global service providers, because if anything is certain, tomorrow's FTTH challenges will require CommScope-level innovation to solve them. **TR**



Moiz Baig, cyber security advisor,
Nokia MEA

5G security: a must to the overall architecture from the start

In an exclusive interview to *Telecom Review*, Moiz Baig, cyber security advisor at Nokia MEA talks about different aspects of 5G security: challenges, best practices and frameworks, “zero-trust” approach, and guaranteeing a secure 5G network for customers.

5 G has gained a strong traction among the leading operators across the globe including in the Middle East and Africa. At this juncture, what are the main security challenges of 5G networks Nokia sees, being an expert in network security space with advanced security solutions?

It is estimated that billions of devices will be connected to the 5G network in the coming years. Many of these devices will be low power sensors, wearables and small devices used in various industries. 5G increases wireless capacity by 1000 times, connects 7 billion people and 7 trillion Internet of Things (IoT) with zero perceived down time.

Realizing network as a service and the diversity of 5G use cases will make securing the network more complex. Availability, confidentiality and integrity of all users as well as management and control functions need to evolve to cater to: dynamic networks, multiple players involved in service delivery, wide variety of devices (including IoT), users and applications.

Multiple logical networks, so called network slices, will be running on the shared 5G infrastructure. This complexity leads to a large attack surface. Moreover, the huge number of connected devices also means that the network may be exposed to massive attacks by such devices, and they become infected by malware and abused by an attacker as a botnet for carrying out attacks such as distributed denial of service (DDoS) attacks. With 5G, vulnerabilities in the network may have more serious consequences than was the case with previous generation telecom technologies due to diversity of use cases. In addition, the convergence of telecom and IT infrastructures, services, and operations, require a more holistic and broader look at 5G security than before.

How can the security of 5G networks be guaranteed? What are the best practices and frameworks that can be adopted?

5G networks must support a very high level of security and privacy for their users (not restricted to humans) and their traffic. At the same time, networks must be highly resilient to

all kinds of cyber-attacks. To address this two-fold challenge, security cannot be regarded as an add-on only; instead, security must be considered as part of the overall architecture and built into the architecture right from the start. Based on a secure architecture, secure network function implementations are also essential to ensure a high security network. Security assurance methods are therefore crucial so that operators can ensure the required security level for different network functions.

5G networks complying with the 3GPP security architecture will provide multiple protection measures, including:

- Authentication and authorization mechanisms between network and devices and between network elements of a single or different network.
- Cryptographic protection of traffic on the various network interfaces.
- Temporary identities and concealed identities to hide the subscribers' permanent identities in the communication over the radio interface.
- Secure environment inside the

(physically exposed) base stations to ensure a secure boot and protect sensitive data.

A “zero-trust” approach is often considered as the best security concept in 5G. Do you agree?

The importance of having a zero-trust approach in 5G is crucial given the vast majority of critical use cases it aims to address impacting both humans and industries alike, however, given the built-in layered security associations within 5G, the needs for zero trust is reduced.

The 3GPP 5G framework defines network security features supporting a zero-trust architecture approach in the three key domains: network access security, network domain security and service-based architecture (SBA) domain security.

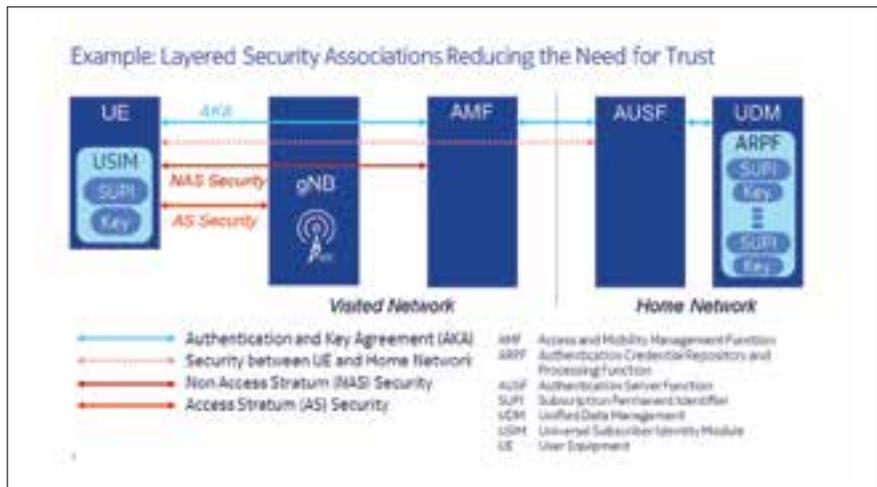
The network access security features provide users with secure access to services through the device (user or an IoT device) and protect against attacks on the air interface between the device and the radio node.

Network domain security includes features that enable nodes to securely exchange signaling data and user data, for example, between radio and core network functions.

The 5G SBA is built on web technology and web protocols to enable flexible and scalable deployments using virtualization and container technologies and cloud-based processing platforms. SBA domain security specifies the mechanism for secure communication between NFs within the serving network domain and with other network domains.

How can Nokia assist in securing its customers’ 5G networks?

Most of the new security functions that are defined in the standards are mandatory to support, and optional to use. Vendors are required to implement mandatory 3GPP defined security features. However, due to a variety of reasons (e.g. operator budget restrictions, different legislations in different countries, risk acceptance exercises) some network



Security Consulting Portfolio
 We help our customers to securely evolve their 4G/5G critical network with a telco-specific risk assessment or enable Security Operations.

“Our broad cybersecurity knowledge and deep Telco/5G expertise allows us to develop next-gen cybersecurity to protect CSP’s services and networks - holistically not only one product”

Benefits

- Unmatched 4G/5G critical network security know-how
- Unique tools and capabilities to lead digital security transformations to 5G SBA
- Experts to enable and optimize analysis and workflows for 5G Security Operations

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operators are not using or configuring the security functions available to them thus, weakening network security.

This can expose the network and its users to unnecessary risks. Operators should conduct a risk assessment justifying the adopted security decisions. Reporting of such decisions may also be part a regulatory requirement.

Nokia Security Advisory Services is helping its customers address complex security challenges while rolling out 5G networks in accordance with global and regional regulatory security requirements, addressing the skill gap that exist particularly in the ability to assess 5G security controls.

Key deliverables of security advisory services are listed but not limited to the below:

- Joint security assessments across customer teams to build a current security profile based on established frameworks.
- Advice for design, architecture and implementation, hardening against regulator telecom security framework and compliance.
- Mapping of security controls to regulatory and global framework compliance such as NIST and 3GPP NESAS.
- Tangible recommendations based on target profile creation across all domains of a 5G network to be able to close 5G security gaps that may exist.

In the end, the customer benefits from a newly established 5G security baseline across its network domain, having a clear view of the potential gaps in its 5G security posture and visibility, and mitigation of security issues. **TR**



Eyad Abu Khorma, founder - CEO Naitel

Eyad Abu Khorma set to make Aqaba the real neutral digital hub of the Middle East

With the leadership of Eng. Eyad Abu Khorma and his extensive international experience in the technology and telecommunications industry, a new digital hub is underway. The Aqaba Digital Hub is set to benefit not only Jordan, but also all the Middle East region, profiting from the presence of big CDNs, international operators, new submarine cables, and OTTs coming to the region.

A

qaba Digital Hub will complement the ongoing mega projects happening near Jordan and will solve major issues related to

connectivity and colocation facilities in the Middle East: the first is the Intranet connectivity between Middle Eastern countries (high prices and unavailability of networks); and the second is the lack of real neutral telecom hubs with fully open access policy in the region.

In an exclusive interview to Telecom Review, Abu Khorma elaborates more on how Aqaba will resolve these two issues in order to allow people to collocate and cross-connect, similarly to the best practices in the European markets.

The "Aqaba Digital Hub" project has seen the light not so long ago. Can you tell us more about the main objectives of this project, how was it conceived, and what region will it benefit?

The "Aqaba Digital Hub" plan was conceived after over 25 years of working in all aspects of the telecom industry in the MENA region. With the experience we gained in the industry, we were able

to identify what I like to call the 3 W's: What, Where, and When.

For that, Aqaba Digital Hub came with a set of projects which include hyperscale datacenters, internet exchange point, cable landing station, teleports, and other, in a bid to provide to Middle Eastern countries the much needed neutral setup with an open access policy.

But why Aqaba in particular? For those eager to know the answer, Aqaba showcases a very strategic location. Being on the crossroad of three continents, the city is positioned to be the proper access and proper international gateway to Jordan and Middle Eastern countries.

In addition, we plan that all platforms we will host in the future, like the VSAT among others, will be made available in one location, a model of a one-stop-shop for all these facilities, governed by open and neutral access.

NaiTel, Aqaba Digital Hub's telecom arm, acquired the first-ever internet exchange license in Jordan. Why you were keen to acquire this license and what were the opportunities that it has unlocked?

Having a neutral internet exchange point in Aqaba will add value to the overall plan and project we're developing in this city.

In Jordan, around three years ago, we lacked a regulatory framework to operate the activities of internet exchanges and it is not until recently that regulators in Jordan released new regulatory framework and licenses.

AqabalX is another milestone we are adding to the Aqaba Digital Hub in order to enable its users to enjoy direct peering with existing OTTs, operators and neighboring operators, CDNs, and gaming centers all in one location.

Can you tell us more about the 35D Datacenter? Is it another part of Aqaba Digital Hub?

In order to be able to show the value of Aqaba as a location, we've started with the concept of promoting the availability of datacenters in Aqaba.

35D is our existing, first, and only carrier-neutral Uptime Tier-3 certified data center in Aqaba and the first data center outside the capital city of Amman. It was built to serve both the market demand for colocation and disaster recovery sites, and the current needs of Aqaba Digital Hub projects, namely hosting Naitel's fiber infrastructure, establishing the Aqaba internet exchange, and welcoming international businesses looking to host and collocate immediately in Aqaba.

Indeed, the existing datacenter translates most of the objectives and strategies we are building for Aqaba Digital Hub. However, the 35D is just a small scale of the bigger data center we are currently developing over 30000 SQM land in Aqaba.

What will the new submarine cable announced by Google and Sparkle add to the country's connectivity?

Aqaba Digital Hub will form the landing facility of the new Raman project, part of the Blue-Raman submarine cable announced by Google and Sparkle, and will provide cable landing station services, colocation services, and fiber connectivity between Europe and Asia. It is noteworthy that it will feature 16 fiber pairs and it is planned to be operational in 2024.

This new cable comes to add value to the country's connectivity seeing that Jordan had only one old cable in service. It puts as well the country on the international connectivity map and adds huge capacity for both telecom and technology sectors in Jordan.

With all the efforts you're deploying, where do you see your business going in 5 years?

Over 7 years ago, when we used to share our thoughts and plans among people around us, some of them used to not take us seriously and others thought it was impossible to achieve. Yet, we carried on with our plans, and today we are proud that we successfully completed the first phase of the project despite the region's instability and all the challenges that covid-19 brought to us. Therefore, we are now more confident than ever that we are on the right track in building Aqaba Digital Hub and becoming the gateway for the Middle East, translating the real meaning

of a neutral facility and open access policy, platform and network.

Who will be your partners in the development of Aqaba Digital Hub and how were you able to overcome any obstacle that came along the way?

We are in discussion with some potential partners; however, the doors are always open to welcome every technology partner and anyone who can contribute and add value to this project in order to build a real neutral facility in the Middle East.

Today, we're working on cooperating with all operators within the Middle East as the objective from Aqaba Digital Hub is to complement what already exists in the market, cooperate with operators and add value to Jordan and all the neighboring markets.

In our journey, it is likely to face some obstacles as it is natural to any entrepreneur. However, we never lose faith and always find a way to redirect our projects to the right path and make them happen. The key is a good cooperation and transparent communication with everybody. 



AqabalX is another milestone we are adding to the Aqaba Digital Hub





Cengiz Oztelcan, CEO, GBI

GBI empowers digital economies by being a preferred and trusted infrastructure partner

Founded in 2008, GBI is a global cloud, connectivity, and content enabler that owns and operates a smart and fully managed network. GBI's multilayer terrestrial and subsea cable meshed network bridges the East to the West through the Middle East, empowers businesses, connects societies, and contributes to the region's accelerated digital transformation. That said, *Telecom Review* had the chance to talk exclusively with GBI CEO, Cengiz Oztelcan, to shed light on GBI's growing prominence in the region and globally.

A s a global cloud, connectivity and content enabler, how was GBI able to support businesses throughout the Covid-19 pandemic?

The pandemic accelerated digital transformation timelines massively and it's been our job at GBI to support businesses in this journey. In particular, the shift to remote working has shaken up industries across the globe. Enterprises now need access to the best-in-class solutions spanning on-premises and the cloud, and every corner of the decentralised network, must be underpinned by quality connectivity.

