TELECOM Review

THE TELECOMS INDUSTRY MEDIA PLATFORM

telecomreview.com

Omantel:

A Trusted Digital Transformation Partner in Oman

Talal Said Al Mamari,
CEO, Omantel

UAE: Building a Future towards Digital Excellence

Sustainability: The Path to Being Green Telcos

Digital Technology Creates **a World for All Ages**

موطن ريادة الأعمال
The Entrepreneurial Nation

The ScaleUp Digitize

Selected SMEs will get the following benefits

Huawei Cloud training and vouchers worth up to 60,000 AED

Hands-on training on:

Huawei Cloud technologies
AI/Big Data technologies

Apply now before 20th August 2022

Limited seats available

ScaleUp
Digitize

HUAWEI

TELECOM Review
THE TELECOMS INDUSTRY MEDIA PLATFORM
telecomreview.com

Editor in Chief & Senior ICT Analyst
Toni Eid
toni.eid@tracemedia.info

Senior Journalist & Content Manager
Christine Ziadeh
christine@tracemedia.info

Deputy Content Manager
Jennifer Saade
jennifer.s@tracemedia.info

Journalists
Elvi Correos
elvi@tracemedia.info
Jonathan Pradhan
jonathan@tracemedia.info

Copy Editor
Chris Bahara

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
Issam Eid
issam@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

Year 17 | Issue 188

Toni Eid,
founder
editor in chief
Telecom Review International

Aviation: A Large Hub for Connectivity and Digital Experiences

While going through Ericsson's recent report on aviation, it came to my attention how it describes the airport as a hub where you have massive connections in one place - airline networks, staff and hundred thousands of passengers, all connected at once in one place to one network.

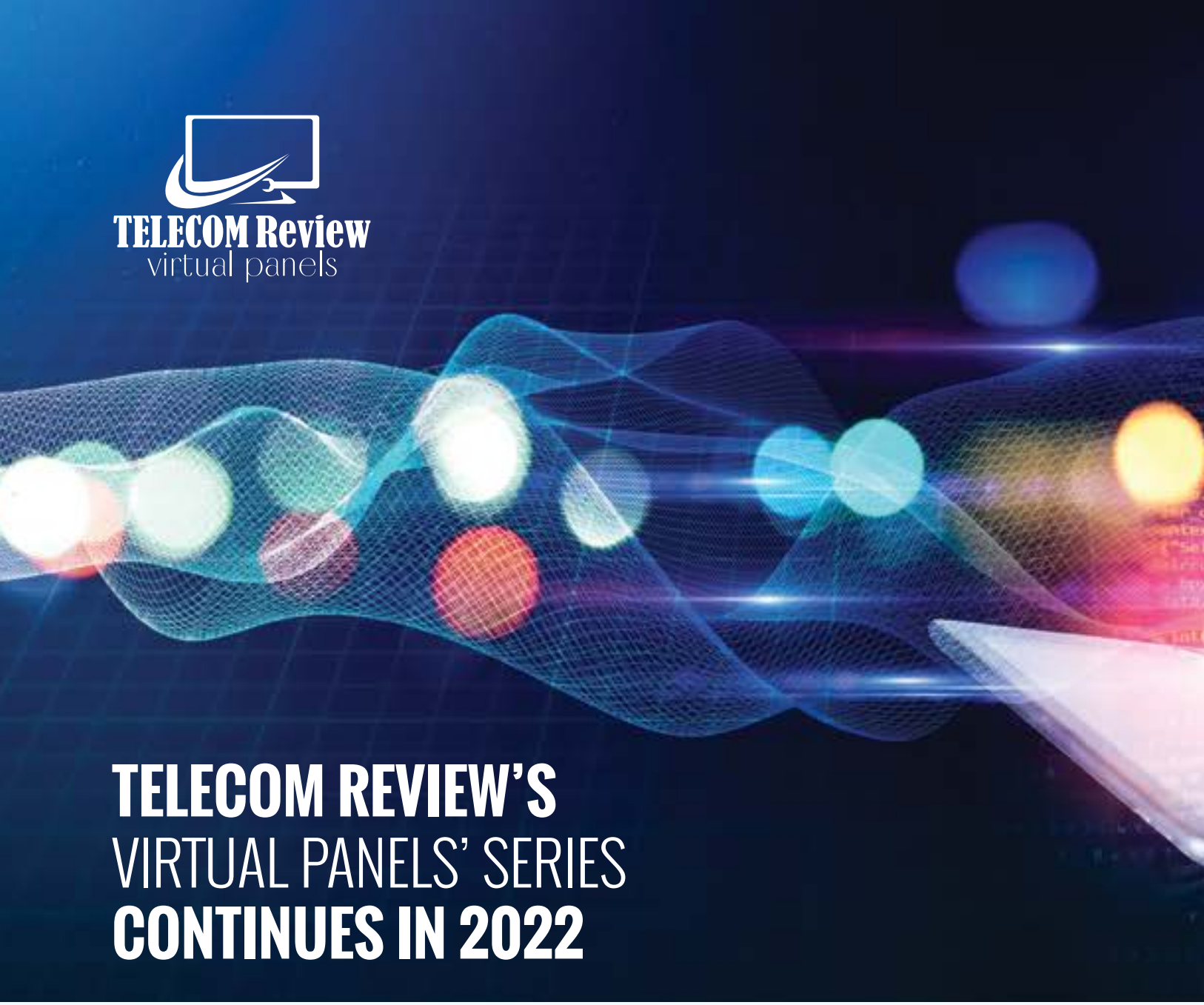
Airlines have a duty to ensure that their networks are operating safely away from cyberattacks which can cost them billions of losses and damage their reputation.

The digital challenges in aviation add more responsibilities on vendors who will supply connectivity services to airports, airlines and passengers.

Think of an airport as a huge and complex ecosystem formed by multiple stakeholders, each one responsible for executing various processes across air transport – both passenger and cargo. Now, imagine that all of them – airport authorities, airlines, ground handlers, retailers, caterers, maintenance, government bodies communicate perfectly and operate seamlessly to offer the best and safest experience to billions of people every year.

Many bad experiences happened in the past where networks crashed and security breaches took place which cost billions in losses to airline companies such as Delta airlines, British Airways, Cathay Pacific, among others.

Telecom Review (www.telecomreview.com) will publish a full report on the importance of connectivity in aviation. Stay tuned!



TELECOM REVIEW'S VIRTUAL PANELS' SERIES CONTINUES IN 2022

Building on previous years' successes, we continue our mission of connecting THE INDUSTRY'S LEADERS.

The 2022 series of virtual panels will address, among others:

* **5G** monetization
* **Digital transformation:** Progress, results, prevision
* Rethinking **wholesale and capacity** growth strategy in the digital age
* The challenge of **cybersecurity** in a more connected world
* **Network automation:** The key to success

For more information on sponsorships and participation, contact,
Mohammed Ershad: ershad@tracemedia.info

Talal Said Al Mamari, CEO, Omantel

Omantel: A Trusted Digital Transformation Partner in Oman

In the spotlight of the August 2022 edition, Telecom Review had an exclusive interview with Omantel's CEO Talal Said Al Mamari, the kingpin of the company since June 2014 and a well-seasoned telecom professional with 26 years of experience. Under his term, critical initiatives and projects have been carried out including the company's 750-million-dollar initial public offering (IPO) sale in 2005, the restructuring of Omantel that brought the mobile and fixed operations together, and the acquisition of a 21.9% stake in Zain Group, the biggest transaction of its kind in the region.

Impressively, Omantel Group reported a net profit of RO 128.6 million for the first six months of 2022, an 18.4% year-on-year growth, compared with the RO 108.6 million posted in the corresponding period of 2021. This is a testimony that the Omani-based company is moving towards a positive trajectory that is in line with its values and objectives.

Connectivity, Omantel's core business, is a key pillar for digital transformation. With this in mind, finding the simplest ways to accelerate connectivity and

drive customer success solidifies Omantel's position as a wholesale connectivity leader.

By combining Oman's history of stability, neutrality and openness with the lowest latency networking, the company ensures that its partners are supported with the best possible network infrastructure while promoting a healthy global wholesale market. The vision of delivering robust and reliable telecommunication services to customers even in the world's most challenging markets, together with meeting their expectations toward the best customer satisfaction experience, has pushed Omantel to be an ICT pioneer, one that has emerged as a trusted partner for customers' technology needs.

As the first telco in Oman – and the primary internet services provider in the country – quality, reliability and performance empower Omantel to bring families, businesses and communities together, in every corner of Oman and around the globe. The huge responsibility of delivering the best communications experience requires Omantel's management team to be a powerful mix of expertise, experience, integrity and strategic thinking that can lead a culture of growth through innovation.

With confidence, Al Mamari shared his perspective on the digital ambition of Omantel, the key actions in enabling improved customer experience and the long-term role of the company within the thriving ICT sector in Oman.

Omantel's reputation is built upon strong performance, resiliency and digital transformation. How does this reflect in 2022 and beyond?

Our "Shift Gear" strategy, which focuses on value creation, digital transformation, customer experience and efficiencies on one hand and building an ecosystem of innovation around us on the other hand, has

> Connectivity, Omantel's core business, is a key pillar for digital transformation

> Outstanding customer experience is a mission-critical differentiator for Omantel in today's rapidly-changing digital age

clearly helped us navigate through the ever-changing market landscape. The launch of a third mobile operator in the midst of an economically challenging period has intensified competitive pressures. Albeit with this significant market development, we anticipate new opportunities, especially in the Enterprise, Government, and ICT markets, as well as potential growth driven by the improving economic situation. In addition, our investment in Zain continues to provide us with less exposure to the risk of operating in a single market and further improves our resiliency.

How could Omantel's groundbreaking launches this year have a long-term impact on the innovation scene in the country?

At the beginning of this year, we celebrated the launch of the Omantel Innovation Labs. We now have a cohort of six companies incubated in our accelerator program. The program supports innovative companies in domains such as Fintech, AI, IoT and E-commerce, becoming a key pillar of the broader hi-tech entrepreneurship ecosystem that we aspire to build. Also, Omantel's Innovation Labs boosts innovation in the country through the organization of Hackathons and Boot camps. Our co-working space not only allows the start-ups to learn from each other, but also brings them into direct contact with Omantel as an organization, allowing new ideas and concepts to emerge.

As Oman's leading ICT solutions provider, what are the key actions in enabling an improved customer experience for both consumers and enterprises alike?

Outstanding customer experience is a mission-critical differentiator for Omantel in today's rapidly-changing digital age. We are dedicated to and passionate about improving and enhancing customer experience in

each and every interaction with our customers across various channels.

Our customer experience initiatives are two-fold. Firstly, our initiatives aim to ensure meeting and exceeding our customers' expectations, providing a world-class customer experience. In parallel, we enable our enterprise customers to ultimately offer a greater customer experience to their clients through our technology solutions offerings.

At Omantel, we have carefully analyzed how our customers prefer to interact with us. We continue to look into our existing customer-facing and non-customer-facing processes to develop new initiatives and transform them. Digitalizing our processes has been a key priority for Omantel and shall remain a focus going forward. We have deployed state-of-the-art technologies such as big data analytics and artificial intelligence to turn our vision into reality.

At the same time, based on our own experiences and learnings from the market, we have introduced several ICT and digital solutions which further enabled our enterprise customers to enhance their customer experience. In the long run, we are committed to continue evolving.

Growing at a significant pace, what developments can we expect from Omantel's various lines of business?
The biggest growth potential is anticipated in the ICT domain as both the government and enterprises are on a continuous digital transformation journey. Omantel is very well positioned to provide innovative solutions and services to meet this increasing demand. We also continue to leverage the position of Oman and our investments in the subsea cable systems and data centers to attract major hyperscalers to the country and bolster Oman's position as a strategic hub for the region.

What drives Omantel's success in being a distinguished player in the globalization of wholesale business?
The wholesale business unit in Omantel has undergone an extraordinary transformation journey over the last decade – from being a party dependent on other regional wholesale providers for fulfilling its own requirements to becoming a main wholesale provider serving telecom operators, hyperscalers and content providers locally, regionally and globally.

Such a remarkable transformation has only been achieved through an ambitious and well-defined strategy that capitalized on Oman's unique geographical location, attracted investments in human and network assets and created new business models. All of this resulted in gradually changing the wholesale landscape and eventually made Omantel an industry leader in the wholesale arena.

Instead of relying on individual projects, Omantel Wholesale introduced the Global Wholesale Integration Program, a comprehensive program focused on various wholesale strategic pillars such as:

- Building an international, diversified and high-capacity submarine network connecting Oman with the rest of the world. This network includes investments in more than 20 global submarine cable systems, with reachability to more than 120 cities across the globe. Omantel also became the first GCC operator to land a submarine cable in the European Union through its landing station in Marseille under the AAE-1 submarine cable which is one of the largest submarine cable systems of its kind.
- Launching an advanced International Network Operations Centre (INOC), a state-of-the-art 24/7 facility that is specifically tailored to meet the needs of the cloud and content-centric market in addition to monitoring and supporting Omantel's international terrestrial and submarine cable systems.
- Inaugurating data centers that will serve as a regional interconnection hub between key global business markets. In partnership with Equinix, the world's leading international data center operator, these are namely MC1, the MENA region's first carrier-neutral data center located in Barka and SN1, the newly announced carrier-neutral data center in Salalah which will undoubtedly change the landscape of global traffic flows between three major continents, having access to several new and existing submarine cables.
- Ongoing rollout of international roaming with close to 700 operators in over 210 countries, in addition to the recently introduced 5G data roaming services.
- Boosting operations under Omantel International (OTI), an international wholesale company managing the group's international voice carrier business as well as international value-added services.

Digitalizing our processes has been a key priority for Omantel and shall remain a focus going forward

> All of this resulted in gradually changing the wholesale landscape and eventually made Omantel an industry leader in the wholesale arena

These game-changing approaches, to name a few, have thrust Omantel into the wholesale leadership position. As a result, the biggest international telecom players and hyperscalers are partnering with Omantel, with many of them hosting their regional servers in Oman. Consequently, more than 80% of the internet access of Omantel's users is now served locally. Such partnerships, in addition to their business and economic benefits, are directly linked to enhanced customer experience on all fronts including access to high-speed internet and gaming.

The Global Wholesale Integration Program is dynamic and keeps evolving to cover the future needs of Omantel and its clients. It undergoes continuous updates and enhancements to stay on par with global developments, with an aim of further strengthening Omantel's position as a global wholesale hub and strategically aligns with Oman Vision 2040.

How do you plan to accelerate Omantel's digital ambition to achieve sustainable growth?

Our digital transformation is one of the primary elements to improve the way we provide services to our customers. Combined with leveraging the insights derived from data and intelligence, we continue to add more value to our products and provide tangible benefits for our customers. Hence, on one hand, we reduce our operational costs and on the other hand, we increase the value offered to our customers in order to achieve our core strategic objective of sustainable growth.

What is your outlook on the ICT sector in Oman and what role will Omantel play in this?

Following the recovery from the pandemic, the ICT market in Oman, and the Middle East region in general, is expected to grow after witnessing recent movements in the market. The higher allocation of budget for ICT in the state-owned entities, semi-government and private organizations, as well as the efforts taken specifically by government agencies in Oman for both nationwide digital transformation and the enterprises' digital maturation, will drive the growth and demand for ICT solutions.

Omantel will continue playing a vital role in developing a digitally-capable society with its innovative propositions focused across consumer, government, private and SMB segments.

Connectivity, Omantel's core business, is a key pillar in any digital transformation project. For this reason, we continue to bring the best-in-class and latest technologies to provide highly available and redundant services. The rollout of Omantel 5G and related initiatives will provide a platform for our customers to test and deploy use cases which were not possible before. Omantel's digital infrastructure coupled with its investments in submarine cables and data centers provide greater opportunities to support the digital initiatives of enterprises in Oman and across the region.

Our investment in ICT continues and can currently be observed through our active involvement in consolidating and acquiring companies with different expertise in ICT and digital technologies. Omantel's ICT capabilities, along with its group companies and partnerships, have made Omantel the preferred partner for digital transformation in Oman. Furthermore, our ICT unit is steadily focused on raising the bar in order to offer one-stop ICT solutions that will respond to the issues and challenges being faced by enterprises.

We are fully committed and aligned with Oman's 2040 vision and looking forward to extending the required support needed through Omantel's comprehensive ICT and digital solutions. This will enable government entities and enterprises to accelerate their digital transformation initiatives. TR

> Omantel will continue playing a vital role in developing a digitally-capable society with its innovative propositions focused across consumer, government, private and SMB segments

TDRA: First Government Entity Providing Sovereign Cloud Services

The UAE's Telecommunications and Digital Government Regulatory Authority (TDRA) announced that it has become the first government entity to provide sovereign cloud services in the region. Sovereign Clouds are designed and built to deliver security and data access that meets the strict requirements of data protection law as well as those of the regulatory sectors regarding data privacy, access and control.

This accreditation is the result of a journey of hard work during which TDRA was able to meet a number of standards set by VMware, such as data integration, security, independence, analytics and innovation. It also fits in line with TDRA's tireless efforts in the field of digital transformation and government enablement of a highly efficient government cloud environment.

TDRA's efforts in this context come within its mission as a facilitator of digital transformation in addition to its role as a regulator of the telecommunications sector in the UAE. TDRA provides a strong digital network, known as the Federal Digital Network (FedNet), as well as a range of cloud services, including a virtual services marketplace that supports government entities in developing their digital solutions.

Commenting on this achievement, H.E. Eng. Majed Al Mesmar, TDRA Director General said, "Data has become the oil of the era and a priceless wealth. From this perspective, TDRA has been keen to develop and localize cloud services according to the best international standards. Through this step, we seek to preserve the data of our government entities and achieve the security and independence of data, its transfer, analytics and innovation so that this data remains safe, secure and protected."

UAE Space Sector Gets AED3 Billion Thrust

The UAE Space Agency has launched a new AED3 billion ($817 million) national investment and development fund for the space sector.

Aptly named the National Space Fund, it will support groundbreaking new programs launched to support international and Emirati companies cooperating in the latest space sector engineering, science and research applications.

The Fund's first investment will be in the development and launch of a constellation of advanced imaging satellites for the Emirates, using the SAR (Synthetic Aperture Radar) technology. The constellation is to be named Sirb after the Arabic term for a flock of birds, and will address the critical need for better environmental and land usage monitoring, data collection and analysis to meet today's global challenges.

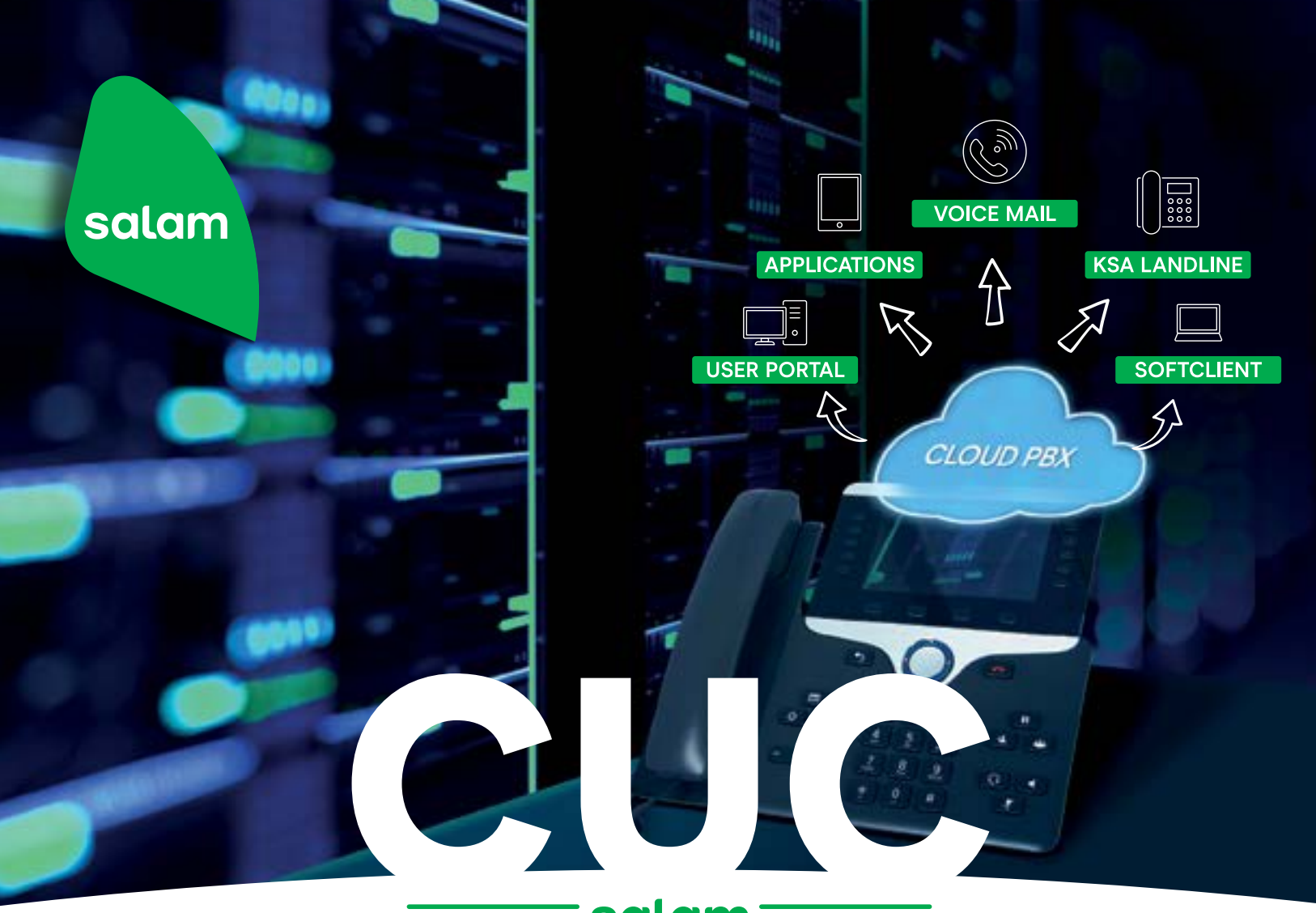
The planned satellites will be able to create highly detailed and complex radar images of land use, ice cover, surface changes and characterization, with a wide range of scientific, civil and commercial applications.

Sarah bint Yousef Al Amiri, Minister of State for Public Education and Advanced Technology and Chairwoman of the UAE Space Agency said, "SAR technology leapfrogs traditional imaging satellites, providing more powerful imaging using X-band radar technologies."

SAR technology combines the power of imaging satellites with cloud and ground penetrating capabilities that will open up applications from urban planning to archaeology, and from weather prediction to atmospheric quality analysis as well as climate change mapping. Critically, the SAR radar-based technology can provide high-resolution images for remote sensing applications, regardless of sunlight illumination and weather conditions.

The six-year satellite development program will see the first satellite launch in three years, a much faster time to launch than was possible using traditional earth observation satellite design principles. The Sirb satellites will be built through several partnerships between the Emirati public and private sectors together with international players. Submissions will be open for a range of system integration, development and subsystem construction opportunities and as part of the constellation development, launch, operation and commercialization plan.

Apart from addressing critical human needs for more wide-ranging data, the Sirb constellation provides a private sector opportunity that bridges the gap between the Emirates Mars Mission and the upcoming Beyond Mars Mission to Venus and the Main Asteroid Belt, due to launch in 2028.



CUC

salam

Salam offers a cloud-based PBX and Unified Communications service called Cloud Unified Collaboration (CUC). The service provides customers with voice, video, messaging, collaboration, & mobility functionalities via IP phones, mobile devices, and desktop clients. This is a service with a full-featured advanced telephony and unified communication functionality.

SVP "selling value proposition"

- Cloud based PBX with KSA Number Range
- Pay as you grow model, customer can keep adding User as his number of employee increase & vice versa
- Improved experience with Smart Phones Applications

Product benefits

- Improved & efficient workplace collaboration
- Extended PBX reachability outside the office walls
- Better value at lower cost
- Flexibility & scalability that grows with your business

Call us for more information 800 500 0788

We are in the midst of a digital revolution that is transforming our lives and societies with unprecedented speed and scale, delivering immense opportunities as well as inevitable challenges. This socio-economic transformation is first and foremost driven by the ability to collect, use and analyze massive amounts of data generated from the digital footprints of personal, social and business activities on various digital platforms.

Achieving Consensus on Leveraging Spectrum Resources for the Digital Economy

With a range of features that include high bandwidth, low latency, ultra reliability and wide connections, 5G is now recognized as the enabler of the future digital society and the foundational technology of the digital economy. According to the GSMA Economic Value Report, 5G will contribute US$960 billion to the global GDP value by 2030, US$610 billion of which will be driven by 5G mid-bands. The mobile industry is not only the driving force and engine of economic development, but also the enabler and promoter of digital transformation for vertical industries. Therefore, the IMT industry must be well planned.

GCC is Leading in 5G Development for the Digital Economy

With favorable government policies and strategic investment by operators, the GCC is leading global 5G deployment and roll-out, matching or surpassing those of many advanced countries. By Q2 2022, 5G services have been launched in six countries in the Middle East, and 15 5G networks have been developed, covering 74% of the population (13 million 5G users). Alongside AI+Cloud investments, countries in the region have a crucial advantage in the rapidly evolving global digital economy.

Within the 5G-powered ToC services segment, the fourfold yearly growth of mobile users and the increase in new services will see mobile data usage per subscriber per month (DoU) continue to multiply. According to the latest forecast report by ITU, mobile DoU will be more than 250 GB per subscriber per month globally by 2030. To fulfill these needs, global carriers will require 2GHz of mid-band spectrum on average per country.

Regarding ToH services, 5G FWA is doubling annually in Saudi Arabia and Kuwait, cumulatively covering 1.3 million subscribers thanks to a home broadband upgrade, which has helped carriers increase their revenue by 10%. In FWA pioneer countries, households today consume 200 GB of data per month and are easily set to reach 1,000 GB by 2025. Adequate licensed spectrum, particularly in mid-bands, will be crucial for FWA's long-term development and affordability.

In terms of ToB services, the Middle East is already ahead. Currently, there are already 27,000 5G private line users in small and medium-sized enterprises such as hospitals, banks, educational facilities, hotels and restaurants, and five commercial and seven POC 2B contracts in various industries such as oil and gas, port, and electricity. Vertical services will lead to a drastic increase in mobile data traffic, highlighting the urgent need to upgrade the technology, to increase spectrum and expand sites.

Visionary 5G Spectrum Strategy Contributes to a Sustainable Digital Economy

GCC leadership in 5G development is the result of the allocation of both sufficient spectrum and supportive 5G spectrum, which are crucial to a sustainable digital economy. The 5G target network must contain ubiquitous layers, including deep coverage and wide coverage. At the same time, it must provide capacity layers with consistent and continuous coverage and experience over dense urban, suburban and rural areas. Also, it should meet ultra-high-capacity requirements in hotspot areas. Based on the experience of successful countries, the success factors for 5G spectrum policies are as follows: releasing the correct frequency bands; sufficient spectrum allocation; low spectrum prices and suitable payment methods.

Releasing the correct frequency bands: 5G-oriented spectrum allocation combines medium and low frequency bands, and consider coverage and capacity, such as 700 MHz/2100 MHz, C-band/ 2.6/2.3G frequency bands, which have been assigned in various countries and are mature in the industry chain.

Sufficient spectrum allocation: 5G uses key technologies, such as large bandwidth and massive MIMO, to achieve a better experience. It is recommended to provision mid-bands with a large bandwidth of 80–100 MHz to meet capacity-layer requirements, increase spectral efficiency and reduce bit costs.

Low spectrum prices and good payment methods: In the 5G era, operators need to pay annual fees for existing 3G and 4G spectrums. As a result, the total spectrum fees account for 5% of operators' annual revenues globally. The spectrum prices for 5G are lower than 4G generally. According to the Coleago report, the 5G SPI [Spectrum Price Index (SPI)=Spectrum license fee/(ARPU*Subscribers)] should be less than 2, that is, the total 5G spectrum expense of an operator should not exceed the revenue of two months (four months for 4G and six months for 3G). Flexible installment and payment deferral are also recommended. For example, carriers can delay payment of spectrum fees in the first few years, significantly reducing the financial pressure in the initial phase of network construction. A good ROI will encourage more investment and thus a more solid foundation for the digital economy.

The leaders of the fourth industrial revolution are being forged as we speak. 5G is key in enabling the digital economy and the industrial revolution. In the long run, the GCC region should sustain progressive 5G spectrum policies in order to maintain its leading position. From a technology development perspective, improving the system performance or user experience tenfold is key. Baseline spectrum bandwidth per carrier is also growing 4-5 times from generation to generation: 5MHz in 3G to 20MHz 4G and 100MHz in 5G. This amount of spectrum is required to start the first wave of these technologies, while additional blocks will be required to match traffic growth. In the 5G-advanced and 6G eras, 400-500MHz per carrier is a must.

Accordingly, 2GHz of licensed mid-band spectrum is recommended by GSMA to meet the 5G service requirement from 2025-2030; 3.5/6GHz bands is the key. Mid-bands play a critical role in continuous outdoor coverage, which shall be reserved for IMT to ensure digitalization and economic development for the future.

Apart from the GCC region, some emerging markets in the Middle East could also refer to the successful practices of the GCC to better prepare for the coming 5G and a boost in the digital economy. Spectrum is a common pool resource, and governments shall aim to make efficient and effective use of it and ensure it is available for uses that stimulate social and economic progress. TR

By Shunli Wang, Vice President of Huawei Middle East

Cybersecurity – Day Zero and Beyond

2021 has been a year where the region witnessed a series of high-profile breaches, an increase in DDos attacks, an uptick in the frequency of ransomware attacks and several top vulnerabilities. It is evident that organizations must be ready to deal with such high-profile cyber-attacks, threat actors and large-scale malicious incidents more than ever. As work-from-home and hybrid working models are fast becoming the norm and next-generation technologies in cloud and IoT are adopted, we are seeing an ever-evolving need for organizations to level up their security requirements.

To help organizations respond to risks and cyber-attacks of any scale, we've identified top cybersecurity trends that will help them navigate the hot topic of embracing a strong mindset and culture of cyber resilience for the effective running of operations.

Service-centric Transformation of the Cybersecurity Space

We envisage that 90% of all cybersecurity requirements will be fulfilled through a service model in the next three years. What spurred the adoption of such service-centric cybersecurity models is simply the rapid acceleration of the same. These days, organizations prefer to partner with specialist managed service providers for their core technology and security needs instead of managing it all in-house. Such service-centric business evolution will become more prominent as businesses move away from CAPEX and adopt efficient OPEX options to optimize their spending. This, in turn, will reduce their TCO so that they can focus on devising a predictive spend plan for their cybersecurity needs.

Increased Investment into Locally Hosted Cybersecurity Solutions

The need for investments into locally hosted cybersecurity solutions and services evolved as a result of accelerating digital transformation requirements, service-centric business propositions and the adoption of cloud in combination with local regulations and requirements around data residency.

We saw significant investment in locally hosted solutions and services, including Security Service Edge (SSE), private access, DDoS protection and security platforms. We've also identified hypergrowth in investments into managed cyber defense and OT and IoT security, as well as considerable increase in investments into the IAM/PAM space. There has been a stabilization of investment into security infrastructure such as next-generation firewalls, application security and DNS security after a significant investment increase in 2021.

When it comes to industries and sectors, investments in cybersecurity saw a noticeable increase across the verticals, with a special focus on government, BFSI as well as energy and utilities. On the other hand, aviation, logistics, construction and hospitality verticals continued to have conservative budget spending on cybersecurity.

Moving Towards Cyber Resilience

The rate of digital transformation has accelerated beyond expectations. Unfortunately, this has been accompanied by destructive cyber-attacks, phishing and large-scale malicious threats that impact how quickly and efficiently organizations can move in their digital transformation journey. This demonstrates the pressing need for organizations to incorporate cybersecurity and cyber resilience strategies into the core of organization's digital transformation strategy.

We see the gradual change in the mindset and culture around cybersecurity, as the shift from cybersecurity to cyber resilience is evitable for a smart and sustainable knowledge economy. With systems more interconnected and dependent than ever, organizations will move towards adopting a comprehensive approach to boost cyber resilience through preventive, detective and responsive methods, as well as a well-structured incident response and recovery plan in place.

Finally, the 2022 technology trends have emerged due to a direct consequence of attack trends. Secure cloud enablement, application security, identity security and Security Service Edge will continue to be top priorities in an increasingly hyperconnected world. As cybersecurity-related trends continue to evolve, organizations and cyber security professionals must continue working together to build and implement excellent cyber resilience to further their digital transformation journey effectively. TR

By Stephan Berner, Chief Executive Officer, Help AG

> 90% of all cybersecurity requirements will be fulfilled through a service model in the next three years

UAE:

Building a Future towards Digital Excellence

UAE – the United Arab Emirates – has been a distinct icon for technology, innovation, research and economic development. Marking its 50-year journey, the celebration of the UAE's golden jubilee year was held in 2021. In keeping with this focus, Vision 2021 has turned key national priorities into reality.

The quality of processes and path to implementation undertaken by the UAE have driven the nation to not only survive during the pandemic, but to eventually thrive in the connected age. This is where digital technologies become a success factor, and the UAE has certainly excelled in them.

Creating the right environment for innovation is key to the success of innovative endeavors, which is why the UAE National Innovation Strategy seeks to develop an environment that promotes and enables innovation through the right regulatory framework, comprehensive service enablements, technology infrastructure enhancements and the availability of investments and incentives.

Moreover, the UAE's Fourth Industrial Revolution Strategy aims to strengthen the UAE's position as a global hub for 4IR and to increase its contribution to the national economy by means of advancing innovation and future technologies.

His Highness Sheikh Mohammed bin Rashid Al Maktoum, Vice President, Prime Minister and Ruler of Dubai even approved the National Policy for Quality of Digital Life to create a safe digital community in the UAE and to promote appropriate digital interactions at all times.

These are just some of the numerous efforts of the UAE to keep pace with the latest local and international developments in the digital world and motivate the digital community comprising both the public and private sectors. Notably, the UAE has ranked phenomenally high globally in three key pillars: technology, readiness for the future and knowledge.

By and large, the UAE achieved great leaps towards a comprehensive digital transformation, counting on the great development in the ICT sector and leveraging the country's technological infrastructure.

An ICT Leader

To attain UAE's innovation pillars, among the focuses are to implement a first-class, competitive and cost-efficient technology infrastructure and to ensure the optimal use of ICT in acquiring and disseminating knowledge.

Accelerating in the technology space, UAE supports various ICT trends that are crucial for development – from broadband internet access to internet and multimedia tools, as well as cloud and other emerging technologies.