As part of this journey, there has been and continues to be a rising demand for more bandwidth, which coincides with a need for low latency and highly reliable connectivity. Indeed, according to the recently released Analysys Mason whitepaper, in the member states of the Gulf Cooperation Council (GCC), the estimated number of individuals using the internet grew at a CAGR of 8% from 38 million in 2014 to 56 million in 2019, while in the same period, the use of international bandwidth increased at a CAGR of 46%. With users now requiring global networks to support mission critical tasks and an ever-more diverse range of use cases, GBI is dedicated to ensuring the most direct route between

endpoints to provide lower latency and optimised connectivity.

Subsea cables are the backbone of modern communications and are of vital importance to economics across the world. Responsible for carrying the majority of the world's data and voice transmissions, there are more than 390 in operation globally. GBI's Smart Network, a multilayer terrestrial and subsea cable meshed network, has been crucial in helping support businesses throughout the pandemic. Moreover, GBI's unique geographical positioning in the Middle East is ideal to bridge the East to the West and the North to the South, meaning we can support enterprises in the region and beyond. We're incredibly proud to be

a global network provider connecting people, communities, and businesses.

GBI has been very active in terms of partnerships as of late, with partnerships like Equinix and Versa Networks. Can you address the new deployment for GBI at the Equinix data center in Oman? Also, what are GBI's plans for partnerships and how important are they to the company's future?

At GBI, we understand partnerships are one of the key factors that contribute to our future growth. Collaboration opens the door to better interconnected regions that benefit end-users, carriers, and enterprises alike. GBI is a carrier's carrier and is dedicated to the success of our partners and their customers. Carriers are the backbone of any nation's digital economy, which is why we take our role in supporting these carriers seriously and recognise we are an integral player on each of their journeys.

In terms of our partnership with Equinix, we're really excited to be expanding collaboration and establishing a new deployment for GBI at the Equinix datacentre in Oman. GBI has been connected to Equinix datacentres in Amsterdam and Frankfurt since 2015 and this is taking our partnership to the next level. As we know, due to the pandemic, users are demanding more content and a superior digital experience more than ever before. Moreover, we have seen the rise of new innovative technologies such as edge networks, and GBI along with its partners are working hard to ensure this is a success in the region and beyond. GBI and Equinix are fully prepared for future innovation as the next wave of digital transformation gathers momentum. Together we are fully committed to serving our Gulf and Middle Eastern customers.

The telecommunication industry is a large space in which many different technologies converge to meet complex customer requirements. As a result, we have seen many businesses collaborate, and in the future, GBI plans on doing the same by partnering with satellite businesses to meet complex market demands and expand our capabilities.

What goals were you able to achieve this year and what goals have you set for 2022?

The dedication of our network operations centre (NOC) team and our collaboration with suppliers and partners allowed us to mediate the challenges that came with COVID-19 and provide the best service for customers at an incredibly demanding time. This year, we have proven that we are one of the most connected carrier's carriers in the region with all routes covered, but we are always striving to provide more for our customers. High quality connectivity as in ensuring low latency and secure and reliable connections, require continued investment in cable infrastructure which is something we are continuously prioritising.

Security is also one of GBI's top priorities now and for 2022. Our goal is to ensure protection to our customers from the rising hacks in the region and globally. That's one of the reasons why we recently reaffirmed our partnership with Versa Networks and are continually working on developing our SASE capabilities. Together, we are fully committed to delivering exceptional products to the Middle East and beyond. As more businesses adopt a digital-first approach to their operations, there is a need for networking capabilities that provide agility, flexibility, quality, and security. Forward-thinking and security conscious enterprises are turning to GBI seeking a solution to their cloud, networking, and security challenges.

For 2022, GBI intends and has ambitions to contribute to the FIFA World Cup 2022, taking place at our base of operations, Qatar. We appreciate the importance of delivering the first event of this magnitude in the Middle East and are well prepared to contribute to the success of this event.

Seeking expansion and improvement, where are you looking to grow your footprint? What are some of the improvements you have made to your cable system? What are some of the future improvements you plan on making?

GBI has plans to expand our product offerings to both satisfy customer requirements. Innovating in products

customized to meet new complex customer requirements, with variable bandwidth options. There are various low latency usage areas across multiple verticals such as but not limited to dynamic e-learning platforms, video gaming, digital payments, surveillance systems, and telesurgery. GBI is continuously developing products underpinned by our GBI Smart Network, that will be able to support these innovative technologies.

With regard to the GBI Smart Network, our network and engineering teams are consistently looking for new opportunities to further our automation goals, specifically looking at software designed principles, effectively making our "Smart" network smarter. GBI is also considering widening our network footprint, by looking at various expansion opportunities in Africa.

Lastly, GBI is ensuring business continuity in the case of cable cuts through diverse routing options and in-built redundancies in GBI's Network. GBI is and will continue to solidify our position both in the region and globally as a trusted global network provider, providing top-tier connectivity, connecting people, communities, and businesses.

How do you ensure you remain a partner of choice for telecom operators and ISPs all around the world?

GBI is extremely focused on being a customer-centric business and we pride ourselves on our innovative customer service strategy. For that reason, partnerships are of utmost importance to us. We prioritise our customer success which in turn allows us to build on our own and, put simply, this makes for a preferred business partner.

GBI plays a significant role in supporting digital transformation journeys across the globe by providing a trusted platform that is a foundation for innovation. This, coupled with our extensive international footprint via our GBI Smart Network, means we provide quality connectivity that enables sectors across the board to explore and develop new technologies. As such, telecom operators and ISPs turn to us as the provider they can count on. **TR**

Nokia exhibits innovations for a more productive, sustainable and inclusive world at Expo 2020 Dubai

Nokia announced that it is demonstrating advanced technologies, including 5G, Internet of Things (IoT), Artificial Intelligence and Augmented Reality/Virtual Reality at the Expo 2020 Dubai for six months from 1st October 2021 to 31st March 2022. As part of the Finnish pavilion, Nokia presents several use cases that enable society to be more productive, safer and sustainable for everyone. The demos are in line with the vision of the UAE Government to build a green economy for sustainable development.

Nokia's demonstration of the LuxTurrim Smart Pole shows how the pole can be leveraged for a range of smart city use cases such as Covid awareness detection, weather/air quality monitoring, smart lighting, infotainment, public safety and more. The smart pole is an ergonomic and compact solution that integrates a 5G base station, sensors, video cameras and other devices into a light pole. In addition, Nokia showcases a hologram using 5G technology to remotely deliver messages from Nokia executives from Finland to the visitors at the expo on specific dates to be booked in advance.

In Expo 2020 Dubai, where more than 180 countries are participating in the first global expo held in the

region, Nokia's demonstrations cover several key areas, including critical communications, public safety, autonomous transportation, and health and education, among others. Finland, one of the happiest nations in the world, as per the UN's World Happiness Report, has chosen the theme of Sharing Future Happiness for its pavilion, and at this pavilion, Nokia is demonstrating technologies that that help create a more sustainable, equitable and happier world.

Commenting on Nokia's participation in the expo, Rima Manna, head of the Middle East market unit, Nokia MEA, said, "We are excited to participate in Expo 2020 Dubai, the first such massive expo in the UAE, and showcase our innovations that are aligned with the Government's focus on the green economy. Finland is at the forefront of adopting the principles of circular



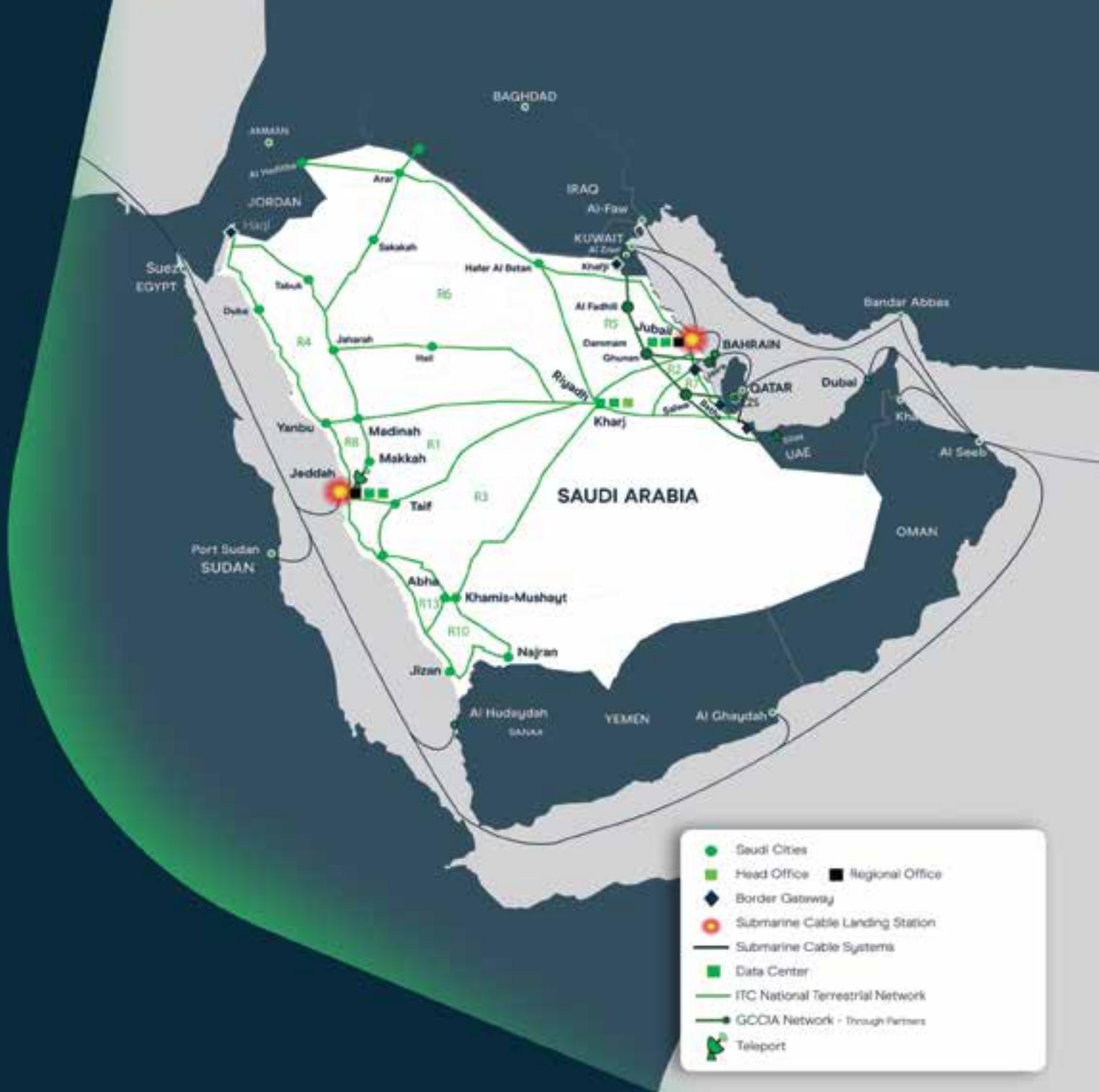
Rima Manna, head of the Middle East market unit, Nokia MEA

economy for a sustainable world. We are proud of our Finnish heritage and to demonstrate disruptive technologies that help the world act together and increase people happiness." **TR**



Nokia's demonstrations cover several key areas, including critical communications, public safety, autonomous transportation, and health and education, among others





Salam, Always-On Network

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





Mr. Ardalan Gardi, CEO, Fastlink

Fastlink fulfills in actions to become the green power pioneer in Iraq towards its "Net Zero" green vision

Fastlink has announced that over 40% of its LTE network has deployed the state-of-the-art green hybrid power technology to tackle the power shortage and realize "0" D.G operation. Its Network OPEX has been significantly reduced by 25% since 2019.

Fastlink, a leading network services provider in Kurdistan Region of Iraq, has committed to provide customers with excellent communications technology services, building high-quality networks. Back in 2019, Fastlink's network OPEX suffered from the insufficient power generation nationwide in Iraq, diesel gensets are widely used powering the telecom load due to the frequent power failure. It's estimated that over \$6,000 has been spent per year on diesel consumption and D.G maintenance for each single LTE site. To solve the network pain point, Fastlink and Huawei initiated a joint-innovated project as "0 D.G target network".

In the project, Fastlink introduced the hybrid power system which contain the high-performance lithium battery as core technology, and thanks to the super charging system and battery capability, power system realize with minimum one hour fast charging while the commercial power is available in a short time. And due to the highest density design for both rectifier and battery, Fastlink is able to expand more battery in only one cabinet to realize longer backup without adding additional cabinets on site. After the hundreds of sites modernization in the first phase in 2019, the hybrid power is taking 100% the load when outage occurs and D.G operation at most of sites

is completely reduced to 0. After one year of verification, Fastlink has benefited from the saving performance and started the second phase of modernization in the first half of 2021. Millions of dollars were saved in the past 2 years, and over 10M tons of CO2 emission has been reduced by this green project.

Mr. Ardalan Gardi, CEO of Fastlink, was invited to an interview with Telecom Review to talk more about the "0 D.G Network" strategy and "Net Zero" green network vision.

Could you please tell us more about Fastlink's green strategy and the vision of "Net Zero" network?