The nation continues to be among the most attractive ICT markets in the Middle East, with both the private and public sectors playing their roles. According to a recent report by the Middle East Institute, the UAE's ICT spending will reach $23 billion by 2024.

- **Telecommunications**

The UAE was the first country in the Arab region and fourth globally to launch 5G. Both of its leading operators – Etisalat and du – have contributed greatly to the telecom service quality and access in the country. The UAE has ranked first in terms of mobile speed at 193.51 Mbps, and among the top 20 countries globally in the fixed broadband index. These are prerequisites to delivering the best and most advanced telecom services in the UAE. In 2021, Abu Dhabi was also ranked among the fastest capitals globally in the 5G network index, with the fastest median download speeds of 421.26 Mbps.

With all of these milestones, 5G has taken the country to the next level and put UAE ahead of the curve. Expo 2020 Dubai was hailed as the world's fastest event, recording an impressive median download speed of 983.19 Mbps across its six-month duration. A testament to Etisalat's network build, the venue's 5G download speeds peaked at over 2 Gbps. In retrospect, du has enabled Global Village as the world's first 5G-powered entertainment destination.

Telecom providers have also worked continuously in providing the highest penetration of fiber-to-the-home (FTTH) connectivity by modernizing their networks and increasing local and international network and data capacity. As a result, the UAE has ranked third globally on the most connected countries' index, measuring the level of communication on mobility infrastructure, information technology and global and social communication.

- **Cloud**

Between 2017 and 2022, the UAE cloud computing industry is forecasted to create over 32,000 jobs. Within the region, the UAE

leads in terms of attracting data center investments, with Microsoft, IBM and Amazon Web Services (AWS) establishing facilities in the country from 2019 until the present. As one of the largest data center hubs in the Middle East, up to $1 billion in additional investments are projected by 2026.

In addition, the estimated spending on UAE's cloud computing sector is projected to be worth almost $2 billion by year's end 2022. A growing number of organizations in the UAE have migrated some or all of their on-premises IT infrastructure deployments to SaaS, IaaS and PaaS cloud environments. Relatively, a Cisco research revealed that IT decision-makers across the UAE are maximizing their investments in multi-cloud infrastructure, cloud and network security, and cloud applications between 2021-2022. Being a fundamental part of digital transformation as outlined in the UAE's Vision 2021, cloud computing helps to drive resiliency and agility within enterprises.

- **Artificial Intelligence**

Over the past decade, UAE has been among the countries with the largest AI investments in the Middle East & Africa (MEA) region. As part of the government's UAE Centennial 2071 plans, the UAE AI Strategy 2031 was created to improve efficiency in various sectors. It marks the post-mobile government phase which will rely on future services and infrastructure projects. "We are looking at AI as a tool," said UAE minister of state for AI, Omar bin Sultan al-Olama. "It's a tool that we need to use to unleash the quality of life aspect."

Overall, AI is forecasted to contribute almost 14% of the national GDP by 2030, adding 33.5% growth to the UAE economy between 2018 and 2030. A Microsoft AI report conducted in 2019 also found that around 70% of double-digit growth companies in the UAE intend to use AI in the coming years to improve decision-making.

- **Cybersecurity**

With cyber safety and digital security taken seriously, among the goals of the UAE's national cybersecurity strategy is tapping into the country's AED 1.8 billion cybersecurity market. In fact, the country was ranked fifth globally for a robust cybersecurity infrastructure as per ITU's Global Cybersecurity Index 2020 report. Moreover, in order to tackle the rising levels of cybercrime, the UAE government is expected to increase its budget allocation for cybersecurity substantially over the next five years and beyond.

As one of the initiatives of protecting the UAE's critical data information infrastructure, the government introduced the UAE Information Assurance Standards, mandating all government organizations and selected businesses to comply. The UAE's Cybersecurity Council has also signed an MoU with Huawei to collaborate in the strengthening of local strategies and efforts related to cybersecurity, based on the public-private-partnership model.

Digital Transformation Journey

It is worth noting that the UAE is among the top 25% of countries in the most important global digital indicators. Among all GCC countries, the UAE has exhibited some of the most advanced and unique innovations, benefiting its citizens at large. "We are building a new reality for our people, a new future for our children and a new model of development," His Highness Sheikh Mohammed Bin Rashid Al Maktoum said.

The UAE has seven emirates – Dubai, Abu Dhabi, Sharjah, Ajman, Umm Al Quwain, Ras Al Khaimah, and Fujairah. For a holistic digital transformation journey, several local governments' strategies and plans have been put into place.

- As part of the Digital Dubai plan, the Smart Dubai Digital Strategy 2021 is focused on delivering seamless, efficient, safe and personalized services, resources and experiences. Notably, Dubai has successfully become the world's first paperless government.
- Abu Dhabi's Digital Transformation Strategy also aims to make the emirate a leading proponent and key driver of its digital future, with its Digital Authority prioritizing government services and solutions, data and applied technologies, as well as ecosystem enablement.
- Ajman 2021 focuses on building a happy society that will contribute to building a green economy, supported by modern, comprehensive government policies and incentives. As part of its digital master plan, 80% of digital services should be adopted by its government in 2021.
- Umm Al Quwain Vision 2021 focuses on providing high-quality living standards for a cohesive society with the government offering excellent comprehensive services and accelerating the transformation towards becoming an eGovernment.
- Ras Al Khaimah's Electronic Government Authority (EGA) was founded to transform its society into an online community through the application of the latest technologies that can digitalize and automate processes, making RAK an attractive place to live, work and invest.
- Since the founding of Fujairah's E-Government Department in 2003, the organization has achieved great strides in advancing the digital transformation of its services. The Fujairah 2040 framework is also working towards sustainable economic growth and urban development.
- The Sharjah Digital platform has been a milestone in the emirate's digital transformation, enabling it to forge Sharjah's digital identity and cater to both individuals and the private sector. It offers services on business, transportation, utilities, social services, real estate and security.

UAE's digital transformation has added value to everyone within its territory by promoting efficiency in the way they do business, ensuring faster time-to-market by using numerous digital platforms available and enabling innovation to drive new services.

Health
The UAE has emerged as one of the world's leading healthcare hubs, receiving its latest recognition for digital transformation in the healthcare category at WSIS 2022. Here, the Ministry of Health and Prevention (MoHAP) showcased the Riayati platform, the national unified medical record system. A tech-enabled ecosystem has led to advancements in both patient care delivery and digital healthcare.

Big data, cloud computing and AI platforms in the UAE offer medical solutions that are personalized, preventive and predictive. These include MoHAP's Medopad smart app that continuously monitors and analyzes patient data to predict life-threatening medical conditions and to allow for proactive healthcare services as well as ALHOSN, the official UAE app for COVID-19-related information, including a color-coded tracker, vaccination certificate and travel pass.

Education
The UAE is also an advocate of smart learning. As per Jameela Al Muheiri, Minister of State for Public Education, smart education was implemented on a large scale in 2017 and 2018 and was fully adopted in 2019. Moreover, the UAE's AI ministry has proposed the adoption of an AI curriculum and the launch of six smart platforms to integrate technology within the education system.

During the pandemic, the Ministry of Education (MoE) started collaborating with Yahsat to provide high-speed satellite broadband services to students and teachers at various locations, extending the reach of MoE's Remote Schooling initiative and encouraging students to access e-learning platforms.

Technology
The UAE has made significant investments to build smart cities across all emirates. Examples of initiatives include the provision of public Wi-Fi, electric car charging stations and live traffic monitoring. In 2022, Dubai has been rated first in the Middle East and 18th globally among the most digitalized cities in the world.

Other remarkable initiatives include the Emirates Blockchain Strategy 2021 which aims to capitalize on blockchain in transforming 50% of government transactions; the UAE Pass app, the first national digital identity and signature solution, utilized for government service access across the country; the Mohammed bin Rashid Library, first in the region to have a comprehensive AI system in streamlining the processes of borrowing and returning books; and the collaboration between the UAE Cybersecurity Council (CSC) and AWS to accelerate innovation and digital transformation services in the public sector and regulated industries, in line with the UAE's economic and national agendas.

Space
The UAE's success in the field of space is promising as well, as it has the largest space sector in the region, both in diversity and the size of investments. As per the UAE Space Agency, the country has more than AED 20 billion of national investments in space technologies. Examples of this utilization include the Mars Hope probe project and the Emirates Lunar Mission 2024.

In February 2021, the UAE became the first Arab nation and fifth country to reach Mars, intending to collect and transmit data about the planet, helping create the first complete depiction of the Martian atmosphere. By 2028, another Emirati interplanetary mission will take place to explore the asteroid belt between Mars and Jupiter. Such an endeavor is designed to further accelerate UAE's space engineering, scientific research and exploration capabilities and to drive opportunity in the country's private sector.

Transportation
Autonomous vehicles are becoming a reality in the UAE, establishing the Emirates as the first country in the Middle East and the second globally to test self-driving cars outdoors. The region's first 5G autonomous vehicle shuttle bus hit the public roads of Ajman in 2021, an initiative led by the government accelerator AjmanX and Etisalat.

Dubai will also be one of the first cities to issue rules for the commercial use of autonomous vehicles in 2022, with RTA planning to roll out driverless taxis in the emirate in 2023. In Abu Dhabi, the first public trials of the TXAI autonomous taxi service took place in 2021, with the second phase of the program scheduled for mid-2022. TR

The UAE achieved great leaps towards a comprehensive digital transformation, counting on the great development in the ICT sector

Sultan Al Wahaibi, Chief Business & Wholesale Officer, Ooredoo Oman

For Oman's Digital Transformation, Developing Infrastructure is Key

Oman is believed to be well positioned as the regional data hub connecting East, West and Africa. As one of the key ICT players in the country, Sultan Al Wahaibi, Chief Business & Wholesale Officer, Ooredoo Oman shares how the company aims to stay at the forefront when it comes to innovation and collaboration, as well as ensuring high service and connectivity standards, both locally and internationally.

Can you share the latest performance insights on Ooredoo Business Services?

Businesses are the engine of an economy, and it is our mission to support companies of all sizes by extending our presence to all regions of the Sultanate and providing them with solutions and services that can flex, grow and develop alongside their businesses. We are developing our services to cater to our customers' individual needs, and have launched several products that provide customization and flexibility, including Oman's first "build your own" plans.

We recognize that ICT is at the forefront of the global digital revolution and we have partnered with some of the top experts in the sector to continue delivering a leading service. Recently, we launched ICT enterprise-grade productivity suites through Microsoft 365, and over the

coming months, we'll be diversifying our product portfolio to offer bundled services that include ICT solutions.

In line with Oman's 2040 Vision to be a digitally-advanced economy, affordable business data connectivity is instrumental for digital transformation programs in every organization. At Ooredoo, we are committed to this goal, and we continue to develop and capitalize on transformative technologies such as cloud solutions, IoT, SD-WAN and other high-growth sectors.

Along with our government sector partners, we have been working with DIAM and NEC on the country's first Internet of Things (IoT) network in the form of smart water meters. Indeed, we are supporting Oman to keep pace with global technological and industrial trends that will ultimately be integrated into the world's economy.

Developing our infrastructure is key to staying ahead of the curve and meeting the evolving digital requirements of our customers. We celebrated the inauguration of our new flagship data center in 2021 when the 7,000sqm facility was finished well ahead of schedule. Furthermore, the construction and delivery of this center was and is supported using the services and products of many local providers, helping to engage and nurture Oman's economy further. Representing a major breakthrough in hosting and data processing, to date, the data center has not only helped us become more agile and efficient by streamlining technologies and processes, it has set the foundation for delivering an outstanding experience to our customers.

How does Ooredoo Oman's position as a connectivity and digital leader impact the telco's wholesale business?

As the digital leader in the Sultanate, Ooredoo positions itself as an alternative wholesale operator within Oman, and leverages the strength of Ooredoo Group as an international wholesale operator, providing telecommunications solutions to telecom operators and hyperscalers such as Skype, Microsoft, Google, Facebook and Yahoo.

Our focus is on providing a suite of wholesale services, including capacity, infrastructure, co-location, managed services, telepresence, content provision and content delivery networks (CDNs), as well as investment in data centers and subsea systems. We strive to adopt the latest technologies in the smartest ways to cater to the country's ever-evolving online and communications needs, all while fulfilling our promise to enrich our customers' digital lives.

We are also firmly committed to supporting Oman through its own journey of digital transformation, in line with the objectives of the government-led Oman Vision 2040. In order to do this, we have invested in transformative technologies that both broaden internet accessibility and strengthen the digital communications ecosystem across the country.

In 2021, Ooredoo signed a three-year national roaming agreement with the third mobile entrant into the market, Vodafone Oman. The deal will have a significant impact on wholesale revenues and open new possibilities of additional businesses with Vodafone Oman, encompassing indoor solutions, tower co-location, IP peering and many other areas which will be explored as Vodafone Oman's footprint grows.

We believe that Oman is well positioned to be the regional data hub that connects the East, the West and Africa. Hence, we have invested in the necessary networks and are diversifying our international connectivity. This strengthens the network overall and brings countries closer together. Our wholesale department successfully bid for and won a tender to provide cable landing facilities to 2Africa (2AF) at Salalah and Barka, joining a global consortium of communications operators. The 2Africa cable system is one of the largest subsea projects in the world, connecting 46 cable-landing stations in 33 countries in Africa, Asia and Europe, with a cable length of 45,000km, making it the longest subsea cable system ever deployed.

Originating in Egypt (East) and UK (West), and converging in South Africa, the network will link several West and East African countries along the route. The system has now been extended into the Arabian Gulf as part of the 2Africa Pearls project which will extend the connection to Oman, the UAE, Saudi Arabia, Bahrain, Iraq and Kuwait, as well as through to India and Pakistan. The first landing was completed in April 2022, in Genoa, Italy, and the entire project is due to be completed in 2024. Furthermore, Ooredoo is working with an international data center partner to launch a state-of-the-art carrier-neutral data center in Salalah that will attract international players to host their data requirements in Oman.

We have also developed a strategy to be a major player in the region to provide transit access facilities to major international operators and hyperscalers through Oman by leveraging its national network and connectivity to the GCC and beyond through its submarine cables and other Ooredoo affiliates. This will open new wholesale revenue streams henceforth and allow Ooredoo to continue investing in the future of digital across Oman and the region.

How does Ooredoo Oman ensure high service and connectivity standards, locally and internationally?

Technology has become the driving force in supporting economic growth and business continuity, and Ooredoo's vision is to both enrich peoples' digital lives and cater to the growing demand, not only in the Sultanate, but in the region.

We are continuing to invest in networks and spread our international connectivity with low-latency to further service high-end requirements. The centerpiece

of our IT infrastructure is the aforementioned flagship data center, featuring a power capacity of 2.5 megawatts and guaranteeing around 99.98%+ uptime, according to an internationally-recognized framework. Despite being up and running for only a year, we're proud to say that the data center has already won two prestigious awards.

Our commitment to digital transformation mounts internally, as well. The three-phase digital CRM contract continues apace and is planned to be completed by December 2022. In 2021, we also signed a single rating contract with Ericsson to migrate and consolidate our online charging system, in addition to our agreement with Finland-based digital business support system (BSS) provider Tecnotree, to be vendor for our digital billing system, which is planned for completion by Q2 2023.

In the last year, we have also launched a new intranet platform known as Mawared, and a disaster recovery set-up through our mobile app. We have continued to innovate, update and improve each of our IT systems to stay ahead of the curve within Oman and to maximize our support to our customers.

Ooredoo Group has been on a digital transformation journey for some years now, investing in networks, technology and people. The Group has, at its core, a robust strategy designed to ensure the organization is future-proof and well placed to leverage our technologies, expertise and partnerships to create an unrivalled customer experience. With so many aspects of people's lives now online – and demand for fast, reliable networks ever increasing – the role of a quality connectivity provider has never been more important, and we shoulder this responsibility with pride.

This digital-first strategy will continue throughout 2022. We will stay focused on being agile and adaptable, and on maintaining a culture of innovation both within our organization and in our many partnerships with world-leading technology providers. As we move into the second half of 2022, we will – in alignment with the Group strategy – continue to innovate with our products and services, improving our mobile and fixed line services, further expanding our network to provide superior connectivity across the entire Sultanate and increasing our investment in a 5G-empowered Oman.

We will also continue to support Oman's economic growth in line with Oman's 2040 Vision to be a digitally-advanced economy as a new era of competition dawns. Importantly, we will remain steadfastly committed to our customers by offering them a seamless, unrivalled digital experience. Since launching 5G last year, we have continued to develop our cloud services and IoT, and have introduced several competitive plans for consumer and corporate users. Available to an ever-expanding number of locations across Oman, our 5G network now covers the majority of the population in the country. We are also continuing to expand the network to cover the whole of Oman in the near future.

What is the key to implementing cost-effective access to international nodes and managing carrier business for global capacities, IP transit and data services?

The key to being cost-effective is to be near to our customers with a hub-and-spoke network architecture. As part of the Ooredoo Group, Ooredoo Oman is leveraging international reach and other Ooredoo OpCo networks, to build a virtual network to cater to any demand placed on Oman, and within the region, by the rest of the world. Ooredoo Oman has access to more than 17 subsea cable systems and benefits from being very competitive, able to offer cost-effective tariffs from global alliances with carrier-neutral data centers (CNDCs), subsea cable systems operators, content providers and technology vendors.

What is your future outlook on the telecom wholesale business, in general, and how will Ooredoo Oman continue to fulfil its role in this area?

Ooredoo's determination for the future is to build global alliances with telecom, OTT and content providers, acting as a key differentiator in being a leading wholesale services provider within Oman and the greater region. Ooredoo will continue to invest in future technologies and systems with analytical and AI-enabled tools. The virtualization of the network will also bring in a lean and fully-automated process, resulting in operational excellence and cost-effectiveness.

Elsewhere, our focus remains on the future market, which is becoming more competitive. The telecom market in Oman now has five mobile service providers, with three mobile network operators (MNOs) and two mobile virtual network operators (MVNOs). We also have three fixed network operators. We are confident that we can gain market share by offering innovative, value-added digital products and services, supported by a great network and a unique customer experience. We aim to stay at the forefront when it comes to innovation and collaboration, and this extends to our wholesale business.

Our long-term strategy is still centered on the country's digital transformation – nurturing the development of its people and responding to its ever-evolving communications needs. As our journey continues, we are carving out an even bigger path for technologies like 5G and IoT, catering to the ever-growing appetite for mobile and internet services, supporting SMEs and providing more value than ever. We are also finding new ways of segmenting our business to keep us ahead of the curve when it comes to both competition and technology implementation.

Ultimately, as the country embarks on a new phase of growth, we are leveraging the power of communications and the reach of the Ooredoo Group to stimulate economic and social development, while boldly positioning Oman to thrive and Ooredoo to lead globally. TR

TELECOM Review
virtual panels

consoleconnect | PCCW Global | inwi | du

OUTCOMES OF DIGITAL TRANSFORMATION

ONGOING MISSION AND VISION

September 14th at 5pm Dubai time

Digital transformation is no longer a goal to achieve but one of the pillars of success. It has become a pre-requisite for businesses to thrive in an ever evolving industry. Telecom Review will address the next phase of digital transformation in its upcoming webinar, with a focus on:

- The outcome of years of digital transformation efforts
- Has the approach to digital transformation changed?
- Winners of the digital transformation race
- Pillars of the new future post-digital transformation

For sponsorship, contact Mohamed Ershad: ershad@tracemedia.info
For content, contact Christine Ziadeh: christine@tracemedia.info

Sustainability: The Path to Being Green Telcos

Sustainability is an important topic that is being addressed urgently worldwide. With telecom operators' climate-related commitments and the ICT sector's expanding energy footprint, there is a need to do more and transform faster.

In Europe and the Americas, companies' carbon neutrality targets for scopes 1 and 2 are set mostly for implementation before 2030 while carbon neutrality targets for other regions — the Middle East and Africa and Asia-Pacific — are set primarily for 2050. Achieving these climate-reduction targets will require a mix of behavioral change, regulation, legislative commitments and technology advancements.

The mobile industry was the first to fully commit to the United Nations' Sustainable Development Goals (SDG) in 2016 and has since been a forerunner in climate action. "Thanks to continued investment in infrastructure and the resilience of networks, the mobile industry continues to achieve its highest impact on SDG 9: Industry, Innovation and Impact," said Mats Granryd, GSMA Director General.

With technological progress benefiting humanity across different verticals, the telecoms sector is a key player in building a sustainable, resilient and quality ecosystem. To deliver the common 2030 agenda, it is increasingly important for telcos, among other industries, to embed principles of sustainability at their core.

Strong environmental, social and governance (ESG) initiatives bring an advantage by putting a spotlight on climate change and sustainability. In fact, an analysis showed that actively addressing and demonstrating consistent performance in sustainability leads to higher market valuations.

It is certain that connectivity has become a necessity for today's generation. Hence, now is the time to use the momentum of advocating for environmental sustainability to rethink telecom operations and value creation. By responding to the telecom sector's sustainability challenges, including becoming carbon neutral and bridging the digital divide, digital transformation and innovative solutions can support the transition to a low-carbon, digital economy.

Sustainability commitment

Digital companies, including those that produce and sell ICT equipment, operate telecommunication networks and provide software and other IT services, have become prominent in the race to eliminate harmful greenhouse gas (GHG) emissions.

By definition, the concept of sustainability assumes that resources are finite and should be used strategically to remain available for future generations. Nowadays, telcos are facing increasing pressure from customers and investors to be sustainable, with customers opting for companies that are sustainable and environmentally responsible.

- **Energy efficiency**

Energy costs represent 20–40% of telecoms OPEX – and even higher in diesel-heavy markets such as Southeast Asia and Africa. This trend will intensify as 5G takes hold, increasing the average data usage by 4× in 2025. In 2022 alone, the average usage per smartphone is expected to surpass 15 GB.

Taking this high demand into consideration, one area where the mobile industry can play a significant role is in decarbonizing energy systems. Minimizing energy consumption and maximizing the use of sustainable energy sources at ICT sites requires a transition toward smart energy systems (SES) and a holistic approach to energy management.

Network infrastructure energy efficiency is a priority for operators as networks (RAN, base stations, etc.) represent 90% of energy consumption. Moreover, the massive increase in the amount of data traffic over mobile wireless communication brings the challenge of supplying reliable and clean energy to end-users.

The ability to stabilize power on demand is critical for handling the 4G network, 5G transition, edge computing and IoT, and beyond. With the urgency of achieving carbon dioxide (CO2) reductions to meet net-zero deadlines, the telecom sector is shifting towards a strong commitment to sustainable business practices.

Sunsetting 2G and 3G legacy systems are said to contribute 15% of reduced energy consumption. Major operators in the Middle East and the US have already announced plans to retire these older networks and make way for newer generations.

Ericsson has joined MTN in its commitment toward reaching a net-zero carbon emission future by 2040. Creating shared value in a sustainable manner through responsible ESG practices, MTN will be in a better position to realize its energy use and carbon management efforts by leveraging Ericsson's latest and most advanced sustainable technologies.

For AT&T, in 2021, more than $111 million was invested to implement approximately 4,600 energy efficiency and reduction projects. For over a decade, an annualized energy savings of nearly 8.1 billion kWh and cost savings of $733.8 million were achieved by AT&T. Among its two innovative energy efficiency solutions are the efficiency-as-a-service (EaaS) platform that helps companies' large-scale energy efficiency deployments, and the data-driven solution to realize energy and operations savings by the Energy and Building Management Solution (EBMS).

- **Renewable energy**

Net-zero commitments have been made by telcos and enabled by a rapid substitution of renewable energy in place of fossil fuels. IoT penetration is also around 35% in solar and 10% in wind, and is set to increase steadily as a result of commitments to renewables that will connect a majority of grids by 2050.

In July 2021, Vodafone confirmed that its entire European operations will be 100% powered by electricity from renewable sources, marking a key step towards Vodafone's goal of reducing its own carbon emissions to

'net zero' by 2030. While in the MEA region, Jordan is one of the Orange countries with the highest renewable energy rate, equal to or even greater than 50%. du has also showcased its innovative Solar on Tower project which uses the vertical space on the telecom tower to install 65 to 72 solar panels. To date, du's solar sites have resulted in a total carbon footprint reduction of 3,750 tCO2/year.

Additionally, T-Mobile was the first telecom to commit to going all-in on renewable energy by the end of 2021, and by early 2022, it is powering America's largest, fastest and most reliable 5G network with 100% clean electricity. Transitioning to renewables, Verizon expects to generate renewable energy equivalent to 50% of its total annual electricity consumption by 2025. Since 2013, the operator has installed 31.5 megawatts (MW) of on-site green energy at administrative offices and other facilities.

Launching its 'Go Green' project in 2022, the Rakuten Group is actively pursuing its goal of 100% renewable energy usage across the entire Group by 2023, and supporting the realization of a green society by providing consumers with environmentally friendly living and shopping options.

Unsurprisingly, the use of renewable energy has been found to bring significant reductions in CO2 emissions. Major operators across the world are turning to renewable sources for their energy use and are aiming to make their entire consumption green.

- **Waste reduction**

While the average replacement cycle for mobile devices has trended longer in many markets over the past few years, the disposal of billions of devices every year carries a sizable e-waste footprint. Global e-waste is estimated to grow further to 74 million tonnes by 2030, with only a small fraction being recycled.

Recycling efforts are a visible strategy for mitigating the impact of e-waste as well as putting downward pressure on the resource-intensive production of new devices. In terms of emissions, a carbon-neutral economy is the goal, while in terms of waste, the goal is one of a circular economy. This is based on the principles of designing out the waste and pollution, keeping products and materials in use, and regenerating natural systems.

Telco and IT equipment are a major share of e-waste where 80% is discarded in landfills, burned or illegally traded every year. By 2022, Telstra has targeted that 100% of its branded packaging will be made of renewable or recycled material and will be fully recyclable. By 2025, the telco targets to reuse or recycle 500,000 mobile phones, modems and other devices each year and increase the network waste recycling rate to 85%. In the same context, China Mobile has recycled packaging waste and used recycled paper and other environment-friendly packaging materials. In 2021, over 80% of its newly-procured main equipment used green packaging, saving 262,000 cubic meters of timber resources.

On the other hand, as a result of Rogers' efforts, 2,799 tonnes of electronic waste were responsibly resold, reused, manufactured or recycled in 2021 – wireless devices alone accounted for an increase of 22%.

In 2020, Etisalat achieved a remarkable 60% recycling rate, deploying sustainable waste solutions such as sensors in the waste bins across retail spaces which provide real-time monitoring of waste accumulation. In that same year, the operator generated a total of 547,356 kilograms (kg) of waste, of which 40% was recycled.

Furthermore, Zain KSA signed an MoU with the Kingdom's National Environmental Recycling Company (Tadweer) for recycling electronic waste. This is in line with the goals of Saudi Vision 2030 to improve the quality of life and protect the environment, with the "Saudi Green" and "Middle East Green" initiatives.

Green telcos

Moving ahead, operators are uniquely capable to empower households and businesses across sectors to become more involved in environmental strategies. Beyond providing connectivity, enabling sustainability through telecommunications is an even higher goal, one that is lucrative in the fast-paced digital transformation scene.

A sustainability metric is necessary to know which sectors and products to target in B2B strategies, particularly in deploying vertical use cases such as transportation, automation, remote working and smart applications. Overall, reduced energy consumption, adoption of renewable energy sources and the implementation of a carbon reduction strategy are the three vital elements that must work in tandem for a telco to be considered green. TR

> Telcos are facing increasing pressure from customers and investors to be sustainable, with customers opting for companies that are sustainable and environmentally responsible

NGMN

REGISTER NOW

NGMN INDUSTRY CONFERENCE & EXHIBITION

7 – 9 September, 2022 – Paris, France

With a great line-up of speakers, exhibitors and a packed agenda around our strategic focus topics:

- **ROUTE TO DISAGGREGATION**
- **GREEN FUTURE NETWORKS**
- **ROAD TO 6G**

Digital Technology Creates a World for All Ages

Digital technology is a valid solution to the significant, yet not sufficiently discussed, issue of ageism. In light of International Youth Day 2022, a world leveraging the full potential of all generations is necessary.

The key to sustainable development is fostering fair intergenerational relations and opportunities, ensuring that no one is left behind. An essential factor in achieving this is building a greater sense of connectedness through digital technology.

In a highly digitalized society, equal opportunities to access and use digital technology are critical for social inclusion and participation. By empowering the youth, maximizing new ways of working and removing the stereotype of ageism towards older people, the lack of diversity in a digital future can be addressed.

Creating a world for all ages is a universal objective, since both older and younger people deserve the right to be connected. Efforts in bridging the gap in device familiarity, service access and online platforms are ongoing and deemed particularly valuable in the long run.

Youth in ICT

Ensuring the prevalence of digital literacy can empower young individuals to become more digitally engaged and to hold more positive attitudes toward their own aging. It is more likely that tech-native and digital-savvy youths can immerse themselves within a digital economy.

In the Middle East, countries like the United Arab Emirates (UAE) and the Kingdom of Saudi Arabia (KSA) are leading the way in reducing the digital skills gap. The Arab world has one of the largest youth populations globally. By starting early with digital education, the youth can be well equipped for the future workforce.

Schools are now using various forms of online education platforms, with the more ambitious institutions adopting cloud-based communications, virtual reality, augmented reality and other immersive technologies. This helps students be more well versed in technologies early and easily shift to learning advanced ICT skills later on (e.g. artificial intelligence (AI), robotics, cloud, cybersecurity, etc.)

Government authorities and the ICT industry – particularly telecom players – contribute to building the talent ecosystem through open collaboration with academia and tech-intensive initiatives. Companies like Huawei and Ericsson are actively engaging in developing the most talented youth, locally and globally.

Participating in the modern world is putting a lot of pressure on learning new digital technologies and skills. This is why the approach to digital literacy must be tailor-made and adjusted in the best possible way, from primary age.

This will add great value to minors' capabilities to make informed life choices and decisions while being involved in tech-focused industries. Indeed, ubiquitous connectivity will create new business models that demand entirely new talents and skills. A great example of this is seen nowadays in the rise of digital nomads within the gig economy.

Digital Nomads

Powered by digital technology, remote

work and flexible hours are enjoyed by millions of digital nomads worldwide. To define, digital nomads are location-independent people who make a living by working online. They can constantly be on the move as long as they can stay connected.

Investopedia research found that the average Nomad is about 35 years old, with income skewing higher than average – 38% earning $75,000 and above and about 26% earning less than $25,000 per year.

As part of the gig economy on the rise, these digital nomads adapt to the changing nature of work and embrace digital upskilling. Whether you are just a fresh graduate or you already have plenty of professional experience, having a balanced mix of hard and soft skills is key for a lucrative digital career. These include important 21st-century capabilities such as excellent communication, creativity, design thinking, leadership skills and innovation.

Dubai has been ranked one of the best cities in the world for digital nomads to live and work in. The Emirate's agility to embrace the future of work through specialized digital frameworks and offerings has made it an ideal environment for digital entrepreneurs. Managing Director of selected members of TECOM Group Majed Al Suwaidi commented, "Our near 100 percent internet penetration rate, our plethora of housing and hospitality options across various price points, co-working spaces and smart services make setting up in Dubai seamless and hassle-free."

In fact, the UAE unveiled a one-year residency permit for remote workers to attract more talent to the region and boost business opportunities. Even Ras Al Khaimah, UAE's nature-based Emirate, has positioned itself as the "ideal work from home" location by organizing the Live RAK Play program, available until September 2022. It features a range of long-stay offers across numerous hotels, ensuring optimal levels of work productivity with seamless and complimentary Wi-Fi as well as discounted rates on laundry, telephone calls and food and beverage.

Being a digital technology enabler in remote work, the Etisalat CloudTalk service features HD video virtual meetings, desktop sharing with screen sharing functionality, whiteboarding using an interactive tool that facilitates creativity and toll-free audio conferencing.

According to forecasts, this global nomadic workforce, capable of plugging in anywhere in the world with a decent internet connection, will make up 1 in every 3 employees.

Older People in Tech

Older persons are often stereotyped as those who dislike digital technology or are rather less capable and unwilling to adopt it. While technology holds promise to improve the lives of older people, a digital divide has opened up between older and younger generations.

Despite this, a great proportion of older persons report a high willingness to learn and consider many digital technologies as relevant to their lives. Either for leisure, personal development or health reasons, digital adoption for adults aged 50 and above has consistently increased since 2014, making the baby boomer generation the most rapidly growing group of internet adopters.

Among all use cases, communication via video call or online services is a widely accepted and desired means of accompanying older persons in their everyday lives. Emerging technologies such as wearables, voice activation and biometrics also offer great convenience and accessibility for older people.

Supporting senior Emirati citizens and pensioners, du announced exclusive business mobile and government plans to specifically provide more value for money and mobile plan benefits for seniors to meet their communication requirements and improve their lifestyles.

Even on the corporate side, age discrimination against technical capabilities and workplace culture exists. Yet, a key to creating a balanced workforce is not only focusing on the youth, but also building upon the experience and insights of older people. When the generations are merged together, this can bring a more beneficial impact to the business community.

Unsurprisingly, the next generation of seniors is expected to spend many of their golden years using the internet, smartphones, tablets and various software applications. According to a 2021 survey, nearly one in five seniors plan to work beyond the age of 70. For this reason, we could see a continuous trend in older people becoming familiar with new and relevant digital technologies.

Telehealth or digital health is a testimony to how the elderly could benefit from connectivity. With a tap of a finger, a senior should be able to communicate with a health coach, start a video call with a medical professional or follow an exercise routine from their device. Building relationships and trust is essential, as is having a virtual support team who can watch over seniors and assist them when needed. TR

A great proportion of older persons report a high willingness to learn and consider many digital technologies as relevant to their lives

Telecom's Holy Grail: Being Connected and Reachable

Telecom's importance will continue to be magnified as the global population is expected to reach 8 billion by November 2022. With this massive number of people distributed worldwide coupled with fast-paced digital development, the need to be connected prevails.

If users can connect online but cannot be reached, it becomes a tricky situation. Thus, being able to connect and having the means to be reached by other devices or people are both keys to a seamless telecom service. New research commissioned by Ookla shows just how much more consumers are relying on their mobile connections nowadays. The percentage of consumers who describe themselves as always online has surged, from 30% to 69%. These valuable customers need reliable networks to keep up with the demands of their mobile internet use.

From a commercial perspective, the majority believe that the most significant business driver to deploying mobile private networks is to support the digitalization of large enterprises.

Connectivity made better, stronger

Connectivity is a major priority that can improve the quality of life, eventually helping people to be more reachable. With technologies like 5G and Wi-Fi 6 leading us into the future, unlimited connectivity will become a necessity to enable life-enhancing services like AI-powered smart homes and clinical facilities.