The Paris Agreement has released the signal that all countries, associations and individuals must take action to reduce the CO2 emission to create a sustainable world. As our social responsibility, Fastlink aims to adopt green power solution to reduce the D.G frequent operation caused by unstable commercial power, not only to reduce our network OPEX greatly, but also to reduce the CO2 emission generated by diesel consumption to contribute to the green industry. As per GSMA's initiatives, I believe that Fastlink would become the Net-Zero network model in the region by putting our efforts into the green network modernization gradually in the future.

Fastlink has modernized over 40% network with high efficient power solution to save D.G operation since

2019, Could you please share some highlights of this project?

Fastlink used to have thousands of sites powered by diesel gensets, which cost extremely high OPEX due to the high consumption of diesel and frequent maintenance. In 2019, Fastlink was working closely with Huawei for our green case, and for this project, the joined-team had carried out deep study on the business case before the project was implemented. As per the estimation, the ROI for the modernization takes only 1.5 years. At the same time, Huawei provides the high efficient power solution that helps Fastlink accomplish nearly 0 diesel genset operation with unique features, to meet its target and requirement. By reducing the D.G operation significantly, our site OPEX is largely reduced, and we create much less D.G pollution and noise in the neighborhood and our nation.

What are your future plans for the green strategy?

In my opinion, Fastlink will be dedicated to keep providing green energy to our telecom infrastructure. We commit to bring greener technology to the industry such as solar renewable power, wind power etc. With the development of the technology, clean energy is believed to play the main role in paving the way to net-zero network. Plus, Fastlink will keep working with its partners to study new cases for any possible solution. We are confident that we will build the greenest network in the region of Iraq. **TR**



Data replications: why use them?

Data loss through cyber breaches has become the primary concern for most enterprises, making information management a tough call for modern IT network managers. The importance of safeguarding data has resulted in the growth of the data loss prevention (DLP) market particularly in light of increased public awareness about data privacy and security. DLP market revenues are projected to double from \$1.24 billion in 2019 to 2.28 billion by 2023. Moreover, increasing data transmission traffic leads to unwarranted capacity loads on the networks, affecting the capex and opex for the mobile operators. In times of disaster, organizations are left with traditional backups to rely on. However, the problem is, with increasing data, the backup to tape becomes too burdensome, requiring higher costs and operational overhead for the smooth functioning of business processes.

Data replication is a useful component in backup and disaster recovery strategies to minimize the risk of data loss as effective safeguarding of information assets has become a primary, if not an unavoidable concern.

Why replicate the database?

The process of data replication aims at storing the primary or original data in multiple locations to improve data availability and accessibility as well as to improve system resilience and reliability. For instance, for some reason the original database (DB) goes down or is compromised and inaccessible, having a replica will help in tolerating faults by enabling a failure-free execution and preventing downtime. In some cases, replicas can take over and become the primary DB so that businesses are not disrupted. Another advantage is that having replicas will help reduce network latency. Accessing files from diverse geographic locations puts strain on the network for transmission. Proximally located replicas will enable faster access and less capacity demand. Moreover, it is common practice as the primary DB handles all the updates, replicas can be used as lead replicas whereby other DBs can be used for directing lead queries. With replicas, distributed analytics teams can work on common projects for business intelligence and in turn improve applications performance and improve systems scalability. Data replication also enables the distribution and data organization for test systems that need quick accessibility.

Replication lag

Replication lag occurs when the secondary DB cannot keep up with the updates occurring on the primary DB. Consequently, there are chances that unintended changes get replicated in the logs and modify the version of the database.

Synchronous, asynchronous and semi-synchronous replication

There are 3 categories of data

replication. Synchronous replication products usually write data to primary storage and the replica simultaneously. As a result, the primary copy and the replica always remain synchronized. In this method, the replication lag is zero and the data remains consistent in the system. However, on the flip side, the performance can be affected because every write will have to wait for all the replicas to get updated and acknowledge to the write issuer. In the case of asynchronous replication products, the primary database will send the write message to all the replicas but it does not wait for acknowledgment from any of the replicas before completing the write command. The advantage of this approach is that the write operation becomes quicker; however, the disadvantage is that if any of the replicas fail and do not get updated, the system will encounter inconsistency. The third approach to data replication is semi-synchronous. In this method, as soon as a new writ is issued, the primary DB will update it to all the replicas and will wait for only one of the replicas to acknowledge. Once an acknowledgment is received from any of the replicas, the primary database completes the process. All of these replication approaches will depend on the various business processes that they will be used for.

To backup or replicate?

Both backup and replication processes are used to make the copies of the primary database. The basic difference being that replication is a singular copy of the data and not a versioning copy, while the backup is a versioning copy, which captures the system and its history that can be revisited at later dates. With replication, all changes to your primary data are immediately replicated; however, organizations use snapshots to capture versioning but over time, the retaining snapshots consume large amounts of storage and become expensive to maintain, and once the storage limit is exceeded, viewing the data at a point in the past before the snapshots taken are lost. Snapshot

management thus becomes another hurdle to overcome in this strategy.

Despite the shortcomings, experts feel that the best option for a rapid return to service for businesses is the complete replication of primary data at a new location. In effect, this method eliminates the need to rebuild the data structure and function and instead creates a replica of the data structure and sites whereby service providers can offer a quick business continuity management (BCM) and planning to get businesses back on track in far less time. Although deemed an expensive solution, the data replication approach to data recovery seems to strike a balance against the business interruption likelihood posed by today's hyperconnected networks and rapid workload migration to the Cloud. **TR**



DLP market
revenues are
projected to double
from \$1.24 billion in
2019 to 2.28 billion
by 2023





Business in motion: 5G experience in the Middle East

The adoption of 5G technology in the Middle East has been evident, particularly with Abu Dhabi, capital of the United Arab Emirates (UAE), being ranked among the fastest capitals globally.

GCC Arab states are known as 5G pioneers, with governments and regulators working hand-in-hand in gearing mobile operators to deploy some of the world's first and fastest 5G networks in Bahrain, Kuwait, Oman, Qatar, UAE, and Saudi Arabia. By now, Gulf countries have led the way in adopting 5G technology and the continued rollout of 5G-powered services showcases their roles as digital technology leaders.

While the COVID-19 pandemic may have slowed down 5G deployment in neighboring countries, 5G leaders in the GCC Arab states have continued to invest in the technology. These include leading telcos Etisalat, du, Ooredoo, and Zain KSA. All have significantly stepped up their investments in coverage expansion to bring the best 5G experience to more users.

No doubt that the 5G technology revolution is poised to change the digital-centric society within the Middle East. According to GSMA Intelligence,

5G adoption will reach 16% in the GCC Arab states by 2025, with around 20 million connections. Consistently setting the stage for 5G in the region, the financial impact in MENA by 2034 is also expected to equal \$15.4 billion, representing a 1.1% increase in GDP.

Recent benchmarks

Majed Sultan Al Mesmar, director-general of the Telecommunications and Digital Government Regulatory Authority (TDRA) mentioned that "5G is a huge leap forward and a powerful catalyst for digital transformation

bringing new opportunities to various industries and the country [UAE].”

The availability and access to the super-fast speeds on 5G is a huge accomplishment that reflects the continuous efforts of operators and their innovative approach during today's 'new normal' scenario. In a June 2021 OpenSignal report, UAE and Saudi Arabia had the fastest 5G experience in EMEA. The average 5G download speed scores recorded were 274.9 Mbps and 237.4 Mbps, respectively.

As for umlaut's report, Zain KSA emerged on the top of 5G network and data performance across Saudi Arabia networks using the latest 5G-supported smartphones. The reliability of Zain's 5G data services showed 98.8% success rates, delivering the highest 5G peak data rates and strongest pure 5G coverage in Riyadh — at least 27% more than its competitors.

Ooredoo was also hailed as the fastest mobile network in Kuwait during the first and second quarters of 2021 while Zain has once again won Ookla's Speedtest Award for 'fastest fixed internet' in Saudi Arabia during the same period. In terms of the best 5G services provided, Zain KSA also ranked first in the Communications and Information Technology Commission (CITC) Q1 2021 Meqyas report.

5G verticals and enterprise business

An ecosystem of technology and business innovation is empowered by 5G across various vertical markets. These include automotive, energy, government, healthcare, manufacturing, public transportation, and many more.

Targeting guaranteed long-term value, operators must nurture 5G use cases for enterprises. Operators' success in the enterprise market will depend on how the enterprise needs and 5G capabilities complement each other and the pace of digital transformation. Among the most sought-after use cases of today are enhanced mobile broadband, 5G-based fixed wireless access, massive Internet of Things (IoT), and ultra-reliable and low-latency communications.



Etisalat

Etisalat launched its first commercial 5G wireless network in May 2018 and was ranked the fastest mobile network globally in 2020 — the first telecom operator in the MENA region to achieve these technological breakthroughs. As the official premier partner to Expo 2020 Dubai, from October 2021, Etisalat's network will also provide the most advanced digital and telecom services to millions of visitors that are expected to be roughly 300,000 users on peak days.

Etisalat has a proven history of supporting economic growth and innovation by bringing the latest technologies and broadband services. To clearly illustrate, Etisalat has been at the forefront of healthcare innovation and cybersecurity through its subsidiaries Etisalat Digital and Help AG and offers customized industry solutions to vertical markets like smart government, energy and utilities, financial services, transportation and logistics, and retail and distribution.

With 5G, Etisalat would drive enterprise business further to achieve financial and economic growth. Looking ahead, Etisalat is also one of the operators globally that is making its steps towards 6G through the introduction of new features, capabilities, and use

of millimeter frequencies seen in 5G. The achievements by Etisalat today in 5G coverage, multi-access edge computing (MEC), AI, and automation platforms, to name some, make it competitive for this later trend.

du

As for du, its 5G for Business motto is focused on the idea that 5G networks are the next step in delivering higher speeds and capacities, as well as in providing a more advanced mobile business future. With speed, reliability, and capacity being the pillars of business responsiveness, 5G can empower businesses to be connected to the world around them — customers, partners, and potential investors.

Ready to serve small and large businesses as well as governments, du has devices, fixed and managed services, and digital transformation initiatives that could respond to their digital needs.

Furthermore, du and Nokia signed an MoU to identify and develop new 5G use cases for enterprises in the UAE. These will focus on improving operational and cost efficiency through digital transformation for various industrial sectors like manufacturing, transport, shipping, aviation, energy, and health across the country.

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With these in mind, 5G experience will be maximized and available for all, creating an interconnected society that benefits a fast, reliable, and inclusive coverage.

Zain KSA

Zain's 5G enables breathtaking new experiences that will reshape lives by offering the most comprehensive coverage in Saudi Arabia equipped with the most advanced 5G and other ICT technologies. Businesses in today's world have an increasing dependency on the internet and require reliable and robust connectivity.

Focusing on the importance of 5G for businesses, this telco would invest in more 5G B2B applications and use cases that will unlock vast opportunities in numerous fields of business from AI to the Internet of Things (IoT) technologies.

Planning to pursue further growth opportunities, Zain KSA realizes that 5G has become a vital lifeline for driving economic growth and achieving sustainability across all industries, mainly with the prevalence of IoT, AI, cloud computing, and Big Data. Expanding their range of scalable solutions to businesses, they aim to reinforce their position in the world of digital innovation.

Ooredoo

Ooredoo is one of the first operators that did a pre-commercial 5G launch in Kuwait in 2018. Following this, it is conducting the first international 5G video call in the MENA region between Ooredoo's Kuwait and Qatar headquarters. Ooredoo Kuwait is as well among the first operators in the Middle East to deploy dynamic spectrum sharing (DSS) to fast track the deployment of its 5G network.

In its efforts to provide a superior internet experience, Ooredoo's 5G home internet, mobile, and business plans provide improved network coverage, stability, and faster download speeds. As part of its ambitious roadmap, Ooredoo plans to construct around 2,000 5G stations over the next five years to benefit various vertical markets – from scientific research

and healthcare to entertainment and education.

A key prediction in its latest whitepaper emphasized the importance of managed end-to-end IoT service in enhancing products, solutions, and customer engagement. Under a managed IoT regime, it is essential for devices and operational support to work together to ensure positive business outcomes.

What to look out for

In line with the ongoing developments for 5G, the experience for all is majorly influenced by the three factors below. These must be paid attention to as more people become connected and the digital world strives to be more open and scalable than before.

Fixed wireless access

Through FWA, operators can reach the unconnected by providing advanced connectivity and services to subscribers still utilizing wireline infrastructure. To harness FWA's market potential to the fullest, operators and the mobile industry as a whole should ensure interoperability and flexibility.

A Nokia-commissioned research revealed that fixed wireless access is actually a highly desirable 5G use case. Hence, owners and operators of 5G networks can use this to their advantage to improve the return on investment of their networks.

Spectrum resources

To build a 5G network with the best possible performance, operators need access to a large amount of harmonized spectrum. To help 5G services scale in the 2025-2030 timeframe as well, significantly more spectrum will be needed. It is vital that operators have the capability to deliver on the potential of 5G including up to 20 Gbps peak data rates and 100+ Mbps average data rates as well as area traffic capacity of 10Mbit/s/m² (for machines).