Further into 2022, one out of two smartphones will be able to support 5G globally as 40% of all devices are working their way to 5G compatibility.

With a whopping 2.5 billion consumers under 25 years of age, most of whom are always online, higher demands for fast connections with low-latency arise. Additionally, about 45% of young adults running a business use social media platforms for customer service, while millions are surfing the web for information, shopping and connecting to brands online.

Unlike previous generations of communication networks, 5G is considered the cornerstone of digital transformation wherein the world's major economies utilize 5G as an essential part of long-term development.

Moreover, 60% of global mobile network data traffic is expected to travel over 5G networks by 2027. With better, safer and stronger connectivity in mind, we can unleash the power of IoT, enable demanding use cases and secure networks in an evolving threat landscape.

Participating in society without being connected is no longer feasible, as most services like banking, telecommuting, distant learning and digital identity verification can only be accessed with the internet. An anonymous senior software engineer at Microsoft wrote, "Societal norms will dictate to connect. Products will dictate to connect. Entertainment needs will require a connection."

The ability to connect multiple aspects of our lives online also makes it harder to disentangle from a digitally focused system moving forward. Metaverse, for example, is a trending topic being explored that merges the physical and virtual personas together.

As more technological advances prevail, modern life is ever more dependent on having near-constant internet access, and telcos must keep up with this demand and deliver services that bring value to customers.

Within reach

In most cases, the telecom services are only as good as the service providers themselves. When choosing an operator, a solid reputation for quality services and products, exceptional customer support and reliability is key.

Typically, when a smartphone is unreachable, it could either be powered off, receiving a weak signal, out of battery power, switched to airplane mode or in some way destroyed. Otherwise, the network will have some mechanisms like timers, periodic updates and paging to know whether the user equipment (UE) is reachable at a given moment.

If there are coverage or voice quality issues, one can try to switch off any of the devices in proximity that produce electromagnetic induction (such as internet routers) and then restart their mobile device. They can also try re-inserting the SIM card into this or a separate device. If worse comes to worst, one should contact their network operator who will be able to sort the issue from their end.

Technically speaking, the reachability in 5G involves the basic functionalities in the core such as the Access and Mobility Management Function (AMF). Applicable to IoT use cases, some features were originally designed for the network to acquire knowledge on the expected transmission/reachability times of the devices. 5G takes these initial solutions much further, acknowledging the fact that IoT devices can be dormant, only "waking up" and becoming reachable for rather short periods.

Moving towards the 5G network function, a whole sequence of signaling exchanges with dedicated messages and parameters has been created to share the knowledge on paging, mobility handling and the actual transfer of data.

By definition, a reachable UE can receive incoming communication. In cases like emergencies where service is disrupted, two-way radios and satellite-supported phones are used. Foundational technology and communications needs vary based on the scope, scale and nature of the emergency. TR

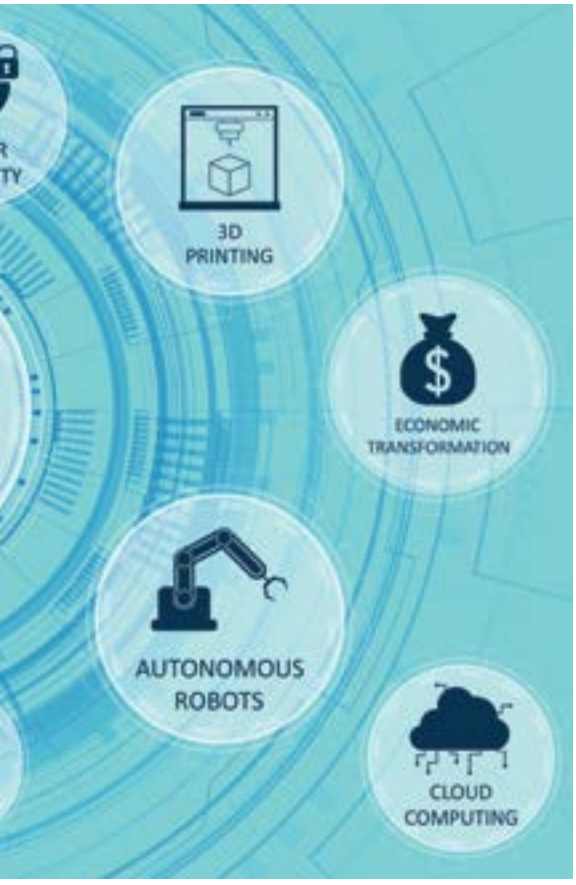
Accelerating Adoption of Industry 4.0 Solutions

Among the major pain points faced by the industry sector, especially in manufacturing, are incidences of accidents and injuries. Treatment and rehabilitation of injured staff can require huge chunks of company money and result in unplanned downtimes and inefficiency. Fortunately, with the advent of industry 4.0 technology, such instances can be drastically minimized to improve both the well-being of workers and the overall business health of industries.

As such, the industry 4.0 revolution (4IR), at a relatively fast pace across the globe, is delivering on its promise of enhancing productivity and efficiency, cost optimization, new opportunities, customer satisfaction and safety. The Global System for Mobile Communication Association (GSMA) predicts that, by 2025, there will be more than 25 billion Internet of Things (IoT) connections globally. The industrial IoT (IIoT) enables machine-to-machine (M2M) communication, making manufacturing facilities smart and digitalized. For instance, by using sensors to monitor factory floor data, manufacturers can gain insights into their facility to optimize processes, improve machine performance, reduce waste and energy consumption, etc. Moreover, 86% of surveyed IT decision-makers in the UAE regarded accelerating the pace of innovation, digitizing their business and moving IT infrastructure to the digital edge as among the highest priorities in their organization's technology strategy.

To bring all this together, cellular or mobile networks are the fundamental component of the 4IR ecosystem. The need and demand for cellular networks to connect physical devices such as vehicles, electronic devices and other "things", allowing access to systems and machines from remote locations via applications and mobile devices is gaining momentum. Small wonder that cellular IoT technology is projected to be a market worth $5.31 billion by the year 2023.

LTE-M and NB-IoT are networks designed specifically for IoT connections that will be further propelled into 5G. LTE- M offers a lower price point as well as voice and



SMS support while NB-IoT offers low power and low data usage for long-range and reliability.

As mobile IoT networks use dedicated spectrum bands under the terms of the licenses issued by regulators, interference from other radio technologies is kept to a minimum. Moreover, all mobile operators employ Subscriber Identity Modules (SIMs), which contain highly secure integrated circuits to authenticate the devices accessing their networks and services. Although SIMs are recognized by end-users and provide a secure means for authenticating devices onto networks, eSIMs, or embedded SIMs, is a digital alternative to physical SIMs, connecting devices to a network over the air. Initially adopted for wearable devices and connected cars, eSIMs are also now a key component of the IIoT.

Mobile operators can supplement the inherent security capabilities in their networks by pursuing four main aspects of security features as proposed by GSMA that can add significant value for their customers.

Secure communication channels: Mobile operators must ensure that customer/user data is encrypted while traveling across their infrastructure. In cases of this data entering less secure environments (e.g. the Internet), mobile operators can provide and manage secure connections using virtual private networks (VPNs) and encrypted Internet connections. Operators can also enable individual customers to use dedicated communication channels to ensure that no data enters a public network, such as the Internet. These methods can be used in conjunction with secure, private access point names (APNs) dedicated to a specific customer in order to keep their data communications isolated from other traffic.

Managed communications:
For IoT applications, devices typically only need to communicate with a specific set of servers. It is, therefore, good security practice to restrict the communication from this device to these specific servers, meaning a compromised device cannot communicate with any other destination, thus limiting any potential threat. Such restrictions could be implemented, for example, using a whitelist of IP addresses, IP address ranges or URLs. Moreover, unessential connectivity capabilities can be disabled in the devices' HLR/HSS (home location register/home subscriber server), to prevent misuse. For example, if the devices in question only use SMS and voice, the data connectivity should be disabled.

Data over NAS (DoNAS):
Data over NAS (DoNAS) allows the network to transport user data within signaling messages. This feature transports data via the MME (mobility management entity) by encapsulating it in NAS (non-access stratum) signaling. DoNAS can be used to transport both IP and non-IP traffic. The customer/user data is encrypted and integrity protected using the same mechanism reserved for network signaling, thus ensuring similar levels of protection. This feature works well for short data transactions, for example with UDP (user datagram protocol) traffic, where a few packets are sent per connection.

Non-IP Data Delivery (NIDD):
NIDD is used in conjunction with DoNAS to allow a device to send data to the network without an IP stack, without an IP address and without an IP header or transport header. NIDD can transport data using a Point-to-Point (PtP) Serving Gateway interface (SGi) tunnel to the application server or by using the service capability exposure function (SCEF). The SCEF provides a means to securely expose service and network capabilities through network application programming interfaces (APIs).

Globally and regionally, the digital transformation of industries is being seen as the most important driver of economic development. Huge investments have already been made to that end. The industry sector is well-placed to benefit from the technologies that drive 4IR – namely artificial intelligence, IIoT, big data analytics and cloud computing. Network service providers need to ensure that the connectivity process is streamlined and immutable to breaches for continued success. TR

> “Mobile networks are the fundamental component of the 4IR ecosystem”

Connectivity Gap:

Unbroken Adversity in Rural Areas

The connectivity gap is still apparent, particularly when we study how urban and rural areas function. Looking at the increase in online activities as a result of the COVID-19 pandemic, connected areas were resilient in the face of change and uncertainty, while unconnected areas were stuck in a blind spot.

In reality, most of the unconnected live in rural areas. Studies have shown that rural users are 20–30% less likely to engage in activities such as ordering or purchasing goods online and using mobile to access education, health and financial services. Moreover, they tend to engage in online activities such as instant messaging and social networking less frequently.

Long before recent innovations in ICTs, uneven development between urban and rural areas could be observed within the broader scope of both developing and lesser-developed countries. This was identified as the "urban bias" in the economical sense.

And yet in terms of connectivity, disparities between urban and rural areas based on broadband access can also lead to a "rural penalty", which is described as the increased economic and social burden that rural communities face.

To bridge this divide, an innovative approach is required to pave the path to universal meaningful connectivity and broaden connectivity across rural communities.

Rural areas should aim for meaningful connectivity

According to an ITU report, virtually all urban areas in the world are covered by a mobile-broadband network, but a lack of connectivity and internet access persists in rural areas. This connectivity gap is evident in the least developed countries, where the rural population lives either in areas with non-existent mobile coverage or areas only covered by a 2G network.

Despite the efforts of the governments and operators to expand broadband networks considerably, many rural areas are still difficult to reach. Hefty

costs, low return on investment and challenging geographical terrains often present barriers to rural connectivity.

Meaningful connectivity in rural areas, specifically, is one of the keys to achieving various SDGs. It is not impossible to attain fully in the future, as long as countries continue to include rural targets within their national broadband plans and policies.

We understand meaningful connectivity to be 4G-like speeds on a smartphone, allowing daily use of unlimited internet access at home, work or place of study.

The Fourth Industrial Revolution (4IR) is upon us, and it offers further opportunities to transform the way people live and work. But in rural areas without adequate internet connectivity, there is a continued risk of being left behind.

Addressing the urban-rural connectivity gap in MENA

By 2025, the MENA region is projected to have 160 million digital users. However, access to the Internet remains highly disproportionate. Amongst Arab states, there's a continued urban-rural divide in terms of internet availability, mobile ownership and digital literacy favoring urban areas, with only 42% of rural households using the Internet and only 34% of individuals in rural areas having access to a computer.

The rapid urbanization of the region saw the MENA countries, which were on average 65% rural in 1960, shift to 65% urban in 2007. According to UNICEF, urban dwellers account for nearly 100% of the population in Kuwait and Qatar, making them the most urbanized countries in the region. Jordan, Oman, Lebanon, Bahrain and the UAE follow suit. Conversely, approximately half of Sudan's population will still live in rural areas by 2050, with Yemen and Egypt standing at 43 and 44% rural respectively by that same year.

This ITU data shows an existing problem that continuously needs to be addressed to benefit all citizens. In response, Oman's regulator unveiled an initiative aimed at connecting over 500 remote communities and villages in the Sultanate through the Telecommunications Regulatory Authority's National Broadband Strategy. This program seeks to extend telecom and internet connectivity to underserved areas of the country and will receive funding of OMR15 million (US$39 million) from Oman's Ministry of Finance.

In parallel, one of the key issues for the urban-rural connectivity gap is the varying prices of internet bundles, which are above the affordability target set by the UN Broadband Commission: 2% of monthly GNI per capita.

As a result, in Africa, almost 30% of the rural population still cannot access the Internet. Based on TheGlobalEconomy.com's figures, four African countries – Burundi, Niger, Rwanda and Malawi – are included among the top 10 for rural population percentage (<80%) in 2021. Having been known by ITU as the region with the lowest ICT Development Index (IDI), GSMA also found the largest coverage gap in sub-Saharan Africa, at 19%. Despite this, efforts made by various stakeholders to address Africa's coverage gap are bearing fruit.

In 2021, to ensure sufficient coverage in rural areas, MTN increased the number of rollout partners and introduced new partnership models, unveiling some 912 rural sites. This expanded coverage to more than 23 million people in rural areas is up from 8.5 million in 2020. And to increase data service affordability, they also reduced the data tariff by 15.3%. They further disclosed that, after benchmarking MTN data pricing across operations, 11 MTN markets have data prices that are within the UN's recommended affordability range.

Relatively, the GSMA Mobile Connectivity Index shows that infrastructure has seen the biggest improvement in the Arab States region, but more needs to be done to ensure that access to meaningful connectivity can be achieved to close the usage gap. Closing the digital divide definitely means much more than simply getting everybody online. Meaningful connectivity is the core goal, as digital platforms and services become more sophisticated and mandatory in people's lives.

Telecom Egypt is also connecting fiber-optic networks to about 1,413 villages in 52 towns within 20 governorates, to better develop the information infrastructure and ensure access to high-speed internet services in the Egyptian countryside. This is in line with MCIT Egypt's goal to connect one million rural homes with fiber-optic cables.

Bridging the connectivity gap as well, industry leader Huawei seeks to resolve the rural connectivity challenge by facilitating Ghana mobile operators' deployment of cell sites. One such solution is RuralStar, a lightweight rural network coverage solution supporting 2G, 3G and 4G connectivity through a more affordable non-line-of-sight (NLOS) wireless backhaul technology with 10-40 km reach.

A service agreement was also signed by the Egyptian government through the National Company for Telecommunications Services (NCTS) to provide connectivity in rural areas via the Tiba-1 satellite. Connecting rural populations via satellite is part of the government's "Decent Life" project.

Indeed, satellite broadband in the Arab States region is also offering an effective means of closing the digital divide and addressing the remaining connectivity gaps in remote or hard-to-reach areas. ITU data even showed increased satellite broadband subscriptions in Bahrain, Tunisia, Sudan, Morocco and Oman between 2017-2019.

The next generation of satellite backhaul technologies also has the potential to transform rural connectivity. As an example, SES' O3b mPOWER has a strong mix of commercial potential and the latency and capacity to deliver useful mobile internet connectivity to rural and remote areas. In February 2022, Orange, Sonatel and SES announced the deployment of the first African O3b mPOWER gateway in Senegal. TR

What 5G Standalone Can Mean for the Telecom Market?

Advances in digital technology will further the real-time, engaging and more immersive experiences in the digital world, a virtual landscape which is steadily inching towards a 10 Gbps network speed across the globe.

5G wireless technology is meant to deliver higher multi-Gbps peak data speeds, ultra-low latency, more reliability, massive network capacity, increased availability and a more uniform user experience to ever-expanding volume of users. Higher performance and improved efficiency of 5G will affect many industries including manufacturing, transport, retail and healthcare, along with a plethora of other industries.

However, the true potential of 5G cannot be realized without the deployment of a 5G standalone (SA) core. The 5G core itself is designed as a Service Based Architecture (SBA) which virtualizes network functions altogether, providing the full range of 5G features enterprise needs for factory automation, autonomous vehicle operation, remote sending and more. In non-standalone (NSA) architecture, the 5G Radio Access Network (RAN) and its New Radio (NR) interface is combined with the existing LTE and EPC infrastructure Core Network, 4G Radio and 4G Core respectively. Compared to NSA, the 5G Standalone network demonstrates advantages in uplink (UL), End-to-End (E2E) latency, edge computing, etc., and therefore provides broader user experience. Although a cost-effective option for initial 5G deployments, operators have been compromising with the latency issues in an NSA setting. As such, many operators are eagerly waiting to capitalize on the 5GSA setup. The low latency capacity of 5GSA can enable new technologies such as industrial robots, self-driving cars and remote sensing, etc. which are crucial for productivity efficiency.

"The deployment of 5G standalone (SA) networks is increasing in many regions as communications

service providers (CSPs) gear up for innovation to address the business opportunities beyond enhanced mobile broadband. A solid digital network infrastructure supports enterprises' digital transformation plans, and their new capabilities can be turned into new customers," says Peter Jonsson, Executive Editor, Ericsson Mobility Report.

5G standalone as an enabler:

Network slicing: 5GSA will enable automated network slicing to be used in a variety of industrial applications. SA's delivery for 5G private networking can accelerate commercial deployments by the virtualization of networks (Network Function Virtualization (NFV) / Software-Defined Networking (SDN) technology) on the same physical hardware through network slicing. 5GSA can be required for mmWave private network deployments where verticals need a fully isolated network. Network slicing allows the implementation of customized functionality and network operation specific to the

needs of the unique customer rather than a one-size-fits-all approach in the current and previous mobile generations.

IoT connectivity: SA complements massive IoT on the network as the 5G core can support up to one million devices within a square kilometer, which is far superior to what previous cellular standards could accommodate. Moreover, using 5G NB-IoT connectivity service can integrate the satellite network with existing terrestrial networks to provide IoT connectivity for customers located remotely.

Carrier aggregation (CA): CA combines two or more bands to increase bandwidth. As more smart devices start to implement carrier aggregation, operators can add new revenue-generating packages through this technology.

AR/AI-based technologies: Big cloud operators and telecom vendors are collaborating to simplify the consumption of secure and private 5G networks that can run latency-sensitive applications on various industry sites. AR applications that run on the cloud are helping transform the workforce and boost employee capabilities while reducing manufacturing startup time. Mixed reality-based integrated communications are allowing industry operators, maintainers and their teams to efficiently follow work instructions to perform inspections and complete complex and unfamiliar tasks independently. Moreover, by leveraging multi-access edge computing (MEC) and cloud with data analytics, the operations team can monitor and analyze data to ensure quality metrics are maintained and presented to line workers in real-time. 5GSA connectivity will speed up analysis and data gathering processes, improving production line efficiency across the factory sites.

5GSA deployment headways:

According to GSMA, in the early stage of 5GSA deployment, enhanced Mobile Broadband (eMBB) service interworking between 4G and 5G is necessary to ensure service continuity, while ultra-reliable low latency communications (URLLC) and Massive Machine-Type Communications (mMTC) services will be supported at later stages. As of early 2022, the Global Mobile Suppliers Association (GSA) reported that 99 operators in 50 countries worldwide are investing in either public 5G Standalone (SA) network trials or actual planned deployments, and that 20 operators in 16 countries and territories, including the Middle East had already launched public 5GSA networks.

The 5G spectrum resources defined in the 3GPP protocol can be divided into two frequency ranges, FR1 and FR2. While FR1 includes Sub6 GHz bands aka low-frequency bands, it is the primary band for 5G. The frequencies below 3 GHz—also called sub-3Ghz, and the others are referred to as C-band.

FR2 is the mmWave of 6 GHz or higher, also referred to as the high-frequency bands, which are extended bands for 5G. There are excessive spectrum resources available in FR2. In 2019, Etisalat tested 5GSA in the 3.5GHz carrier with a spectrum of 100MHz. Using a Standalone (SA) smartphone, throughput of over 1.5Gbps was achieved in download speed and 200Mbps on the upload speed, enabling the seamless management of upgrades and migration from NSA to SA. Experts believe that more FR1 spectrum deployments will make the 5GSA deployment appealing in the future.

Looking ahead

5GSA coupled with new technologies such as cloud, network slicing, edge computing and AI will open up multiple innovative applications and solutions for customers, especially for vertical industries (manufacturing, healthcare, real-time surveillance and others). For instance, in the case of the health sector, the enhanced connectivity of 5GSA could enable reliable digital support to doctors during highly critical procedures such as the real-time care for patients with cardiac problems. The collating and transmitting of technical information from different medical systems to assist the doctors remotely will warrant secure, low-latency high-bandwidth to support quick decision-making in matters of life and death. This, 5GSA can deliver. Countries around the world are providing impetus to their technological sectors with massive investments in capital and human resources. Industry 4.0 Technologies are being implemented across industry verticals, and the key component of the overall functionality lies in the greater connectivity capacity of 5GSA.

Operators may be facing headwinds in 5GSA deployment in terms of 1) monetization opportunities and uncertainties emanating from issues of network migration and 2) traffic management from both a performance and cost standpoint. However, the innovative features of 5GSA that complement enterprise requirements such as low latency, expanded device support and multiple connections for various corporate tasks – should keep the network service providers well motivated in the meantime. TR

e& H1 2022 Performance Reinforces Success, Strong Standing

e&, formerly known as Etisalat Group, announced its financial results for H1 2022, showing AED 26.3 billion in revenue and AED 4.9 billion in net profit. Representing an increase of 2.5% over the same period last year, aggregate group subscribers reached 160 million. e&'s consolidated net profit for H1 2022 recorded a year-over-year (YoY) increase of 2.5%, and at constant exchange rates, revenue increased by 3.8%. Consolidated EBITDA remained steady in reporting currency at AED 13.4 billion while increasing by 4.1% in constant currency. The board has also approved an interim dividend of 40 fils per share for the first half of the year.

Among e&'s key operational highlights and developments for H1 2022 include its major investment in Vodafone Group, representing 9.8% of Vodafone's issued share capital, partnership with G42 to create the Middle East's largest data center provider under Khazna Data Centers, collaboration with other Middle East operators to establish the region's first Open RAN centralized test lab, the launch of Cyber Eye as an initiative to strengthen the Abu Dhabi Government entities' cybersecurity capabilities and the acquisition of elGrocer under the Smiles brand.

Impressively, the number of Etisalat by e& (previously Etisalat UAE) subscribers reached 13.3 million in H1 2022, representing a YoY increase of 10%.

Among the significant launches of the telecom pillar of e& in the UAE at this period are the GoChat Messenger, an all-in-one free voice and video calling app, the UAE's first-of-its-kind Easy Insurance that offers digital services for auto, health and travel insurance and the first global live multi-vendor voice over new radio (VoNR) ecosystem.

As a testimony, in response to the demand for high-quality content and seamless streaming, E-Vision, a part of e& life, and Abu Dhabi Developmental Holding Company PJSC (ADQ) signed a binding agreement to acquire approximately 57% of STARZPLAY ARABIA.

e& enterprise (formerly Etisalat Digital) also announced a partnership with NICE to drive the availability of the CXone platform in the UAE, providing Etisalat customers with a clear, seamless path to the cloud with CXone, while enabling frictionless digital self-service and agent-assisted customer experiences.

Zain KSA Achieves Triple-Digit Growth in Q2 2022

Zain KSA has achieved SAR 134 million in net profit during the second quarter of 2022 (Q2), an impressive 219% growth compared to the same period of 2021 and a 65% increase compared to the first quarter of 2022 (Q1). A 16% year-over-year (YoY) growth in revenues was also recorded during Q2 2022, hitting SAR 2.2 billion.

These results are mainly driven by sustained growth in 5G and B2B revenues as well as higher demand owing to the resumption of Umrah and international travel after the relaxing of COVID-19 restrictions.

This positive financial performance coincides with Zain KSA's expansion of its portfolio of digital products and solutions, aiming to provide the most innovative services and the best customer experience. Zain KSA has reaffirmed its commitment to being the preferred choice for all segments of customers (individuals, businesses and governments) by pursuing an ambitious vertical expansion plan, especially in the areas of 5G and cloud computing services with their wide range of use cases in AI, VR, AR and the IoT.

Commenting on the financial results, Zain KSA CEO Eng. Sultan bin Abdulaziz Al-Deghaither said, "Through our strategic partnerships with global players, we were able to transform the 5G experience in Saudi Arabia. At the same time, we matched our world-class partnerships with the enabling digital infrastructure required to ensure the best results. In this regard, we are connecting the Middle East with the rest of the world through a system of submarine cables J2M (Jeddah, Saudi Arabia to Marseille, France). Jeddah will be the cable landing station for Saudi Arabia's portion of the PEACE cable system. Our aim is to enhance our capabilities when it comes to international infrastructure while making available to global carriers and enterprises operating in the Kingdom a brand-new entry point in Saudi Arabia for their connectivity requirements in order to serve their communication needs according to the best quality standards."

Al-Deghaither continued, "In line with the goals of Saudi Vision 2030, we believe at Zain KSA in the importance of investing in human capital development, especially young national talent. This belief led us to earn the 'Labor Award' for job localization in the Information and Communications Technology sector from the Ministry of Human Resources and Social Development (HRSD). As part of our continuing efforts in this area, we recently launched the Evolve program, which aims to provide workplace training and skill development to one hundred fresh graduates."

EITC (du) Reports 26.2% Increase in Q2 Net Profit

Emirates Integrated Telecommunications Company PJSC ("EITC") whose brand name is du published its financial results for the quarter-ended 30 June 2022. Sustained demand for broadband and mobile services led the revenues to increase by 9.9% to AED 3.14 billion. EBITDA improved by 12.1% to AED 1.27 billion, attributable to a sharp increase in service revenues and gross margin expansion. Net profit increased by 26.2% to AED 303 million. Operating Free Cash Flow (EBITDA – Capex) grew 47.7% to AED 709 million, driven by higher EBITDA and Capex spend that is beginning to normalize. On the basis of these results, the Board of Directors approved an interim cash dividend of AED 0.11 per share representing a 10% increase over the previous year's interim dividend. Read Q1 results

Operating highlights

The mobile customer base grew 13.0% to 7.4 million subscribers, highlighting the sustained performance of the postpaid segment with net-additions of 24,000, a fourth consecutive quarter of growth, to reach 1.4 million subscribers. The quarter ended with 6.1 million prepaid customers. The prepaid visitor customer base tapered following the conclusion of Expo 2020 and the start of the low tourist season. Excluding visitor SIMs, our prepaid customer base remained stable when compared to the previous quarter.

Consumer broadband customer base increased 69.5% to 473,000, attracting 35,000 new customers, compared to 31,000 for the same period last year, as a result of the combination of connecting new premises to fiber network and an attractive commercial offering.

Commenting on the results, Malek Al Malek, Chairman said, "EITC delivered an excellent set of results. The recovery trend seen towards the end of last year, is morphing into a growth trajectory that is driving revenues back to pre-COVID levels and an improvement in profitability. We are maintaining a dynamic and proactive commercial approach: we will continue launching new products and services for the benefit of our customers. Our transformation projects, a key enabler of these commercial initiatives, are progressing according to plan."

Meanwhile, Fahad Al Hassawi, EITC CEO added, "I am really delighted by this quarter's performance. We have delivered three consecutive quarters of improvements and growth. Crucially, our service revenues have been and will continue to be a significant driver of profitability. Q2'22 service revenues have reached a three-year high. Our commercial and investment efforts continue to bear fruits. We had a fourth consecutive quarter of net-additions on the high-value postpaid segment. Our customer acquisition on the consumer broadband services remains robust. We are also actively managing the efficiency of our business to drive profitability. Cash generation will sustainably improve as our Capex program continues to normalize."

Ooredoo Group H1 2022: Healthy and Stable Business Growth

Ooredoo Group announced its financial results for the second quarter of 2022, showing impressive growth in the first half of the year.

Revenues for H1 and Q2 2022 are valued at QAR 11 billion and QAR 5.5 billion respectively, surging by 4% and 3% year-on-year. Net profit has also displayed a double-digit growth in the latest quarter (37%) and mid-year (43%), hitting QAR 1.3 billion.

Moreover, the Group EBITDA for the period was QAR 4.5 billion, a YoY increase of 2% while the CAPEX decreased by 21%.

The success of Ooredoo's transformation strategy is also evident and proven through its improved free cash flow of QAR 3.6 billion, which increased by 10% during H1. Overall, the customer base is consolidated at 55 million, with Qatar operations being the most profitable.

Within the Middle East, the Group's impressive reputation secured its position as the official global connectivity services provider for the upcoming FIFA World Cup Qatar 2022. Ooredoo and BICS also agreed to create an innovative voice business model that will deliver innovative solutions in artificial intelligence, machine learning and fraud protection.

In its home market of Qatar, Ooredoo reported revenue of QAR 3.8 billion, an increase of 3%, and a customer base increase of 5% to 3.2 million. On the other hand, despite the increased competition in the market, Ooredoo Oman also delivered good results for H1 2022, with an improved customer base of 2.9 million, revenues of QAR 1.2 billion up by 2% and EBITDA raised by 5%. Ooredoo Kuwait also reported a 13% increase in revenue to QAR 1.4 billion and an increase in EBITDA by 17%. Notably, it is the first telco in Kuwait to adopt IPv6. In addition, Asiacell also continued its strong performance with a revenue increase of 3%, recording QAR 1.7 billion and a customer base standing at 16.3 million, an increase of 13%.

Zain KSA Prepares Best Services for the 2022 Hajj Season

Zain KSA has completed all arrangements and preparations to receive the pilgrims during this year's Hajj season. All the technical requirements have been fulfilled to ensure the top quality, speed and reliability of communications and digital services offered to pilgrims in the vicinity of the Great Mosque and the holy sites in Makkah and in Madina.

Zain KSA expanded and improved all networks in the area of the holy sites, including the Wi-Fi, core and radio access networks (RAN). Moreover, the operator also conducted service evaluations and field examinations and increased its capacity across more than 40,000 points and locations around the holy sites. All operations were digitized to increase performance and quality indicators, while cybersecurity was enhanced with continued risk assessments performed. Zain KSA also simulated various potential incident scenarios to ensure instant response to those potential occurrences that might affect network services.

In his remarks, Eng. Sultan bin Abdulaziz Al-Deghaither, Zain KSA CEO stated, "We are extremely proud to serve the pilgrims and provide the best digital services to them and to all the groups and teams of all the sectors operating in the areas of the Holy Mosque and the holy sites, in line with the directives of our astute leadership. At Zain KSA, we collaborate closely with the relevant authorities and our success partners, namely the MCIT and the CITC, serving the objectives of the Doyof Al Rahman Program in enhancing the religious and cultural experience of pilgrims at the Two Holy Mosques and the holy sites and facilitating their spiritual journey with the best technologies. We will continue to cooperate with all our partners in developing and advancing our services in line with Saudi Vision 2030 and the aspirations and directives of our wise leadership."

Preparations for this year's Hajj season were highlighted during a visit by the Governor of the Communications and Information Technology Commission (CITC) Dr. Mohammed bin Saud Al-Tamimi to Zain KSA's headquarters at the holy sites, leading a delegation from the CITC and Ministry of Communications and Information Technology (MCIT).

Etisalat by e& Drives Juma Al Majid Group's Transition to Cloud

Etisalat UAE, branded as etisalat by e&, has successfully implemented an end-to-end MS Teams Direct Routing in the UAE for Juma Al Majid Holding Group, supporting the digital transformation journey of the group by moving from an on-premise legacy telephony to a cloud-based solution.

The implementation follows e&'s recent unveiling of "etisalat by e&" as the new brand identity for Etisalat UAE, in line with the Group's positioning as the global technology and investment conglomerate that digitally empowers people and societies, highlighting the company's creative offerings that best support its customers' requirements and experience.

Etisalat by e& is providing a hosted end-to-end solution including voice infrastructure, managed Session Border Controller (SBC) and MS Teams integrated with MS Office 365. This will offer interoperability by delivering calls directly to Juma Al Majid's business locations with MS Teams as an office phone system, making the workforce more productive. This is in line with Juma Al Majid Holding Group's future goal of adopting a fully agile way of working and seamless interaction with the installation of softphones on mobile, thus eliminating the traditional desk phones and giving employees the freedom to communicate and collaborate from any location, thus leading to higher productivity between cross-functional teams.

Jawad Abu Farha, Group Chief Information Officer, Juma Al Majid Holding Group highlighted that this implementation is an essential building block in the group's digital journey as the organization transitions to the cloud for all its operations. "The group's partnership with Etisalat by e& is supporting our journey in achieving our strategic digital goals. The deployment of this end-to-end solution is the first in the country, and we are proud to have set a benchmark for our peers in adopting this agile solution that enables cross-functional team productivity and increases operational efficiency," he stated.

Etisalat by e& operates and manages the most advanced network and voice infrastructure in the UAE, but it also brings robust end-to-end managed solutions to its government and enterprise customers. Moreover, in its position as a leading digital enabler, it gives large-scale organizations like Juma Al Majid ample leverage to fast track their journey to the cloud, facilitating faster time to market and supporting multiple lines of businesses.

Ragi Magdy, Senior Vice President, Enterprise Sales, Etisalat UAE said, "We are committed to enhancing customer experiences across all our business operations at e&, by ideating, designing and delivering a range of innovative technologies that make a difference. We are proud of our partnership with Microsoft to deliver the first end-to-end MS Teams Direct Routing solution in the UAE to our long-term customer Juma Al Majid Holding Group.

TELECOM Review TV
telecomreview.tv

WATCH LIVE
WATCH **NOW!**

WATCH THE ICT CONTENT ON THE ONLY TV WEBSITE

WWW.TELECOMREVIEW.TV

Visit **telecomreview.tv** and get enlightened about the latest news, trends, services, projects and plans in the ICT industry, featuring fundamental interviews with esteemed leaders in the telecom and ICT sector.

Industry Leaders Successfully Tackle the Role of Cloud and Data Center in Shaping the Digital Economy

In its recently concluded virtual panel titled "Cloud and Data Center Shaping the Digital Economy" and co-sponsored by AWS and inwi, Telecom Review, the Middle East's leading ICT media platform, gathered top industry experts to further explore this topic in depth.

The esteemed speakers' lineup included: Bernard Najm, Vice President Telco MEA, AWS; Nicolas Gresser, Head of Public Policy, Middle East and Africa, AWS; Ouassim El Arroussi, B2B Marketing Director, inwi; Stelios Savvides, CTIO, Vodafone Oman; and Mounir Ladki, President and CTO, Mycom OSI.

Kick starting the virtual event, Tamer Bdran, Managing Director, NEC GCC and Vice president ICT Solutions, Middle East, who was the moderator of the session, welcomed the speakers and participants, and gave an overview of the topic at hand.