For such capabilities, significant amounts of spectrum over the 5G era must be made available. Therefore, additional allocations and awards in new mid-bands (e.g 6 GHz), mmWave

bands (e.g 40 GHz) as well as low bands (e.g 600 MHz) should be done.

Cybersecurity

Due to the spur of new services, architectures, and technologies brought by 5G, security challenges, as well as higher user privacy and protection requirements, are on the surface. The telecom industry needs to prepare and understand the diversified scenarios relying on software and redefine 5G security standards and technologies to address the associated risks.

Various telecom players such as virtual mobile network operators (VMNOs), communication service providers (CSPs), and network infrastructure providers must address key end-to-end operations namely radio transport, telco cloud, IoT and devices, security operations, and slicing security. 



The availability and access to the super-fast speeds on 5G is a huge accomplishment that reflects the continuous efforts of operators and their innovative approach during today's 'new normal' scenario



Etisalat's SmartHub data centres poised as trusted digital enablers



Etisalat's SmartHub community of customers is witnessing massive growth, mainly due to its diverse and complete ecosystem offering an ideal environment for interconnecting and its proximity to regional end-users,

according to Ali Amiri, Group chief carrier and wholesale officer, Etisalat.

SmartHub is a trusted digital enabler for global customers from various industry verticals including, telcos, OTTs, cloud players, content delivery networks, financial services, and gaming platforms. It also has direct access to multiple independent subsea cable systems, interconnecting Europe, US, Asia, the Middle East and Africa, which makes it capable of serving more than two billion people within 30 milliseconds latency to guarantee a superior customer experience.

SmartHub is the largest hub of submarine cable landing stations in the region, allowing access to a list of wholesale services including data, voice, mobile, and satellite teleport services as well as Internet and IPX Exchange and offers flexible services and pricing models.

Etisalat SmartHub is a multiservice carrier-grade wholesale data centre in Fujairah, The SmartHub ecosystem currently has three facilities, namely SmartHub Fujairah 1, SmartHub Fujairah 2, and SmartHub Dubai.

Etisalat is currently building a fourth SmartHub facility in the UAE, which is expected to enter service in the first quarter of 2022. The new facility is set to increase Etisalat's capabilities and global capacity to meet its international clients' growing needs for infrastructure across Asia, Africa, Europe, Middle East and the Americas. With the expansion, Etisalat's carrier and wholesale services have set a benchmark in the region, and are 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.

stc Group female workforce grew 120% in 3 years: report



stc Group's female workforce grew by 120% between 2018 and 2020, occupying 30% of the leadership positions, according to Oxford Business Group's report.

The Sustainable Digital Transformation Report, issued by

OBG's Information Department highlighted Saudi Arabia's improvement in the digital government services, noting that the wireless broadband project achieved its main objectives for the year 2020 by reaching about 2.6 million users at 500,000 homes. It also reported that the project provide ICT services with an average internet access speed of 10 megabytes per second for each home. The report pointed out the initiative launched by the Ministry of Communications and Information Technology in which stc's reliable networks provided about 43% of the population of the five largest cities with 5G network coverage.

Focusing on environmental, social and governance (ESG) information, the new report indicated that stc Group has made progress in the sustainability file with a 16% decrease in electricity consumption and an 18% decrease in consumption of petroleum

materials across its buildings in 2020 compared to 2019.

The rate of manufacturing SIMs from recycled plastic increased by 100% in 2019 and 2020, (compared to 33% in 2018). The group also made effective contribution to the digital empowerment of various government and private sectors during the pandemic.

The report also provides an in-depth analysis of Saudi Arabia's long-term vision for economic progress and diversification, along with the ESG principles that support such progress and diversification, in an accessible and easy-to-navigate format, supported by key data and infographics.

The report recognizes steps taken by stc to combat the threat to cybersecurity, as the Kingdom ranks first in the region for its commitments in cybersecurity and 13th globally.

du provides integrated telecom support to advanced tech group



du, from Emirates Integrated Telecommunications Company (EITC), announced a new partnership agreement with EDGE Group, the advanced technology group for defence and beyond.

The Memorandum of Understanding (MoU) between the two parties ensures that du will provide a host of cutting-edge and value-added telecommunications services to EDGE Group and its employees.

Karim Benkirane, chief commercial officer, du and Trais Al Ketbi, president – support services, EDwGE, signed the MoU at a virtual event to officially kick off the collaboration.

Commenting on the partnership, Benkirane said, "Working with organizations from different verticals and providing the support they require to realize strategic objectives is a long-standing principle that we are always proud to honor. Much like du, EDGE Group is a reputable UAE organization that not only makes invaluable contributions to enable a secure future, but also partners with public and private sector entities where it makes business sense. As such, we are delighted that this partnership has been finalized, and look forward to utilizing our resources and expertise to ensure EDGE Group is backed by our services and solutions moving forward."

Under the terms of the agreement, du is to implement several priorities to ensure EDGE Group is equipped with the quality telco solutions and infrastructure it requires across its expansive operations. This includes centralizing the company's information technology (IT) processes to

drive security, efficiency, speed, business continuity, and reduced costs for all EDGE Group entities and employees. The cost reductions will be achieved through economies of scale – du's value offers on mobile corporate services and DR will facilitate EDGE Group in meeting this objective. Furthermore, the telco is to leverage EDGE Group's purchase synergies to standardize and streamline processes.

As for Al Ketbi, he stated, "For an advanced technology group such as EDGE, it is crucial and critical that our telecommunications network should offer superior quality, unmatched reliability, and uninterrupted service – especially during these digital-first times. We are confident that with this strategic alliance and partnership, du's dedicated corporate support team, and tailored and flexible solutions will enable us to meet industry-leading responsiveness levels and efficiency standards."

Virgin Mobile Middle East and Africa achieves net zero carbon emissions in 2021



Virgin Mobile Middle East and Africa (VMMEA) announced that it has achieved net zero carbon emissions across all of its own operations. Through its partnership with Dubai Carbon Centre of Excellence, VMMEA gathered and assessed available data under Scope 1 (direct), Scope 2 (indirect energy), and Scope 3 (indirect value chain) to calculate its group-

wide total emissions. The emissions calculations were used to create and implement sustainable processes for the year-on-year reduction of VMMEA's overall emissions.

As part of its ongoing sustainability efforts, VMMEA has already eliminated more than 50 tonnes of single-use plastic across the region, with operations in Oman and Saudi Arabia now being 100% single-use plastic free. This was mainly achieved by removing 100% of the single-use plastic from all SIM packs and recharge cards, with further sustainable steps taken that have resulted in a 75% decrease in plastic used for each SIM card by reducing the size of SIM cards from a credit-card sized to a quarter card, and an estimated 30-40% reduction in energy consumption by using recycled paper for SIM card packaging.

VMMEA has also implemented sustainable practices in its offices,

such as policies related to business travel, reduce and reuse, energy efficiency, and sustainability awareness and education, and invested in nature-based solutions to offset its remaining Scope 1 and Scope 2 emissions annually, thereby reaching net zero carbon emissions. VMMEA will plant thousands of trees in school locations through Carbon Footprint Ltd. to not only support local wildlife habitats, but also help educate children understand the importance of natural eco-systems that will help everyone on our planet thrive. For each tCO2e offset, a tree is planted with an additional tCO2e offset from a VCS (Verified Carbon Standard) Tree Buddying project to guarantee a reduction in emissions.

Further in its quest to achieve a negative carbon footprint, VMMEA will launch an app feature enabling all customers to offset their carbon footprint with each purchase via the Virgin Mobile app later this year.

Ooredoo Kuwait ties up with drone company for innovative offerings



Ooredoo Telecom has partnered with New Market owned Falcon company, one of Kuwait's leading drones technology and service provider to launch the latest drone products and accessories in the Kuwaiti market, with the best packages offered exclusively to Ooredoo customers, including an opportunity to purchase the DJI Mini SE drone starting from KWD 6 per month, through the MyOoredoo app, Ooredoo Kuwait website, or by visiting any of the company's branches throughout Kuwait.

DJI Mini SE weighing under 249 grams, which is as light as an average smartphone, makes it exceptionally portable and is the lowest and safest weight class of drones, with

exemptions in drone regulation in many countries. Moreover, the DJI Fly application offers a simple and intuitive user experience, enabling the end-user to create cinematic shots with just a few taps. It also includes a flight tutorial, a feature to help customers get started with DJI Mini SE quickly and safely. The DJI Fly app offers a variety of creator templates that generate exceptional videos with just a tap.

The signing ceremony was attended by Abdulaziz Yaqoub Al-Babtain, chief executive officer; Mijbil Alayoub, senior director, corporate communications; Thamer Al-Tahous, government and VIP relations among others from Ooredoo while New Market was represented by Bader Jeragh, CEO; Hussein Ezzedine, business development manager, among others.

Commenting on the new partnership, Abdulaziz Yaqoub Al-Babtain, chief executive officer, Ooredoo Kuwait, said, "We take pride in our partnership with New Market, which goes in line with our strategy that aims to offer the

latest innovative products to all our customers. Today, capturing real-time pictures has become critical for photography lovers, and the public in general in which the value of such pictures is drastically increasing in which they are now competing to provide the best creative visual content. By providing the DJI Mini SE, Ooredoo customers will be able to go creative which leads to conveying a more enjoyable picture of life and all that goes on around us."

Falcon's efforts began in 2014 when the distinguished team gained paramount brand confidence in the Drones technology, such as DJI, and became the first authorized distributor in Kuwait. With its best of industry services, Falcon was able to be the leader in Kuwait and the region in providing the latest services and technology related to drones. Less than a year later, Falcon was appointed in 2015 as the first certified workshop in the Middle East, and in 2018, the first authorized store was opened in the Middle East.

Vodafone, ITU to address global mobile internet access gap



Vodafone Group and ITU, the United Nations' specialized agency for information and communication technologies, launched an initiative to address the global digital divide. In line with the Broadband Commission Global Targets 2025 on affordability and connectivity, the new Working Group's aim is to provide an additional 3.4 billion people the ability to access and use the internet through a smartphone by 2030.

The Broadband Commission Working Group is co-chaired by Vodafone Group CEO, Nick Read, and ITU Secretary-General Houlin Zhao, while launch partners also include the Alliance for Affordable Internet; GSMA; the government of Ghana; Safaricom; Smart Africa; Vodacom Group; and the World Wide Web Foundation. For Houlin, achieving the Broadband Commission Global Targets requires a multi-stakeholder approach. Through this

newly established Working Group, they can help address the challenges posed by the COVID-19 pandemic and ensure that smart devices are put in the hands of those who need it.

With mobile broadband (4G) networks now covering 82% of the population of low-and-middle-income countries (LMICs), the mobile usage gap is 6x larger than the mobile coverage gap. In line with this, the new Working Group will identify policy, commercial and circular-economy interventions to increase smartphone access. Vodafone Group, in particular, has committed to launch two pilot projects on device affordability as part of this process. To coincide with the creation of the new Working Group, Vodafone, Vodacom and Safaricom have also published the second 'Africa. Connected' report on accelerating 4G for sub-Saharan Africa.



The next G wave:

6G is coming soon

Heading into 2022, telecom companies have an even larger role to play as the fifth generation of wireless technology begins to gain traction among enterprises and consumers alike. 5G deployment has been on the fast track with nationwide efforts done to achieve mainstream adoption. In fact, in four-year time, 4.41 billion people will be able to use 5G services. This represents 53% of the world population, according to an analysis by Bankr.

Every 10 years or so, we are seeing a new generation (G) of communications technologies. Within this period of time, defining the concept, verifying the feasibility, and standardizing the selected technology are performed.

As early as now, the evolution of 5G networks to the next frontier which is 6G is already underway. Global players involved in preparation for the sixth-generation technology include China, Japan, Finland, Europe, Korea, and the US.

Targeted to be launched by 2030, interest in 6G technology is growing



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and many pundits believe that the first commercial 6G deployments could be done as early as 2028, with the first standard technology to be released around 2026.

Trials and interest

As 5G gradually spreads around the world, tech giants are already preparing for the next G wave. Asians seem to be at the forefront with LG, Samsung, and Huawei hitting the headlines with their 6G initiatives.

The world's first, LG transmitted 6G terahertz (THz) signals over 100 meters in an outdoor setting in collaboration with Fraunhofer-Gesellschaft, Europe's largest applied research lab. Hence, in August 2021, the data efficiently traveled between Fraunhofer Heinrich Hertz Institute (HHI) and the Berlin Institute of Technology in Germany.

"The success of this test demonstrates that we are ever closer to the successful application of terahertz radio communication spectrum in the upcoming 6G era," said Dr. I.P. Park, president and CTO of LG Electronics.

Two months earlier, Samsung also demonstrated the 6G THz prototype in collaboration with the University of California, Santa Barbara (UCSB). In the over-the-air (OTA) test conducted over a 15-meter distance, the wireless communication prototype system achieved real-time throughput of 6.2 Gbps.

"Working together with UCSB, we have been able to overcome many technological challenges and develop this new THz proof-of-concept system to explore 6G use cases and deployment scenarios," said SVP Charlie Zhang, an IEEE fellow and head of the standards and mobility innovations team at Samsung Research America.