Telcos as "Innovators"

First, Bdran addressed how cloud and data centers would benefit the future of the digital economy, particularly in the Middle East and Africa (MEA) territory.

Looking at MEA's macro-economic background, Najm saw the significant impact of the pandemic's aftermath. For this reason, accelerated changes in the supply chain, market dynamics and geopolitical disruption were all evident. As a result, market participants, such as telecom operators, now require agility in fulfilling their new and important role of enabling innovation capabilities. As a global phenomenon, the majority of CSPs who have embarked on the journey of being innovators started their cloud adoption to drive enterprise IT transformation, which further leads them to cloudify their networks.

DISH, Telenor and Telefonica are some of the AWS clients based in North America and Europe cited by Najm who have utilized their 5G core via the AWS Cloud. Verizon, Telia and Vodafone have also monetized their investments faster and positioned themselves as thought leaders and innovators with their customers, especially enterprises.

"At AWS, we strongly believe that this trend that we have seen in other regions will apply to the Middle East and Africa region as well," said Najm. CSPs are now in a position to plan their cloud adoption by learning from the

experience of others and accelerating their own journey. "In my view, CSPs are at a critical point in time to decide whether they take the role as leader/enabler/catalyzer or be a follower," he added.

This is a rather convincing scenario proving the cloud as an essential factor to gain competitive advantage and increase relevance with their customers' success.

MEA operators can take the top-down approach of early adopters and recognize that speed is of the essence while they work very closely with regulators to allow the adoption of innovation capabilities and enable new services for customers.

In parallel, CSPs can also support incubating and establishing a developer community. "This is why AWS is looking to work closely with CSPs to enable this journey, create the go-to-market partnerships and invest in education, training, culture and skill sets," furthered Najm.

Cloud Has Huge Business Benefits
Cloud is the key enabler of the digital economy, Najm highlighted. Enterprises, as well as entrepreneurs, can have access to a platform where they can focus on creating value, without having to worry about the underlying infrastructure.

Enterprises can innovate by consuming on-demand infrastructure using CI/CD methodologies as well as iterate over business models and launch their products fast – giving them more time to focus on their core competence.

In having the ability to scale and achieve global success, from Arroussi's point of view, the cloud empowers enterprise verticals to transform. The amount of resilience from all sizes of enterprises has emerged due to the pandemic, allowing them to shift very quickly to digital channels.

The ability to go from the idea to the implementation stage is swift, as witnessed greatly in activities like retail. In e-commerce, Amazon is probably the best example with AWS being built to help the brand optimize and innovate at scale.

Cost scalability, causing faster time-to-market (TTM), is another benefit for customers. "Capital is not an obstacle anymore, which allowed businesses, even the smaller ones, to build their business models without waiting to meet specific investments," Arroussi explained.

In terms of sustainability, Najm provided that cloud operations have very low carbon emissions and higher energy efficiency, compared to any traditional data center.

Different Verticals on the Cloud
By and large, Najm articulated that there is "no one killer application." Instead, there are going to be a lot of smaller ones that will fill the demand and needs of the end users.

Among the verticals that inwi have worked on during the pandemic was the public sector, which is responsible for ensuring service continuity. These include efforts in the externalization of data centers, utilization of hybrid cloud and implementation of backup-as-a-service or disaster recovery architecture.

The tourism and hospitality sector is also an important customer because, during the peak of the crisis, they had to use IaaS or SaaS to be able to relaunch and get back to the market quickly. Arroussi mentioned that a lot of shifts are also happening in the mining industry as its industrial side moves to the cloud.

"When our customers go to the cloud to improve their omnichannel strategy or user experience, they are moving the competition bubble to something more beneficial than the price. They are competing on the experience of innovation and the cloud is enabling this move," Arroussi pointed out.

Based on a hyperscaler perspective, Najm enunciated that each vertical truly has a range of options for the cloud to play a major role in — from general to specific. As an example, in the pharmaceutical scene, Novartis condensed 39 years of computational chemistry into nine hours through an AWS-powered platform. Having said that, efficiency and productivity in the cloud remain really high.

In flydubai's case, they have significantly improved their TTM and the ability to handle seasonal fluctuation. Since moving to the cloud with AWS, the airline operator has been able to spin up and down its capacity seamlessly, without any planning.

Within the manufacturing sector, AWS and Verizon have partnered to combine 5G and cloud in optimizing supply chain logistics and boosting workers' safety at Corning's plant. For the oil and gas industry, the energy robotics use case has been showcased by AWS during ADIPEC 2021.

Najm also underscored that AWS has forged its way into the world of sports entertainment and finance, with Formula 1 and NASDAQ as distinct customers.

Telco Needs AI and Cloud for Automation
Additionally, sharing his view as a service provider, Ladki emphasized how the cloud provides the economics for the massive storage and computing power necessary in today's data-intensive era. At the expense of efficiency, he stressed the significance of unifying the tech stack, especially when delivering solutions in many environments while having different databases.

"Unifying your tech stack and then offering a service to your customers becomes really the right model that achieves efficiencies and benefits for both," Ladki expressed.

Taking this into consideration, the telco industry needs to move to a mindset of real-time on-demand operations. With the inconsistent and emerging demands for 5G network slicing or private mobile networks, AI must be integrated for telcos to be highly automated.

Automation needs to be driven by AI, Ladki asserted, and it requires a

massive amount of training, with a minimum of two years' worth of data. After which, you can select the best algorithms that can deliver at least 20% of good accuracy in forecasting models.

For telcos, each KPI needs an AI model to be trained, which is a very complex and resource-hungry process. "This is where the cloud plays a big role. People have to think of the cloud, not only for workload migration or CAPEX efficiencies; this is only part of the equation. You are also getting access to a platform for innovation, allowing you to profitably execute AI and automate your operations at scale," Ladki expounded.

As a whole, the value creation chain for telcos involves solutions providers that bring domain expertise and automation solutions while hyperscalers convey their hybrid cloud capabilities to empower a platform for training AI models.

Cloud-based 5G and Edge Innovations: Which Use Cases are Most Relevant for MEA?

In this regard, Savvides said that customers and operators have a lot of hope and expectation from 5G. He said that from a consumer point of view, the expectation is of a better service, higher throughput, lower latency and more capacity. "With 5G we can offer data to our customers in a much more efficient way. We're seeing 10 to 20% of handsets in the market that is 5G capable, so we're seeing that improvement in terms of RoI." From the enterprise perspective, he said that several industries need to have dedicated deployments to run machinery in a controlled environment requiring low latency such as monitoring and automation, requiring private networks for efficient control of data and sensitive information security.

"We are trying to change how we deploy things in a smarter way for the interoperability between private networks and mobile edge computing. We need cloud farms for growth and

scalability given the increase in data traffic with 5G. Deploying private cloud is not sustainable," he opined.

Putting his thoughts across, El Arroussi said, "To put it broadly, we are just considering 5G investments as of now. And from the B2C side, we are more in the continuity of 4G use cases whereby we're not forecasting a huge change in the use cases. However, from a B2B perspective, I think that combining the low latency capabilities 5G network with edge computing can be very beneficial to address specific demands. He said that inwi is adequately addressing the data security concerns of their customers in various verticals with a value proposition of 5G and edge computing."

Najm, cited an example of the 5G, edge computing and cloud uses in manufacturing. "5G connectivity capabilities combined with the cloud can optimize the production line, supply chain, logistics, the safety of workers, and data analysis. We are working with network operators in various verticals, including oil and gas to provide both private and public cloud services. Other than that AWS is actively participating with verticals such as entertainment, sports, and gaming to provide the ultimate digital user experiences."

Ladki said that the storage and computational power that is required to achieve the outcomes in 5G is just massive. "Operating in the cloud provides you with the economics and time to market to do that. Unifying your tech stack and offering the services to customers is the right model that achieves benefits to both service providers and consumers." He pointed out that with 5G, the telco industry needs to "move to a mindset of real-time, on-demand operations", as peaks of demand would come in real-time from end-users. "Cloud is the platform for innovation that enables technologies such as AI to automate operations at scale and every stakeholder in the telco industry can focus on that know-how," he stressed. "Solutions providers like Mycom OSI can bring the domain expertise and automation solutions to the table along with hyperscaler partners like AWS who can provide the telco capability and training model platform like the Amazon SageMaker to develop the value creation chain," he said.

Obstacles to Cloud Adoption at Pace and at Scale

Ladki also shared a list of some obstacles that might hinder cloud adoption. According to him, handling the complexity of the network and data volumes is a major obstacle. To respond to this, a company should transform into a SaaS model and offer their customers the same solutions but with enhanced capabilities directly from the cloud.

Time-to-market is yet another obstacle as it takes about 6 months to deploy a solution, to procure the hardware to put it in the data center, to have all the IT around it and then start the deployment. "When using the SaaS transformation, we can cut the time from months to hours," elaborated Ladki.

Furthermore, one cannot miss the obstacle of security: how can one make sure that the data is secured within one's environment and how can one ensure that the data is secured in the public cloud. Telcos have many concerns about this subject, as the cloud is the core of the network and having the data in it is very sensitive. As per Ladki, Mycom in partnership with AWS havey proved that security is maintained, if not enhanced, in the public cloud.

Regulations and Policies

One of the topics discussed during the panel was data regulation. Nicolas Gresser, Head of Public Policy, Middle East and Africa at Amazon Web Services identified two main trends of data privacy and regulation in the Middle East and Africa.

He explained how the MEA region is following the footsteps of the European Union with data privacy laws that follow the GDPR standard. According to him, "this is driving some degree of harmonization between countries, which can enable data flow between countries, however, this privacy framework remains very heterogeneous and fragmented so data is not flowing between countries as it should."

"It is not surprising as it took Europe 50 years to achieve a privacy framework, whereas the MEA region is trying to establish it in a very short period of 10 years", he added.

The second trend is about how telecom regulators are broadening their jurisdiction from telecom to cloud and imposing on cloud service providers to get the registration or license that came with obligations.

Nicolas Gresser also tackled the issue of data localization. "In some countries, localization requirements are emerging in the form of either specific regulations as is the case of the UAE which has an IoT policy that mandates localization of data for IoT services, or in the form of security controls imposed by security agencies."

Data regulation has gained momentum in the digital era given its important role in the process of digital transformation.

Gresser emphasized that "embarking on a digital transformation journey requires some visibility on the regulatory scene of the region. The role of regulators has shifted from traditionally solely handling the regulations part to accelerating digital transformation in order to further develop the ICT and telecoms sector." According to him, regulatory frameworks in the MEA region can be outdated in some cases, which can hinder digital transformation.

The solution is to build future-proof risk-based regulations and avoid the mistake of sorting all types of data in the same place, because there are different types of data that present different levels of risks that should be managed differently.

"A three-way discussion between hyperscalers, telecom operators, and the regulator is the best approach and a regulatory sandbox is a good vehicle for it," he concluded. TR

RPA in the Telecoms Industry:

A Key Differentiator

Nowadays, the telecom sector is all too familiar with challenges and difficulties. With the growing demand for seamless connectivity and customized solutions, a wide variety of products and services, the ever increasing amounts of data to handle, and the cutting off competition, the telecom sector is heavily burdened. And for this, automation via robotic process automation (RPA) is the answer. We live in a digital era where businesses and industries are automating their systems and operations. As telcos seek to address network complexities and revenue declines, RPA is becoming more important to their strategies.

RPA use cases

RPA can work across different applications, platforms and departments, and integrates well with the existing IT infrastructure, with no additional installations. There is no need for companies to invest heavily to automate essential processes; instead, there are several ways to use RPA effectively, and some of them are:

- **Customer service:** Automation can help deliver the results that customers want and automated systems can categorize inquiries by tech department, service department, etc. Customer service has several rules-based procedures that can be automated and modernized. Between 70% and 80% of rules-based processes can be automated, and it is a good idea to start with customer service.

- **Invoice processing:** This process is usually done as manual tasking, which can result in delayed and incorrect payments. RPA can automate data input, reconciliation of errors and even certain decision-making processes required for invoice processing, minimizing the need for human intervention.

- **Sales orders:** Entering data into the system, replicating it and then entering it into another system is a boring task, and might result in errors that may affect productivity. By automating tasks, RPA can perform sales activities from beginning to end, increasing sales workforce efficiency and generating more business.

- **Payroll:** As with other responsibilities, payroll is a repetitive task for the team and requires a lot of effort. As an alternative, RPA can perform automation payroll-related and dated transactions from end-to-end to avoid inaccuracies and delays.

- **Price comparison:** Companies always research online in order to purchase products or provide services. This process can be time-consuming and complicated, which is why RPA is the solution. Business owners can use this system to not only compare prices from different vendors, but also to compare product attributes and quality. This way they can purchase the best resources for the lowest possible price.

- **Storing customer information:** RPA can help businesses store, sort and organize a variety of customer information to ensure everything is easily accessible, all while reducing repetitive tasks by nearly 80%. It's more accurate than human application and has a lower margin of error.

- **Extracting data from different formats:** Data can appear in different formats ranging from editable text to handwritten notes. If the business needs to collect and store information from different sources, RPA is a great investment.

A game-changer in the Middle East

Globally, more organizations are deploying robotic process automation (RPA) to simplify processes and optimize costs. According to the Industry ARC, "The Middle East factory automation and assembly technology market is expected to reach $46.1 billion by 2026 at a CAGR of 5.1% during the forecast period 2021-2026." The number of local manufacturers for food processing and automotive parts is growing in Middle Eastern countries such as Saudi Arabia, UAE, Oman and others. Moreover, the Middle East factory automation and assembly technology market is impacted by the growing number of smart devices, industrial sensors and industrial automation motion control systems installed and implemented over the forecast period.

Saudi Arabia, for example, held a market share of more than 34% in 2020, according to the report of Industry ARC, this as a result of government initiatives to reduce dependency on the oil and gas sector and invest heavily in domestic manufacturing industries including pharmaceuticals, automobiles and food processing. In addition, industrial robots are growing at a CAGR of 7.5% in the forecast period. In this region, manufacturers are using industrial robots to reduce human intervention in manufacturing, increasing production capacity and reducing manufacturing costs.

RPA can be implemented in several interesting ways, and employees can easily adapt to the changes and work more productively. Everyone deserves the benefits of a modern connected life. Businesses can gradually implement RPA to make workflows more efficient with benefits directed to both employees and customers. RPA may not result in immediate cost savings for companies, but it can attract customer loyalty, benefiting businesses in the long run. TR

> The Middle East factory automation and assembly technology market is expected to reach $46.1 billion by 2026 at a CAGR of 5.1% during the forecast period 2021-2026

Nokia Q2 2022: Continued Strong Business Profitability

Nokia continued to execute well in the second quarter (Q2) of 2022, showing an 11% year-on-year (YoY) change in net sales and a 31% YoY change in profit for the period. The operating margin also increased to 9.6% while the gross margin slightly declined to 40.2%.

"We have had a strong first half and with our renewed competitiveness, we are well placed to deliver our full year 2022 guidance," commented Pekka Lundmark, President and CEO.

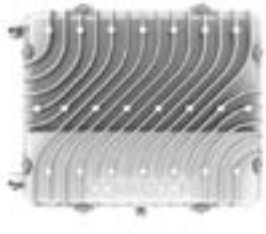
Reported net sales for Q2 2022 reached EUR5.8 billion compared to last year's period of EUR5.3 billion, impacted by positive growth in the mobile networks and network infrastructure business segments. The company's network infrastructure maintained its strong growth momentum with net sales up by 21% YoY, hitting EUR2.1 billion, while its mobile networks' net sales of EUR2.5 billion surged by 9% YoY.

In the Middle East and Africa (MEA) region, broad-based growth across business groups was observed, with particular strength in mobile networks. The leading vendor is known to respond to the shifting traffic trends in MEA and to fulfill the needs of enterprises and operators.

In other business segments, cloud and network services were at a 7% YoY change after recording EUR753 net sales in Q2 2022. Conversely, Nokia Technologies declined by 24% YoY as it became significantly impacted by expired licenses that are in the process of being renewed.

"Since the start of this year, we have been making further investments into private wireless both in R&D and go-to-market to capitalize on our early market leadership. We expect these investments will deliver strong financial returns for us in the mid-term as indicated by double-digit net sales growth in private wireless in the quarter," explained Lundmark.

CommScope Engages on Europe's First DOCSIS 4.0 Initiative



CommScope's DOCSIS leadership and end-to-end solution portfolio will be leveraged in the industry's first DOCSIS 4.0 (D4.0) initiative in Europe. The company will deploy a new custom node and Remote MACPHY Device (RMD) platform, specifically for Liberty Global.

The RMD Node platform for D4.0 will simplify Liberty Global's hybrid fiber-coaxial (HFC) network transformation to deliver multi-gigabit services, providing its subscribers with seamless access to new high-bandwidth and low-latency services while enabling 10G capabilities on the HFC network cost-effectively.

"We are excited to partner with Liberty Global once again as we demonstrate our worldwide leadership in DOCSIS," said Guy Sucharczuk, SVP and President of Access Network Solutions at CommScope. "Our long-standing partnership with Liberty Global uniquely positions us to deliver end-to-end D4.0 solutions specific to its HFC network."

Ericsson Officially Welcomes Vonage as Subsidiary

Ericsson has completed its acquisition of Vonage Holdings Corp. (Vonage). As a wholly-owned subsidiary of the Group, Vonage will become a separate business area undertaken as the Business Area Global Communications Platform (BGCP). The closed transaction supports Ericsson's strategy to leverage technology leadership to grow its mobile network business and expand into the enterprise sector, by having access to powerful building blocks that offer a full suite of communications solutions including, CPaaS, UCaaS and CCaaS.