With these successful tests, it is worthy to note that the first recognizable 6G trial came in November 2020 when China launched the world's first 6G satellite into space to conduct communications tests.

In Huawei's case, executives have spoken about their commitment towards 6G, with research initiated way back in 2017. In April, Huawei's rotating chairman Eric Xu announced their plan to launch 6G networks in 2030. These networks are expected to be 50 times faster than 5G. Accordingly, Xu noted that 6G has a more complicated technology environment than 5G. Thus, it can greatly impact multiple ICT technologies like cloud computing, blockchain, and big data.

"Huawei will define 5.5G and research 6G at the same time in the next few years, and it is a test of the whole industry's imagination and creativity whether 6G can surpass (5G and 5.5G technologies)," Xu wrote.

The advanced technological stance of the company is affirmed by its Founder and CEO Ren Zhengfei, stating that Huawei will push ahead with developing 6G wireless technology despite its current US crackdown. "Our research into 6G is preparation against a rainy day, and we aim to seize the ground of 6G patents," Ren said at a gathering of in-house scientists, researchers, and interns in August.

According to a survey, out of around 20,000 patent applications for core 6G technologies (e.g communications, quantum technology, base stations, and artificial intelligence), China emerged on top with 40.3% of 6G patent filings. The US comes close second with 35.2%. Huawei is known to have filed the majority of the latest patents. This is not shocking as the company controlled 30% of the world's base stations in 2020.

In the Middle East, Etisalat has unveiled its ambitious 6G plans. "We are committed to bringing the latest technologies to UAE market to enable digital societies. As part of our vision and future technology planning, 6G is going beyond earth networks into space to enable new era of services and usage scenarios with terabyte data traffic resulting in extraordinary human-to-machine interaction. Etisalat is upgrading tools and capabilities of its R&D center to enhance the contribution towards 6G global standardization

within the international fora and alliances", said Haitham Abdulazzak, chief technology officer, Etisalat.

Abdulazzak said the excellent achievements done by the company with the fastest mobile network in the world for two consecutive years is a result of the long-term strategy paving the way towards 6G. These include 5G coverage, cloud-native, slicing, multi-access edge computing (MEC) development, AI and automation platforms, as well as high-fiber penetration.

Battle on 6G domination

The society at large still needs time to experience the full benefits of 5G. Nevertheless, the geopolitical race for the next wave of wireless technology has already started. For companies and governments globally, the first one to develop and patent 6G will be superiors in the next so-called Industry 5.0.

Though still roughly a decade away from becoming reality, 6G is expected to deliver the kind of technology that would bring the digital and physical worlds together –from real-time holograms to flying taxis and internet-connected smart machines.

As 6G research moves further along, experts from the Institute of Engineering and Technology (IET) urge city leaders to make their stance towards shaping the next G. Professor Will Stewart, chair of the IET's Digital Communications group, called the organization's '6G for Policy Makers' guide a "wake-up call" for stakeholders.

In this document, they tackled a new approach to 6G including its association to societal and global challenges, the scope of 6G, new 6G services within the fusion of virtual, physical and non-physical worlds, infrastructure priorities, and net-zero carbon emission goal.

"This endeavor is so important that it's become an arms race to some extent," said Peter Vetter, head of access and devices at Nokia Oyj's research arm Bell Labs. "It will require an army of researchers on it to remain competitive."



Primarily, China is set to play a key role in the formulation of new 6G standards. This is given the fact that the country has made great leaps in technology and industry development in 5G. Han Xia, chief engineer for the Ministry of Industry and Information Technology (MIIT), noted that in seeking to create a unified standard, "China will strengthen exchanges and cooperation among global 6G promotion organizations, enterprises, universities and research institutions to create a favorable environment for 6G worldwide".

No wonder that China has become the main source country for patent applications in the field of 6G. On the other hand, in the US, the Next G Alliance initiative, which counts Nokia, Verizon, and Qualcomm among its members, has announced its outlook for the 6G era wherein communications will likely be integrated with AI as well as VR/AR technologies.

Also competing for supremacy in 6G are Europe and South Korea. In March 2021, ITU-R's 6G Vision Group was launched, with Samsung Research's principal engineer as chair. The unit plans to develop technical requirements and recommendations through industry standards organizations like 3GPP to complete the 6G vision by 2023. Following this, around 2030, the global 6G standards will be approved based on the technologies that pass ITU-R's evaluation.

Additionally, the University of Oulu in Finland, under its 6G Flagship research program, has published the world's first 6G whitepaper. This document claims to open the floor for defining the 2030 wireless era. Moreover, the European Union has played a key role in standardization, including the establishment of a research group by the European Telecommunications Standards Institute (ETSI). In South Korea, Samsung and LG have already set up 6G development centers, while the government is expected to spend approximately KRW 200 billion (\$169 million) for five years (until 2026) to develop, secure patents, and form industry foundations for 6G.

In India as well, the Department of Telecommunications (DoT) calls for a collaborative model to work towards 6G spectrum studies. "There is a need to collaborate and work together for establishing infrastructure and organization for 5G and 6G spectrum studies, including jointly collaborating for technology implementation in the country," said A.K. Tiwari, member technology of DoT's Digital Communications Commission (DCC).

In a document TSDSI submitted in line with ITU-R's 6G vision, the body said that they will "steer research in India" to serve the IMT 2030 goals and continuously engage with "global standard bodies for harmonization of efforts". **TR**



Targeted to be launched by 2030, interest in 6G technology is growing and many pundits believe that the first commercial 6G deployments could be done as early as 2028



Largest Huawei Cloud data center operates over 1 million servers



The world's largest Huawei Cloud data center's phase 1 has already come into service. Located in Gui'an within the Guizhou province, it has an operational capacity of over 1 million servers, functioning as a major enabling facility for Huawei Cloud, Huawei BP&IT, and consumer cloud services.

Started being built in August 2017, the phase 1 construction area is approximately 480,000 square meters and is divided into three subareas.

All 51 buildings in phase 1 have been completed, with nine being used as the data center facility and the rest as auxiliary facilities.

The Gui'an Huawei Cloud data center is one of the two main cloud data centers in China (with a total area of 101.4 hectares). It was designed with green and intelligent technologies, making it environment-friendly, smart, and reliable. Its power usage effectiveness (PUE) is only 1.12, which leads the industry.

Estimates indicate that during full-load operations, the data center can save 1.10 billion kWh of electric power and reduce 810,000 tons of carbon emissions each year, which is equivalent to planting 35,670,000 trees each year.

Currently, Huawei Cloud has deployed five major data centers in China. Specifically, Gui'an data center and Ulanqab data center are deployed in the south and north of China,

respectively, with the others deployed in the Jingjinji Metropolitan Region, the Yangtze Delta, and the Guangdong-Hong Kong-Macao Greater Bay area.

As a whole, Huawei Cloud has rolled out over 400 cloud services and solutions, attracted over 20,000 partners and over 1.8 million developers, launched over 4,500 applications in the marketplace, and obtained over 90 global security compliance certifications. It has also launched cloud data centers in Singapore, Chile, Brazil, Mexico, and Peru, working with partners to provide services in 45 availability zones across 23 regions worldwide.

Furthermore, Huawei Cloud has been chosen by over 600 e-Government clouds and 80% of the top 50 Internet enterprises in its home base. In addition, it is utilized by over 30 national ministries and commissions, more than 220 financial customers, over 300 SAP cloud customers, and over 30 top automobile manufacturers.

Here's what we know about Aqaba Digital Hub



Located by the Red Sea and known as Jordan's only port city, Aqaba is on the vital route linking Asia, the Middle East, and Europe. Maximizing its potential, the Aqaba Digital Hub, an iconic project that will serve the growing demand for modern digital services in Jordan and the MENA region, was established.

Created by a group of Jordanian entrepreneurs, the Aqaba Digital Hub aims to capitalize on key digital growth trends that will ultimately benefit individuals, enterprises, and governmental organizations – not only in Jordan but the entire region. Taking this into consideration, digital transformation is an ongoing

phenomenon that requires high-bandwidth connectivity, internet exchanges, and data centers. In response, the Hub provides a broad range of services such as optimized IP exchange, online, satellite, fiber access, and data center for the underserved MENA region.

Among the Hub's notable accomplishments are hosting the first IP point of presence (POP) in Aqaba for two international telecom operators; building and operating the first tier-3 uptime certified carrier-neutral data center in Aqaba; operating the first fiber-optic network in Aqaba via its telecom arm "Naitel"; and setting up the first internet exchange (IX) point in Jordan.

To highlight, AqabaIX has attracted the National Information Technology Center (NITC), in addition to a number of regional and international internet service providers (ISPs) as well as

content delivery networks (CDNs) like Google, Packet Clearing House, and Subspace. As an instrumental tool in developing the local internet ecosystem, AqabaIX helps in optimizing and improving the quality of traffic flow, reducing latency, and improving cybersecurity.

Moreover, Aqaba Digital Hub was selected as the Jordanian hosting facility for the Raman submarine cable, a part of Google and Telecom Italia Sparkle's Blue-Raman submarine cable system. Through Aqaba, this new subsea cable would connect Asia with Europe.

In support of bringing the Aqaba Digital Hub into life, local authorities granted licenses and approvals to acquire 30,000sqm land in Aqaba to build a digital media city, a 5kw mega data center, a teleport landing station, and submarine cable landing station with beach manhole access.

du expands its nationwide data center footprint



du, from Emirates Integrated Telecommunications Company (EITC), has announced the official opening of two new data centers that will equip enterprises across the UAE with next-generation digital infrastructure.

Kizad Abu Dhabi and DSO Dubai will support clients' digital transformation aspirations and accelerate deployment providing agile, resilient, secure, and scalable solutions. The introduction of these facilities forms part of du's commitment to expand its nationwide data center footprint and provide local businesses with the infrastructure their workloads require in the evolving digital landscape.

Backed by proven infrastructure trusted by cloud service providers, government, and financial services,

du's purpose-built and carrier-neutral data centers eliminate digital transformation risks from any equation. The state-of-the-art facilities ensure enterprises benefit from a growing ecosystem of world-class infrastructure delivered with local knowledge and expertise, providing peace of mind that their data is stored locally at a lower cost and managed according to the highest required standards.

Fahad Al Hassawi, CEO at du, said, "As digital transformation continues to accelerate exponentially, those we serve require cutting-edge capabilities and infrastructure to realize their aspirations and deliver on their commitments to customers. At du, we are proud to uphold our support for the national enterprise community with these new facilities. The unveiling of Kizad Abu Dhabi and DSO Dubai is the latest representation of our enduring determination not only to drive innovation, but also provide enterprises with the tools they need to build comprehensive digital platforms crucial to present and future business success. The UAE's digital ecosystem and status as a regional enabler of digital transformation will be elevated

further by the invaluable impacts that come from these new facilities and we are grateful for the enthusiasm demonstrated by local enterprises."

Both Kizad Abu Dhabi and DSO Dubai have been designed with the latest power and cooling management technologies enabling best-in-class efficiencies and resilience. Both incorporate mission-critical, high kilowatt fault-tolerant power delivery and cooling, eliminating supply interruptions.

Certified with various accreditations, including Uptime Tier 3+ and PCI DSS (Payment Card Industry Data Security Standard), both data centers have been built from the ground up with security serving as the foundation to ensure the highest levels of logical and physical security.

With the respective launches of DSO Dubai and Kizad Abu Dhabi, du's portfolio of high-performance, hyperconnected data centers now includes five in total across Dubai and Abu Dhabi to provide clients with even greater reliability, redundancy, and flexibility to scale their presence and influence in world-leading facilities.

2Africa set to be world's longest subsea cable system



The 2Africa consortium, comprised of China Mobile International, Facebook, MTN GlobalConnect, Orange, etc, Telecom Egypt, Vodafone and WIOCC, announced the addition of a new segment — the 2Africa PEARLS branch — which extends to the Arabian Gulf, Pakistan, and into India.

The new 2Africa branch joins recently announced extensions to the Canary Islands, Seychelles, Comoros Islands, Angola, and a new landing to south-

east Nigeria. This extension will bring the total length of the 2Africa cable system to over 45,000 kilometers, making it the longest subsea cable system ever deployed.

As announced in May 2020, 2Africa was planned to directly bring seamless international connectivity to 1.2 billion people. With 2Africa PEARLS, an additional 1.8 billion people will be reached. In total, this subsea cable can serve 3 billion people, representing 36% of the global population. To further support a burgeoning global digital economy, the expanded system will serve an even wider range of communities that rely on the internet for services from education to healthcare, and businesses, providing economic and social benefits that

come from increased connectivity. As with other 2Africa cable landings, capacity will be available in PEARLS landings at carrier-neutral facilities or open-access cable landing stations on a fair and equitable basis, encouraging and supporting the development of a healthy internet ecosystem. Alcatel Submarine Networks (ASN) will be responsible for deploying the new system, utilizing new technologies such as SDM that allow up to 16 fiber pairs. On top of that, as it connects three continents terrestrially through Egypt, 2Africa creates unique connectivity by adding vital landing locations in Oman (Barka), UAE (Abu Dhabi and Kalba), Qatar (Doha), Bahrain (Manamah), Kuwait (Kuwait), Iraq (Al-Faw), Pakistan (Karachi), India (Mumbai), and Saudi Arabia (Al Khobar).



IoT adoption in the GCC

The Internet of Things (IoT) technology is revolutionizing the way we live, work and think. The hyper-connectivity of devices extending to everyday things has made possible many modern offerings such as connected cars, smart homes, intelligent healthcare and many others. IoT integration and internet penetration, especially with the deployment of 5G in the GCC region, have been successful in supporting new types of service delivery across sectors ranging from manufacturing, logistics and transportation to energy, etc. This boom in IoT adoption in the region can find a logical explanation in some interesting stats. In the GCC, approximately 60% are young populations under 30 years among which 64% owning smartphones.

Growth Drivers
 With such a majority of young, smartphone-yielding generation, there is a great demand for connected entertainment such as speakers, smart TVs, health wearables etc. Add to that the growth in smart homes with interconnected networks and robust construction activities across GCC countries, the presence of a thriving IoT

market is hardly difficult to imagine. IoT represents a model of the future of internet and is acknowledged as an ecosystem of connected devices, computing mechanisms and other items to exchange data/information to cooperate with greater ease and benefit from its monetization in the GCC.

Key players

Saudi Arabia: Saudi Arabia's IoT market has significantly grown since 2019 and is expected to continue the trend

in the next five years driven by strong urbanisation and industrialisation push in the kingdom, according to recent market research. Massive national projects such as NEOM, benefit highly from the data collection, data automation, and data operations enabled by IoT. The Saudi government is investing heavily on digital ecosystems that will increase the demand of IoT devices and further substantiate market growth. Not to forget that technological advancements in the IoT sector will also

support this growth. While addressing industry experts and stakeholders about the importance of an interconnected economy, Mohammed Al-Tamimi, governor of the Communications and Information Technology Commission (CITC) said that Saudi Arabia will see significant growth in all major areas of digital technology from Internet of Things (IoT) to cloud computing, taking the entire size of the ICT sector to \$27 billion by 2025.

Kuwait: ICT spending in Kuwait is estimated to grow at a compound annual growth rate (CAGR) of 10.2% between 2019 and 2024, reaching US\$10.1bn by 2024. Growth will be driven by the increasing adoption of advanced technologies including artificial intelligence (AI), big data, cloud computing and Internet of Things (IoT), according to GlobalData, a leading data and analytics company. The telecom regulatory authority CITRA seeks to develop the telecommunications sector in Kuwait to be at par with modern technological development of communications. Kuwait was one of the first countries in the world to accelerate the 5G technology by announcing the special frequency bandwidth of 3.5 GHz allowing mobile operators to test their networks to launch the 5G service in as early as 2019. In the same year, CITRA along with Réseaux IP Européens Network Coordination Centre (RIPE NCC) collaborated to promote the widespread adoption and deployment of IPv6 in Kuwait to engage all stakeholders in capacity building to facilitate digital transformation driven by new technologies such as the IoT.

United Arab Emirates: In 2019, almost two-thirds (75%) of companies in the UAE implemented IoT applications, benefiting on savings, new income streams and increased production efficiency.

The Dubai Internet of Things (IoT) Strategy covers six strategic domains, including governance, management, acceleration, deployment, monetisation and security to build the world's most advanced Internet of Things (IoT) ecosystem. The strategy aims to protect Dubai's digital wealth, encourage government departments to join the

emirate's smart transformation, and achieve the objectives of the Smart Dubai Plan 2021 to transition to a 100 per cent paperless government by unifying the data sources for the Dubai Pulse platform – Dubai's digital backbone. It opens new prospects for growth, improving overall efficiency across all sectors and opening up unprecedented economic and social opportunities for people in Dubai. The IoT strategy has set a three-year deadline to be executed in 4 phases. The first phase will focus on the implementation of IoT policies across government departments. The second phase seeks to harmonise efforts towards implementing the IoT Strategy and the third phase will focus on optimization before moving to the final 'blockchain journey' stage where the full integration of IoT policies and the first RoI of the strategy will have been achieved.

Qatar: Qatar Internet of Things (IoT) market is expected to record a CAGR of 32.65% between 2021 – 2026 as per recent market research. The country has initiated considerable innovation in IoT, virtual reality, robotics, 5G and IPv6. With high internet and smartphone penetration levels, the country boasts advanced technology-readiness and is poised to host some of the world's biggest mega events such as the Qatar World Cup 2022. Considering its adoption of new technologies, the World Economic Forum (WEF), in 2019, pegged ICT adoption score at 83.8% and ranked the country number 8 among 141 countries, accelerating IoT adoption in the country.

Bahrain and Oman: Bahrain was the first GCC country to issue standards for IoT connectivity. Bahrain encourages the utilization of the frequency band for IoT (NB-IoT) systems within the international mobile communication systems. Bahrain has contributed to the International Telecommunication Union to propose the utilization of the IMT spectrum for the narrowband IoT applications. Currently, there are many IoT initiatives adopted by different authorities, agencies and ministries in the kingdom. Meanwhile, Oman's Ministry of Transport, Communications and Information Technology has

signed a cooperation agreement with the National Energy Centre (NEC) to introduce the experience of smart cities and Internet of Things (IoT) in the Sultanate.

Key Challenges

Despite the benefits, IoT will need adequate and affordable wireless connectivity, interoperability, and common standards to be successful. IoT ecosystems design will need to focus on security, reliability, scalability, latency and the level of individual control on connectivity parameters. Since IoT is the storehouse of sensitive personal information, privacy and security of confidential data will remain a key concern area. Another area of concern in the integration of IoT with existing technology. All devices will need to tweak their architecture to connect to cloud services and other gadgets, resulting in complexity to connect to everyday objects. Last but not the least, internet connectivity to access and use IoT applications is not every one's privilege. Without collaborative concerted efforts to bring the unconnected to the fold, the implementation of IoT will remain an exclusive technology for the few.

Opportunities

Telecom operators must find ways to increase their role within the IoT ecosystem and capture a larger proportion of the revenue potential linked with IoT deployments beyond the connectivity and network management layers of an IoT value chain by offering solutions such as platforms as service (PaaS) for developers, as well as cloud and analytics solutions geared towards IoT projects. For instance, Ooredoo Qatar launched an IoT platform that enabled applications development and connected devices management for enterprises, along with real-time analytics and device security. Additionally, in the UAE, Etisalat and Orange have established an IPX peering point at Etisalat's SmartHub PoP to improve its international wholesale arm's range across partners in the region and meeting capacity demand for 4G and 5G connectivity. The Etisalat SmartHub/IPX peering platform will address both roaming customers and the IoT roaming business that require low-latency. **TR**

Huawei appoints Steven Yi as regional president for Middle East



Huawei has announced the appointment of Steven Yi as president for the Middle East at Huawei. In his role, he will work with both regional and global ICT ecosystem partners towards Huawei's vision to bring digital to every person, home, and organization for a fully connected, intelligent world. The appointment comes as Huawei continues to strengthen its leadership role in the ICT industry, supporting nations in the region with their post-COVID recovery through the expansion of open, secure, and innovative digital infrastructure.

"The Middle East and Africa region is an incredibly dynamic geography. Huawei has been proud to serve governments, telecom operators, enterprises, and consumers here over recent decades," notes Yi. "Today, national digitization plans around the fourth industrial revolution are truly breathtaking in their scope. With this in mind, Huawei will continue to invest in its partners and its people to serve the businesses of tomorrow, and assist nations in achieving their development visions."

Yi will be responsible for directing the company's operations across all countries and all Huawei business groups in the region. He will guide the company's strategic direction, cultivate high-level stakeholder relationships, and play an active role in supporting the adoption of Huawei solutions.

"It all starts with having a customer-centric mindset," adds Yi. "We must always deliver results while creating the best possible user experience for our customers. Huawei has been doing that successfully for more than 20 years in the region, and is committed to creating further value in a society empowered by connectivity and digital economy."

As a longstanding Huawei executive, Yi first joined the company in 1998. He is currently a member of the ICT infrastructure managing board, member of the supervisory board, and president of Huawei in MEA. He has previously served as deputy CFO, president of the sales & delivery finance management department, president of Huawei's America area operations, and general manager of the Huawei Pakistan representative office.

CommScope adds new solution to its Wi-Fi 6 gateway



CommScope has further expanded its industry-leading Wi-Fi 6 home network gateway portfolio with the release of its new Touchstone TG644x DOCSIS 3.1 cable gateways.

The TG644x gateway supports CommScope's end-to-end Low Latency DOCSIS (LLD) solution that establishes a fast lane for delay sensitive traffic such as online gaming, video conferencing, AR/VR from the home to the headend and back, and the enhanced capabilities of Wi-Fi 6 reduces latency and jitter in communications to the end device. The gateways support high split with a switched diplexer for flexible deployment capabilities to meet the demand for increased upstream capacity, such as using video conferencing for working and learning from home.

"By deploying the new TG644x gateways, service providers are providing subscribers with the confidence they will not drop a video call or miss an online lesson," said Ken Haase, vice president, product management, CommScope. "Gamers will be able to take advantage of lower latency, thus giving them the competitive edge by reducing lag or buffering."

The TG644x gateways allows service providers to deliver multi-gigabit data rates to and around the home and small business and enables reliable ultra-HD videos over Wi-Fi. These innovative Wi-Fi CERTIFIED 6 gateways are intended to serve as the hub of a subscriber's network and connect all IP capable devices (i.e., internet, data, voice, and video) throughout the customer's premises.

"With more people working and learning from home, all their connected devices are placing increased demand on the home network," Haase added. "With the enhanced performance and connectivity of our new Wi-Fi 6 gateways, service providers can provide their subscribers

with the ability to connect more devices to their network with enhanced reliability."

If additional coverage is required to light up dead spots, the gateways can be supplemented with CommScope's X5 Wi-Fi 6 extender to deliver high-performance and managed Wi-Fi coverage throughout the home. The gateways can also be managed with CommScope's HomeAssure Managed Wi-Fi solutions, providing optimized, high performance Wi-Fi coverage throughout the home. Furthermore, the TG644x gateways also support SNMP and TR-069 remote management protocols for reducing service providers costs and can be managed with CommScope's ECO Service Management solutions. It provides service providers visibility into the home network, and the ability to automate and control subscriber devices and experiences. CommScope is a global leader in these areas and has millions of devices under management. Haase added that several service providers have already selected CommScope's TG644x gateway, so look out for future announcements.

Huawei, Ooredoo extend collaboration for digital transformation



Ooredoo and Huawei signed a three-year contract, extending the five-year relationship between the two parties. Effective from January 1, 2022, Huawei will continue to provide operations and maintenance as well as network performance management services for Ooredoo as it continues to harness the latest digital technologies and position itself as a market leader.

"Our industry is changing faster than ever before, and by working with industry leaders like Huawei we are making sure we stay ahead of the curve. Our partnership, which began in 2012, will focus on optimizing our digital operations using state-of-the-art artificial intelligence and machine learning-based technologies and tools," said Dr. Ahmed Abdullah Al Abri, chief technology and information officer

at Ooredoo. "As we continue to accelerate our digital transformation and supporting the Sultanate's 2040 Vision, we look forward to launching even more innovative services to enrich our customers' digital lives."

Robin (Chen Bing), Oman Huawei GM, added, "Huawei and Ooredoo have had the privilege to work together for many years. This further collaborative step is an important milestone for both parties, marking the phase in the transformation into more automated and intelligent operations."

Ooredoo's aim has always been to provide its users with next-generation technologies that enhance their online experience. By continuing to invest in the latest infrastructure and with a growing number of partnerships and collaborations, it is placing Oman firmly in the global race towards digital innovation.

Nokia's patenting process gets ISO 9001 stamp



Nokia announced it has achieved ISO 9001 certification for its patent portfolio management by successfully completing the independent certification assessment of Nokia's patent portfolio management process, covering the entire lifetime of the patents.

ISO 9001 standard represent the world's best-known quality management systems, with over one million organizations independently certified worldwide. It provides a framework for organizations to ensure consistent results when designing, developing, and delivering products and services.

Commenting on the achievement, Jenni Lukander, president of Nokia Technologies, said, "Quality is a key priority in our patenting process. We set and apply extremely high standards when we evaluate and file potential patents, so we're delighted to be one of the first companies to receive this highly respected independent certification for its patent portfolio management."

Meanwhile, Karolina Lachi Kolarova, business unit director for certification from Bureau Veritas UK, who conducted the audit, said, "ISO 9001 helps businesses and organisations with their efficiency, improve customer satisfaction and is an important measure

of quality within the company's systems and processes. By adding their patent portfolio management activities into their ISO 9001 certification, Nokia has further demonstrated its commitment to high quality and continual improvement."

Nokia's industry-leading patent portfolio is built on more than €130 billion invested in R&D since 2000 and is composed of around 20,000 patent families, including over 3,500 patent families declared essential to 5G. Several independent third-party studies have ranked Nokia among the top for ownership of patents that have been declared as essential to cellular standards, including 5G. We continue to refresh the portfolio investing over €4bn in R&D last year and filing patent applications on more than 1,500 new inventions.

Nokia contributes its inventions to open standards in return for the right to license them on fair, reasonable and non-discriminatory (FRAND) terms. Companies can license and use these technologies without the need to make their own substantial investments in R&D.

Huawei calls global partners to join TECH4ALL digital inclusion initiative



Huawei has called for global partners to join the TECH4ALL digital inclusion initiative, which aims to build a more inclusive and intelligent world that leaves no one behind.

Huawei's TECH4ALL initiative focuses on four areas: driving equity and quality in education, conserving nature with technology, driving inclusion and accessibility in health, and using ICT to boost rural development. It focuses on digital technologies, application enablement, and digital skills, and works with global partners to promote and expand digital inclusion to help achieve the UN Sustainable Development Goals (SDGs).

At present, more than 60,000 teachers and students benefit from TECH4ALL projects in over 200 schools worldwide. Digital technologies have been deployed to improve resource management and biodiversity conservation efficiency in 22 natural reserves around the world.

UNESCO and Huawei jointly launched technology-enabled Open Schools, a three-year partnership program this project in July 2020 that is rolling out in Ethiopia, Egypt, and Ghana. The project explores future schooling models, contributing to UNESCO's global initiative on the future of education.

Vodafone Foundation's Instant Network Schools program, aims to bring high-quality education to refugees and host communities, with plans to connect 500,000 refugee students and their communities by 2025. Huawei is one of the partners for expanding connectivity to more schools in Africa.

Close the Gap's DigiTruck Program are green, solar-powered mobile classrooms

converted from shipping containers. They are equipped with recycled ICT devices and provide training for young people in digital skills. Huawei has supported this program in Kenya and France. Later this year, Huawei and Close the Gap will implement the project in Ethiopia.

Continuing the environmental track, Rainforest Connection and Huawei's Nature Guardian system, uses acoustics technologies to monitor endangered species and alert rangers to threats like illegal logging and gunshots. The Guardian platform supported by Huawei cloud is provides a lifeline for the nation's endangered Darwin's fox, fewer than 1,000 of which are thought to remain in existence.

Huawei believes that partnerships are the fuel that powers progress in TECH4ALL's environment and education domains, as well as in the initiative's other two domains – health and development.

Qualcomm, global semiconductor maker to develop premium 5G solutions



Qualcomm Global Trading PTE. Ltd., a subsidiary of Qualcomm Technologies, Inc. and GlobalFoundries (GF), a global leader in feature-rich semiconductor manufacturing have agreed to extend their successful RF collaboration on 5G multi-Gigabit speed RF front-end products for delivering the high cellular speeds, superior coverage, and

outstanding power efficiency in the sleek form factors users expect from the newest generation of 5G-enabled products.

"GlobalFoundries continues to lead in RF with feature-rich technology solutions for 5G," said Dr. Bami Bastani, senior vice president and general manager, mobile and wireless infrastructure strategic business unit at GF. "Our strong collaboration with Qualcomm Technologies includes sub-6 GHz to unlock everyday access to 5G, and cutting-edge mmWave technology to take 5G to the next level by delivering unmatched data speeds while continuing to provide the longest possible battery life for smartphones, computers, automobiles, network access points and many other 5G connected products."

Meanwhile, Christian Block, senior vice president and general manager, RFFE, QUALCOMM Germany RFFE GmbH said, "With accelerating demand for RF front-end products in a 5G world, robust low-power semiconductor solutions are critical. Our collaboration with GlobalFoundries, and their leadership in RF-specific, feature-rich foundry solutions, helps to ensure that we're able to meet the high-performance requirements of our cutting-edge 5G products."

This collaboration is the latest of several strategic initiatives for GF and is further evidence of the company's commitment to redefine semiconductor manufacturing innovation by delivering highly differentiated solutions.

Red Hat announces company's new standard for hybrid cloud automation



Red Hat, Inc., the world's leading provider of open source solutions, announced Red Hat Ansible Automation Platform 2 as the company's new standard for hybrid cloud automation. Refined for the evolving realities of computing at hybrid cloud scale, the latest version of the platform adds self-contained automation capabilities while shifting automation more deeply into the application development lifecycle.

Ansible Automation Platform 2 is fully restructured for a hybrid cloud-native world, making it easier for IT teams to address automation needs at scale

across varied environments and systems in a standardized way. With the automation controller (formerly Ansible Tower), users can more reliably and consistently scale automation on demand, taking a systematic approach to standardizing automation practices while helping to reduce automation irregularities across the enterprise.

Further addressing the need for automation at scale across the open hybrid cloud is automation mesh within Ansible Automation Platform. The capability connects disparate automation components together and provides status checks on automation environments across the IT estate. Automation mesh is designed to connect across diverse environments with dispersed networks for more flexibility and resiliency without sacrificing security, so enterprises can better adopt and scale automation.

Ansible Automation Platform 2 introduces the concept of automation execution

environments which deliver self-contained automation spaces that can be easily replicated and repeated across an organization. This helps teams scale and speed up the delivery of automation tooling across environments while also significantly reducing the operational overhead and complexity of maintaining a standard automation platform that spans the open hybrid cloud.

The Red Hat Ansible Automation Platform Operator integrates Ansible Automation Platform directly with Red Hat OpenShift, enabling smoother cloud-native deployment of automation clusters, easier management and migration of data and platform performance upgrades further cementing automation into cloud-native processes.

Ansible Automation Platform 2 Early Access is now available for all existing and prospective customers. Ansible Automation Platform 2.1 will be generally available in November 2021.

"We must set the standard for sustainable business practices," says Cisco VP MEA



Cisco commits to reaching net zero across all scopes of greenhouse gas (GHG) emissions by 2040, which includes product use, operations, and supply chain. This is 10 years ahead of when climate scientists say the planet must reach net zero to avoid the worst impacts of climate change.

Cisco's net zero goal will be supported by ambitious near-term targets, such as the current goal to reduce 60% of Scope 1 and 2 emissions by FY22

that is approved by the Science Based Target initiative (SBTi). Other near-term targets will cover the company's most-material Scope 3 categories, such as the use of sold products and supply chain emissions, and will be made public as they are finalized later in 2021.

This announcement marks a major milestone in Cisco's journey to power an inclusive future for all. Cisco's efforts to advance this purpose will encompass investments and initiatives related to closing the digital divide, advancing social justice, building partner ecosystems of impact, and setting and achieving ambitious sustainability goals like today's net zero commitment.

Cisco has been setting and achieving goals to reduce its GHG emissions at its facilities and across its supply

chain since 2008. Some of the company's strategies to reach net zero include continuing to increase the energy efficiency of products through innovative product design; accelerating the use of renewable energy; embracing hybrid work; investing in carbon removal solutions; and further embedding sustainability and circular economy principles.

For more than 15 years, Cisco has worked toward a sustainable future by reducing emissions, reducing waste, building more efficient products, and setting and achieving ambitious goals. It is worthy to note that Cisco has achieved 100% renewable energy in several countries around the world and is on track to reach its goal to use electricity generated from renewable sources for at least 85% of Cisco's global electricity by FY22.



Firing up a discussion on how ongoing innovation revolutionizes connectivity

Telecom Review, the Middle East's leading ICT media platform, held a webinar titled 'Revolutionizing Connectivity Through Innovation' on September 13, powered by SES, the world's leading connectivity provider.

The moderator of the virtual event was Andrea Faggiano, Partner, Telecom, Information, Media & Electronics Practice Lead, Arthur D. Little Middle East. Accordingly, C-level speakers within

the panel's sponsor company and leading telecom operators in the Middle East were featured as panelists.

These are namely Hamid Nawaz, general manager, Middle East & Central Asia, SES; Chra Hussain Arif, chief commercial officer, Asiacell Iraq;

Kamil Hilali, chief strategy officer, Zain Group; Georges Jaber, vice president, wholesale, BD, Salam Saudi Arabia; and Hani Askar, general manager global, Batelco.

Kicking off the live online conference was Toni Eid, Founder of Telecom Review and CEO of Trace Media, who

welcomed everyone present in this virtual panel and outlined the topics to be discussed by the industry experts such as delivering efficient network communication, satellite innovations leading the digital transformation journey, and achieving digital inclusion, among others.

As a brief introduction, Andrea mentioned how connectivity has always been a fresh topic as every five years, technology innovation can be seen within the industry. He shared how he began his career and related it to the subject matter at hand. "In those days where the moments are mobile, fiber and many things, the satellite industry at a certain point was almost doomed because more interesting technology was happening in the terrestrial. 20 years after, the satellite has never been more alive."

SES

Hence, Hamid Nawaz started the connectivity discussion from the satellite perspective. "In the case of SES, we aim to do extraordinary in space to deliver amazing experiences on Earth." As he expounded, they connect more than 300 large companies in 130 countries comprising of planes, ships, oil rigs, etc., restore connectivity after natural disasters, and extend the reach of mobile operators in 2G/3G/4G rollouts.

With today's use cases that require lower latency and high throughput, SES' innovation continues after acquiring O3b Networks and eventually launching O3b mPOWER, the first commercial communication satellites in the Medium Earth Orbit (MEO) system. Proudly, SES is the only satellite operator with commercially successful services in both MEO and GEO orbits.

Asiacell

Shifting the conversation, Andrea went over to Chra Hussain Arif to know more about Iraq's landscape in connectivity, technology, and satellite and how she handles Asiacell's commercial department. She affirmed that running any operation in Iraq is a challenge "because of the lack of

solid infrastructure for connectivity, regionalization, electricity issues, and political ups and downs."

In Iraq, Chra said that they are "currently running satellite connectivity but we also like to see the opportunity of tomorrow." Now, satellites that offer broadband internet services have been launched to reduce the cost of data. She believes that satellite connectivity will eventually require "continuous innovation and would help in spectrum and efficiency."

Zain Group

Andrea emphasized that Zain has changed its approach to connectivity by moving on to new assets and new types of technologies that were less present in the past. As per Kamil Hilali, fixed and wholesale are new areas that they are focusing on.

"Basic innovation has touched every aspect of the network," he added. With Zain supporting OpenRAN technology, Kamil mentioned that this makes more "space for innovation." SD-WAN is also explored by the company now, with the surge of subsea cable projects being observed as well. "All these innovations will offer us, hopefully, as Zain and as a provider, the flexibility to increase the capacity within our network, optimize the investments we will make and the time to market."

Salam

Georges Jaber underscored how everybody is now thinking about how to bring in "the latest connectivity to ensure productivity for various sectors like entertainment, transport, education, and healthcare." He pointed out that the open access system in Saudi Arabia allows Salam and other Saudi-based operators to offer fiber-to-the-home to any household in the Kingdom.

"Now, the competition is no longer on who can reach the household but more on the customer experience and who can provide more value-added services," he stressed. For the consumer side, Salam will comply with building 3,000 sites for the next three years to ensure 5G FWA coverage

and utilize its recently acquired MVNO license. For the enterprises, SD-WAN, fiber, and data center hubs that allow localization of content are put into use.

Batelco

Andrea noted that Bahrain's connectivity is being revolutionized from a market structure — BNET. Despite being small, this puts the country in a strategic position. Giving more pressure to small operators, "for you to stay in this game, you have to think beyond the connectivity, and not just the pipe itself," said Hani Askar.

In Batelco, there are a number of types of innovation they have considered: business model and technological change. They start to become innovative in the submarine space and the creation of Global Zone, a carrier-neutral transit zone, as well as the establishment of an internet exchange in Bahrain.

Aside from SES' satellite-focused services, the rest of the panelists — telecom operators — who are known connectivity enablers have spoken about how each of their companies has innovated their services to provide connectivity and more advantages to customers.

Both big and small countries still need to optimize technology further to bring in connectivity, with lots of changes existing in the industry. Moreover, panelists were also able to offer a unique perspective regarding digital inclusion and trends that would further strengthen connectivity offerings in the future. Besides, Andrea has also addressed various questions from the audience associated with digital transformation, FTTH, and 5G network.

Overall, the comprehensive discussion brought up within Telecom Review's panel highlighted the different actions being done within the industry to ensure connectivity and how, with innovation and increased demand by end customers — both consumers and enterprises — operators work hard to deliver value-added services (VAS) and transform into becoming digital service providers. **TR**



Telecom in metaverse:

A new space to connect and monetize

If you are a video game enthusiast or a sci-fi supporter, the idea of metaverse has most likely crossed your mind. This innovative term is a combination of the prefix “meta” (meaning beyond) and “universe”. Hence, it is typically used to describe the concept of a world where anything we can imagine can exist. Powered by the internet and virtual assets, it will be made up of shared 3D virtual spaces where people can come together to interact, engage, transact, and build upon a digital version of life.

With big tech companies like Microsoft and Facebook making a big noise about metaverse, the claim that a virtual reality universe is the future of the internet is yet to be proven as true. As the world becomes more interconnected than before and the COVID-19 pandemic pushes people to go digital in all ways possible, a universe beyond the physical realm seems enticing.

It took years for nearly 80% of humans to use landlines, automobiles, personal computers, and cellphones – and this will be a similar approach when it comes to jumping into this new world. To work, a global metaverse requires global internet availability and low-latency infrastructure where roughly 50% of the population currently obtain.

A fully realized metaverse needs to be global to ensure that everyone can benefit from another revolutionary phenomenon in the “information age.” As the metaverse is an always-on digital space powered by the internet

and open standards, its potential is starting to get unveiled in different industries. It may be evident in games, but telecom as well would be impacted positively in the years to come.

Key aspects

There are many small metaverses today but a dominant one that reached billions of users has no clear date of arrival. Yet, the momentum is building up as its vision encompasses a thriving digital economy. Leslie Shannon, Nokia’s Head of Trend Scouting, referred to the importance of the metaverse, or spatial internet,

as the culmination of everything that augmented reality (AR) and virtual reality (VR) is developing today. "It's the idea of taking information about things, locations, or historical events and actually locating that information out there in the world where it's most relevant."

In its entirety to function, three key aspects are highlighted: presence, interoperability, and standardization.

- Through the use of various VR-tech-powered devices like headsets, the feeling of actually being in a virtual space is achieved. This sense of embodiment highly improves the quality of online interactions. Immersive VR technology aims to completely give the impression that a user has stepped into a synthetic world. Its progressive growth and development will continue to make lasting impacts on our technological culture. According to a VR research team, to establish a presence — a person's subjective sensation of being there in a scene — a wide field of view (80 degrees or better), adequate resolution (1080p or better), low pixel persistence (3 ms or less), a high enough refresh rate (>60 Hz), optical calibration, and rock-solid movement tracking, are needed.
- Interoperability, which is commonly heard as well in telecom's network architectures, means being able to seamlessly travel between virtual spaces with the same virtual assets. It should be as easy and convenient as moving from one website to another, but with the complexity of having a highly connected society, this brings up a huge challenge. From a computational and business point of view, this must be addressed to ensure that virtual economies can work efficiently — regardless of the point of presence. Developers must produce content and software that is compatible across multiple platforms to construct a persistent and continuously evolving metaverse. The importance of interoperability comes within the fact that no single entity could own the metaverse and in order to provide a safe and comprehensive experience to

users, valuable data and business intelligence must complement one another.

- Without standardization, it will not be possible to instill interoperability of platforms and services across the metaverse. As with other ICT technologies, common technological standards are essential for widespread adoption. The metaverse would be a massive communal cyberspace that would require standardization and cooperation among tech giants and developers. If we can come up later on with a common ground where all have their own unique characteristics and the underlying infrastructure ideally operates, high-quality connectivity can extend to every corner of the globe. As a result, a metaverse can become a place for equality and representation, where all participants have the freedom and chance to benefit from a new virtual world.

How metaverse influences telecom

As of August 2021, GSA confirmed the number of launched 5G networks stands at 176, with a presence in 72 countries and territories. This figure is expected to grow as 461 operators in 137 countries/territories are investing in 5G, including trials, acquisition of licenses, planning, network deployments, and launches.

Mobile carriers poured billions of dollars into 5G networks which is why it is not surprising that they are betting on a futuristic concept that can give them a fair share of returns in time. GSMA Intelligence predicts \$720 billion worth of spending on 5G networks between 2021-2025 globally.

Telcos have actually started to delve into metaverse-based platforms that combine multiple technologies to bring the internet to life. Why so? Because 5G and metaverse go hand-in-hand. Sarah Gilarsky, a Verizon business development lead said that "what 5G is going to do is really turn that metaverse experience into something that reaches out into your daily life."

Recognizing the business potential, China Mobile, Verizon, and SK Telecom

have jumped to build platforms founded on blending the digital world with real-life environments. Seeing a win-win situation, operators could potentially be earning \$712 billion in revenue by 2030 if they introduce such innovative 5G applications. Taking this into account, while cutting-edge metaverse applications are still at the conceptual stage, once they become a hit, various ICT players such as service providers, MVNOs, and cloud hyperscalers can take advantage of the demands for fast connectivity, data storage, and reliable connection.

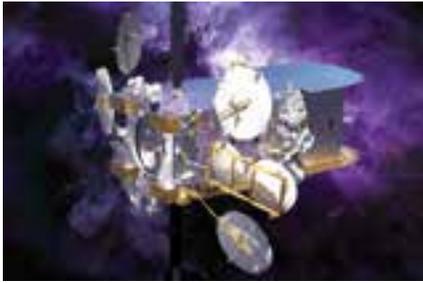
While it's tough to estimate how much metaverse-related applications will generate in the long term, early metaverse uses such as enhanced and immersive media will account for 40% of the 5G-enabled application market by 2030. In relation to this, Fuad Siddiqui, a senior partner and vice president of Nokia Oyj's research arm Bell Labs, commented that telcos would need funding partners to pull these platforms off as they continue to heavily invest in 5G over the next couple of years.

Service providers and developers together could also join forces to integrate interoperable communication functions that would accelerate deployments, ease maintenance, and connect users to an unlimited number of potential services. Moreover, providing a turn-key 5G solution would allow virtual service providers to keep focused on their business core while transparently connecting to both physical and virtual worlds.

As we have learned to understand, the metaverse phenomenon will give wireless operators the chance to boost 5G's adoption and monetize their investments in place. This can be done by getting involved in the internal communication landscape as well as collaborating with external enterprises that wish to deliver the best hybrid experience to their customers.

Sooner than later, 5G (and 6G) will drive the next-gen connectivity, not only here on Earth but also on its parallel universe. **TR**

Fully digitized SES-17 satellite set to launch this October



SES-17 has completed its performance tests at the Thales Alenia Space facility in Cannes, France and is being prepared for shipment to Arianespace's Guiana Space Centre in Kourou, French

Guiana on 22 September 2021. The spacecraft is scheduled to be launched by Arianespace, using an Ariane 5 vehicle on 22 October 2021, SES has announced.

SES-17 is a very high-throughput satellite in geosynchronous orbit, built to serve North America, South America, the Atlantic Ocean and the Caribbean with Ka-band coverage. It will address demands for high-speed and flexible data connectivity across aviation, maritime, enterprise and government segments, advancing the region's digitalisation objectives and helping to bridge the digital divide. This

first fully Ka-band geostationary orbit (GEO) satellite of the SES fleet will have a total processing capacity of 200GHz and a fully digital payload connected to approximately 200 beams, capable of maintaining a throughput of 2Gb / s per connection.

The totally digital payload is powered by an advanced digital transparent processor (DTP), enabling far greater flexibility and efficiency than previously available.

For commercial aviation, SES will be partnering with its anchor customer, Thales Avionics.

Newest EOS Landsat-9 heads to the skies



Landsat-9, considered the world's most important satellite was launched to orbit on an Atlas rocket from California's Vandenberg Space Force Base. According to experts, once the Atlas rocket drops it off at just under 680km in altitude, the Landsat-9 will use its thrusters to climb to a height of over 700km. The images relayed by the spacecraft will be compared with its predecessor, Landsat-8, launched in 2013 as well as images in the old Landsat archive for scientists to extract important information about the state of Earth's surface.

Landsat-9's genesis as part of a series of earth-observing spacecraft (EOS) can be traced back almost 50 years and holds the record as the only

remote-sensing system to monitor our planet for the longest time.

In 1972, The American space agency (NASA), in partnership with the US Geological Survey (USGS) launched the Earth Resources Technology Satellite. Since then, the NASA/USGS Landsat programme is the ultimate record of change of the earth from logging the development of the megacities and spread of farming to the evolving outlines of coasts, forests, deserts, and glaciers. It has even been used to monitor remotely the activities of the animal kingdom.

According to scientists, the Landsat spacecraft has gathered the history of the evolution of the planet over the last

century, including natural disturbances such as fires, hurricanes, and insect outbreaks as well as the climate-change impacts on ecosystems. The Landsat data is free and open for access from anywhere.

Public programmes such as US' Landsat system and European Union's Sentinel-2 satellites are collaborating with commercial satellite operators to enable greater image accuracy helping scientists, farmers, journalists, and customers to move from awareness to action. For instance, in agriculture, using Landsat, scientists can monitor crop health, predict the availability of water to minimize the impact on low food production and food shortages. Satellite imagery can monitor receding glaciers and Arctic coasts as melting glaciers and ground ice can lead to slope instability, with implications like avalanches, debris slides, and erosion. In urban development, Landsat helps scientists monitor changes in city areas around the world and forecast patterns future cityscapes can expect.

The launch of Landsat 9 was delayed until September 2021 due to the effects of the coronavirus pandemic on spacecraft work in Arizona. Landsat-9's lifecycle cost is expected to be close to \$1bn.

SES, Hughes unlock new possibilities for unmanned aircraft with first multi-orbit SATCOM



SES and Hughes Network Systems have successfully demonstrated a new multi-orbit satellite communications (SATCOM) capability for remotely piloted aircraft. Conducted for General Atomics Aeronautical Systems, Inc. (GA-ASI), the demonstration paired Hughes HM series software-defined modems and Resource Management System (RMS) with SES's satellites that operate in geosynchronous (GEO) and medium earth (MEO) orbits. SES's unique multi-orbit fleet, which delivers global coverage, high throughput and security, was leveraged to show how unmanned aerial vehicles, such as the GA-ASI MQ-9 series, can maintain crucial connectivity and resiliency, even in contested environments.

The demonstration replicated a typical unmanned Intelligence, Surveillance and Reconnaissance (ISR) mission, transmitting high-definition video and sensor data to and from the unmanned vehicle to the command center. Based on the mission's pre-set policies, the RMS automatically switched the satellite signals to stay connected – even when a signal experienced interference and jamming scenarios. A quasi-instant and smooth beam switch took just seconds to complete, allowing a near real-time capability that enhances the military's Primary Alternative Contingency Emergency (PACE) planning.

"Our multi-orbit demonstration for remotely piloted aircraft delivered three times the throughput of the currently deployed SATCOM service using a terminal less than half the size, while maintaining constant connectivity," said Rick Lober, vice president and general manager, Hughes Defense. "This highly resilient,

significantly reduced SWAP option for primary and secondary aero connections unlocks new beyond-line of sight mission opportunities for unmanned aerial vehicles like the GA-ASI MQ-9. It's another example of how Hughes empowers our military to exchange information securely with the right people at the right time."

"SES's second-generation MEO system, O3b mPOWER brings a new age of game changing performance, scalability, and resilience that will enable us to deliver the network sovereignty that governments are looking for," said Will Tong, Vice President of Strategic Government Initiatives and Head of the Aero ISR market at SES Networks.

The demonstration was powered by software-defined gateways and modems from the Hughes HM System, a commercially based, frequency-agnostic, open architecture platform for fixed, mobile and portable government applications.

Lockheed Martin invents new, multi-use satellite dish technology

Lockheed Martin has invented a new type of satellite dish technology with a wide range of use on satellites and ground terminals, including space-based 5G. The Wide Angle ESA Fed Reflector (WAEFR) antenna is a hybrid of a phased array Electronically Steerable Antenna (ESA) and a parabolic dish, and increases coverage area by 190% compared to traditional phased array antennas at a much lower cost.

This antenna is part of a larger research and development investment in 5G.MIL technologies that will optimize and securely connect warfighting platforms to enable joint all-domain command and control (JADC2). Lockheed Martin is uniquely positioned, leveraging commercial best practices, strong partnerships, a broad supply chain and leadership expertise, to bring

5G connectivity and capabilities to the defense community rapidly and affordably.

"We adopted a commercial mindset to quickly mature this technology and discovered there were multiple use cases and applications that could benefit from this new hybrid antenna," said Chris Herring, vice president of advanced program development at Lockheed Martin Space. "5G.MIL technologies like this will bring greater connectivity, faster and more reliable networks, and new data capabilities to support our customers as they navigate the complexity of 21st century battlefields."

The team rapidly prototyped, tested and validated this system in a matter of months compared to what previously took years. WAEFR also features:

High performance gain of a dish with the beam agility of an ESA
Low Size Weight and Power (SWAP) common product solution to accommodate any orbital altitude or ground terminal application
Advances in 3D-printing technology and accelerated parts production
This type of antenna will also benefit the broader communications and ISR communities by providing a more reliable scanning solution compared to gimbaled designs.

"The primary benefit of the WAEFR approach is accomplishing more mission with fewer resources," said Thomas Hand, Ph.D., associate technical fellow at Lockheed Martin Space. "While state of the art ESA solutions can address more demanding link performance, capacity, and data rates using multiple agile analog beams, they do so at a premium."

GITEX

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

Place: Dubai World Trade Center, Dubai, UAE



17
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21
OCTOBER

Cabsat

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

Place: Dubai World Trade Center, Dubai, UAE



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28
OCTOBER

Telecom Review Leaders' Summit 2021

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

Place: InterContinental Dubai Festival City and virtual



8
DECEMBER

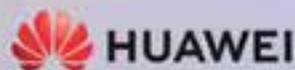
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