Börje Ekholm, President and CEO of Ericsson said, "We are already seeing great progress with frontrunner CSPs, and we aim to launch the first 5G network APIs in the coming year. We will continue to create new, enhanced applications and services for enterprises, while driving continued innovation on Vonage's UCaaS and CCaaS applications, helping businesses create new digital experiences for better communications, connections and engagement."

Vonage currently serves over 120,000 business customers and has a global community of more than one million registered developers. This, combined with Ericsson's deep network expertise, industry-leading portfolio and global scale, is expected to enable the leading vendor to seed and accelerate the market for global network APIs. As a result, CSPs will benefit from global reach, beyond that of national or regional setups.

TELECOM Review
THE TELECOMS INDUSTRY MEDIA PLATFORM
telecomreview.com

MORE OF TELECOM REVIEW'S INSIGHTS **DIRECTLY SENT TO YOU!**

Subscribe

to our **LinkedIn Newsletter Now**

Telecom Review ME

NEC Brings the Largest Data Capacity Between US, Japan

NEC Corporation has been contracted by Seren Juno Network, a company established by NTT Group, Mitsui and JA Mitsui Leasing (JAML) to build the JUNO trans-Pacific subsea fiber-optic cable that will provide the largest data capacity — maximum 350 Tbps — between the US and Japan.

Spanning a total distance of approximately 10,000 km, and expected to be completed by the end of 2024, JUNO connects California in the US with Chiba prefecture and Mie prefecture in Japan. By using NEC's newly developed energy-efficient repeaters and the leading-edge space division multiplexing (SDM) technology, this subsea system will be able to adapt as many as 20 fiber pairs for the first time in a trans-Pacific subsea fiber-optic cable.

Moreover, the WSS wavelength selective switch (WSS) function will enable the system to remotely alter the bandwidth of each route, allowing it to respond flexibly to customer business needs and changes in communications traffic demand.

Japan plays an important role as a data hub in the Asia-Pacific region. This cable will promote the development of digital economies by supporting the strong demand for communications, including the spread of 5G throughout Asia and North America. In addition, by providing communication routes from two separate locations in Japan to the US, the system will be highly resilient to natural disasters in the coastal areas of Japan.

Ooredoo Plans To Exit Myanmar

Qatari telecoms giant Ooredoo is considering selling its Myanmar unit, a source with knowledge of the matter told Reuters, following the exit of Norwegian carrier, Telenor, in March this year.

Ooredoo is now the only foreign telecoms service provider operating in Myanmar amid the increasing pressure on the local industry, the result of the military coup launched in February 2021.

According to sources cited by Reuters, Ooredoo has notified the local regulator, Myanmar's Posts and Telecommunications Department (PTD), of its plans to sell its Myanmar unit for an undisclosed amount.

One insider also told Reuters that potentially interested investors could include local conglomerate Young Investment Group, Singapore-headquartered network infrastructure operator Campana Group, and telecoms company SkyNet.

No final decision has yet been made regarding the potential buyers.

Reuters said the Doha-based telecom firm did not immediately respond to its emailed inquiry. The news agency also said it tried to reach the interested investors, but no immediate comment has been given.

The departure of Telenor earlier this year took place after Reuters last year reported that the PTD has issued a directive, which bans senior foreign executives of major telecommunications firms from leaving Myanmar without permission. After this ban, the junta then released a second order instructing telecoms firms to fully implement an intercept surveillance technology, enabling authorities to monitor various communication channels.

PLDT's Trans-Pacific Cable System Is Now Activated

PLDT announced that its US-Transpacific Jupiter Cable system is now available for service.

The latest 14,000-kilometer cable system is the fastest in the country, enabling direct data cable link to the US and Japan. It's also expected to improve the Philippines' international data capacity and boost its digital infrastructure.

PLDT and Smart President and CEO Alfredo Panlilio said, "The PLDT Group takes pride in leading our nation's digital advancement, made possible through dynamic synergies with government and private sector partners."

He added, "Our investment in Jupiter will exponentially boost the Philippines' international capacity, ramp up the global trade of digital services and propel the nation's digital economy, while increasing internet speed and reliability for Filipinos."

The company also said that this new system will triple PLDT's international capacity to about 60 Terabit/s, which will be beneficial for the country since a large volume of Internet content and services consumed by Filipinos goes through servers from the US and Japan.

Currently, PLDT has extensive participation in 16 international submarine cable networks and is set to expand further with the completion of two more major international cable systems, namely Asia Direct Cable (ADC) and the APRICOT cable system, set to be completed in the next two years. It also operates the most expansive fiber optic network among local ISPs at 803,000 kilometers, linking all islands in the archipelago with fiber connectivity and powering local economies and communities in the cities and regions.

Sparkle Expands its American Fiber Optic Network

Sparkle announces the activation of spectrum capacity on the Monet submarine cable system connecting Brazil to the United States. Monet is a new generation cable spanning 10,556 km and connecting Boca Raton, Florida, to both Fortaleza and Sao Paulo in Brazil. Having Monet as part of its assets in the Atlantic, Sparkle further enhances its Tier-1 Seabone global IP transit service and its capacity solutions, catering to the huge data demand driven by new technologies, media platforms and cloud-based services that require omnipresent internet connectivity.

With this addition, Sparkle increases the overall redundancy of its regional backbone by providing five diversified routes between North and South America, thanks to its extensive submarine infrastructure that includes three undersea digital highways: Monet and Seabras-1 in the Atlantic and Curie in the Pacific.

Sparkle continues the expansion of its American fiber optic network, which now counts 56 points-of-presence (PoPs) including its open landing and connectivity hub in Panama.

Expanding the 5G Horizon in Space

Ericsson, Qualcomm Technologies, Inc. and French aerospace company Thales are planning to take 5G out of this world and across a network of Earth-orbiting satellites.

After having each conducted detailed research, which included multiple studies and simulations, the parties plan to enter smartphone-use-case-focused testing and validation of 5G non-terrestrial networks (5G NTN). The result could effectively mean that a future 5G smartphone could use 5G connectivity anywhere on Earth and provide complete global coverage for wideband data services, including places normally only covered by legacy satellite phone systems with limited data connectivity capabilities.

The benefits of 5G connectivity via low Earth Orbit (LEO) satellites are expected to include coverage in extreme geographies or remote areas across seas, oceans and other locations where terrestrial coverage is absent. Such widespread connectivity would boost 5G smartphone subscriber roaming service capabilities, as well as enable global connectivity for transportation, energy and health sector 5G use cases.

The space-based network could also be used as backup support to terrestrial networks in the event of major network outages or disasters. The expected security capabilities of 5G NTNs mean that national government communications may be a main use case to enhance safe and secure national security and public safety government networks.

Ericsson plans to verify a 5G virtual RAN (vRAN) stack modified to handle radio signal propagating via the fast-moving LEO satellites. Thales plans to verify a 5G radio satellite payload suitable for deployment on LEO satellites, while Qualcomm Technologies plans to provide test phones verifying that 5G NTN can be accessed by future 5G smartphones.

Experts will use ground-based equipment to emulate the 5G radio propagation and time delays between an equipped satellite in orbit connected to a 5G smartphone with the 5G radio access network at different places on the Earth's surface. As a 3GPP-backed technology, 5G NTNs will be able to capitalize on a large ecosystem of standardized products and components. The new specification also enables the inclusion of NTN technologies in 5G devices, providing opportunities for technology vendors to easily and quickly scale 5G NTN compatibility across devices.

Two Giant Satellite Operators Eye Possible Merger

French satellite operator Eutelsat and British counterpart OneWeb have been in talks for a possible tie-up to become a global champion in broadband internet, rivaling US operators such as SpaceX's Starlink.

"Following recent market rumors, Eutelsat Communications confirms that it has engaged in discussions with its co-shareholders in OneWeb regarding a potential all-share combination to create a global leader in connectivity," the French company said in a statement.

Eutelsat, which specializes in geostationary Earth orbit (GEO) with a fleet of 35 satellites positioned at an altitude of 36,000 kilometers (22,400 miles) for satellite internet services, already holds a stake of 23% in OneWeb.

OneWeb, for its part, has deployed 428 out of a total 648 so-called "low Earth orbit" (LEO) satellites, operating at an altitude of several hundred kilometers.

The combined entity "would be the first multi-orbit satellite operator offering integrated GEO and LEO solutions and would be uniquely positioned to address a booming satellite connectivity market" that is expected to grow to $16 billion by 2030, Eutelsat said.

"OneWeb is one of the two only global LEO networks and has experienced strong momentum over recent months, with service expected to be fully deployed in 2023."

The transaction would represent a "logical next step in the successful partnership between Eutelsat and OneWeb," the statement noted.

Verizon in Q2 2022: Still Strong in Wireless

Verizon reported its second-quarter and half-year 2022 results with a relatively flat consolidated operating revenue of $33.8 billion and a decline of 10.7% in net income, valued at $5.3 billion during Q2 2022.

"Although recent performance did not meet our expectations, we remain confident in our long-term strategy," said Verizon Chief Financial Officer Matt Ellis. "We believe that our assets position us well to generate long-term shareholder value."

Despite having wireline revenue declines as well, the total wireless service revenue had grown by 9.1% year-on-year. This reflects the company's ownership of TracFone, further progress on its premium unlimited strategy and its strong business volumes.

There is strong wireless demand across all Verizon Business customer groups, with postpaid phone net additions of 227,000. Moreover, there are 256,000 fixed wireless access (FWA) net additions in Q2 2022, up by 32% compared to the previous quarter while consumer FWA net additions are up by 50% Q/Q.

It is worth noting that Verizon has been recognized as the "Most Awarded Brand for Wireless Network Quality" for the 29th consecutive time by J.D. Power.

Having an extensive 5G Ultra Wideband coverage, the C-band spectrum usage is up by 233% compared to the previous quarter. Customers have been adopting 5G at a rapid rate, with 47% of the consumer postpaid phone customer base now using 5G.

SES O3b mPOWER Now In Service for Smart Mining

SES and AXESS Networks (AXESS) are accelerating the digital transition of the mining industry with SES's second-generation medium earth orbit (MEO) system O3b mPOWER.

Under this multi-year, multi-million agreement, the mining sector users will benefit from the cutting-edge low-latency Onshore Energy & Mining mPOWERED connectivity service. This service provides the highest throughput available from a satellite system and delivers dedicated and carrier-grade networks to AXESS's customers reliably, regardless of their remote locations.

Simon GattySaunt, Vice President of Networks Sales, Europe, at SES, said, "Transition towards smart mining is already turbocharging profits and revolutionizing industry's environmental and societal impact. We are proud of the success our partnership with AXESS has already had in facilitating this change, thanks to our multi-orbit GEO and MEO network, and are excited to further accelerate it with the O3b mPOWER service."

SES's O3b mPOWER can deliver multiple gigabits per second per site, enabling AXESS's customers to accelerate the digitalization of their operations and sites globally. This boosts profitability through access to new applications and efficiency as well as improves staff safety and welfare.

Bringing the cloud closer to the end customers, edge computing is also enabled to support the use of 5G and IoT in the mining industry.

ZTE's CEO Xu Ziyang Awarded at the GSMA's Asia Mobile Awards

ZTE Corporation, a major international provider of telecommunications, enterprise and consumer technology solutions for the mobile internet, has announced that its CEO Xu Ziyang has been awarded the Outstanding Contribution to the Asia Mobile Industry Award at the GSMA's Asia Mobile Awards (The AMOs) 2022, held in Hong Kong. The award recognizes Mr. Xu Ziyang's outstanding leadership in guiding ZTE to continuously promote industrial innovation, increase cross-industry cooperation and boost the development of the global mobile industry.

Mobile communication technology has become the key driving force in the booming digital economy for enriching people's lives, accelerating the digital transformation of industries and promoting economic growth. In order to cope with the challenges brought by the Covid-19 pandemic with innovative ICT technologies as well as facilitate the digitalization and low carbonization of the industry for the healthy development of the economy, ZTE has carried out in-depth cooperation in digital infrastructure construction, digital industry development and more with its global partners. To date, ZTE has entered into cooperation with more than 110 operators worldwide on 5G, while working with over 500 partners to jointly explore more than 100 innovative 5G application scenarios in 15 industries.

Moving forward, with a focus on the construction of ICT infrastructure, ZTE will keep working with the whole industry to expand the application scenarios of digitalization in order to build a green digital and intelligent world, and contribute to the sustainable development of the global mobile communications industry and society.

NGMN Industry Conference & Exhibition

The IC&E is a highly recognized bi-annual global industry event, where CTO/CTIOs and other top management level participants share their perspectives on today's and tomorrow's opportunities and challenges of mobile communication.

Place: Pavillon D'Armenonville in Paris, France

07 - 09 SEPTEMBER

Outcomes of Digital Transformation: Ongoing Mission and Vision

Digital transformation has become a pre-requisite for businesses to thrive in an ever evolving industry. Telecom Review will address the next phase of digital transformation in its upcoming webinar.

Place: Virtual

14 SEPTEMBER

MWC Las Vegas

Register today to enjoy invaluable networking opportunities, as well as expert insights from connectivity influencers.

Place: Las Vegas Convention Center

28 - 30 SEPTEMBER

Latest updates on:
www.telecomreview.com

GITEX x Global DevSlam

GITEX GLOBAL is one of the world's most influential meeting places for the technology industry; bringing together thought-leaders, creators, innovators and makers to discuss, debate and challenge new ideology, showcase new products and identify future opportunities.

Place: Dubai World Trade Center, UAE

10 - 14 OCTOBER

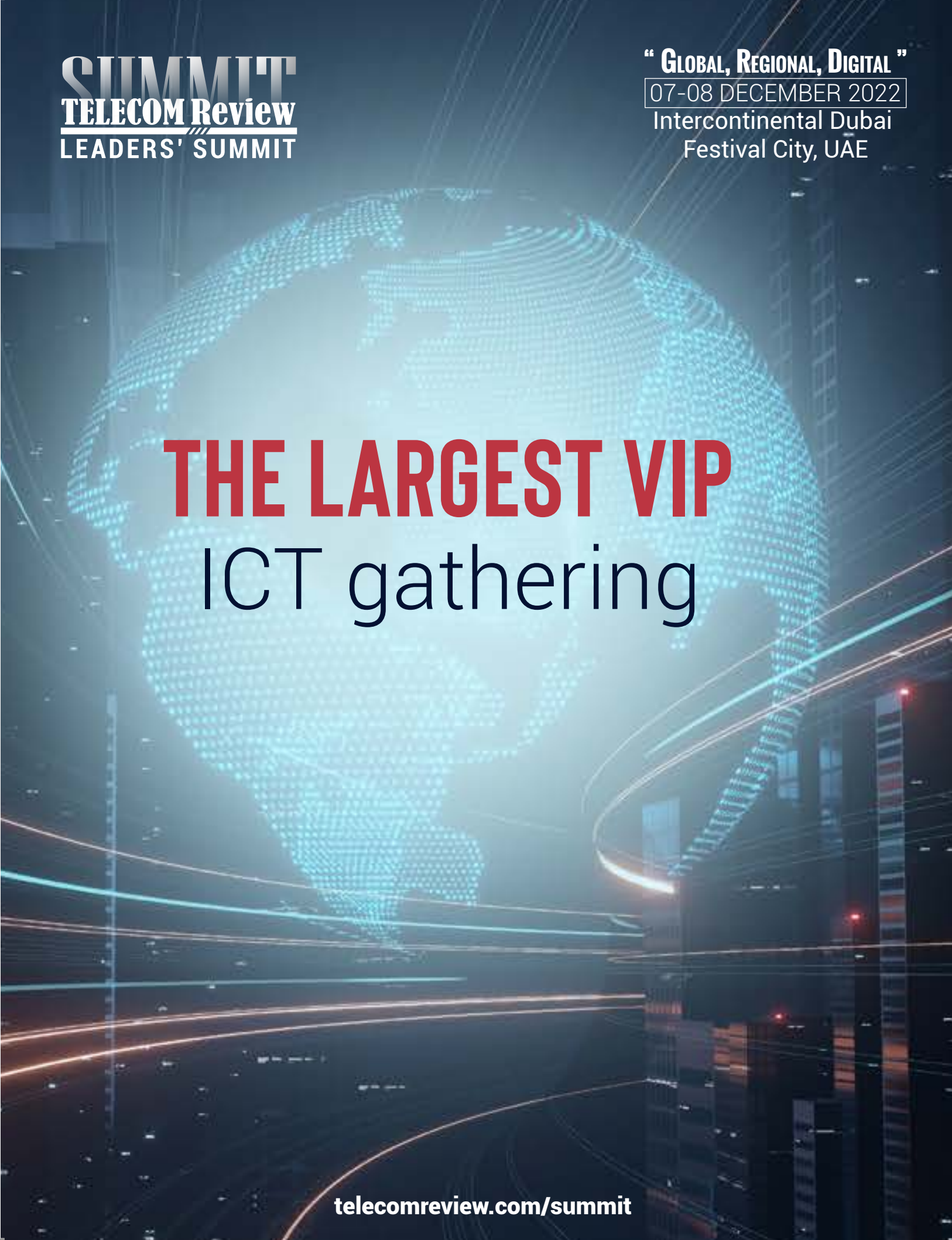
Telecom Review Leaders' Summit 2022

The 16th edition of the leading ICT gathering will be held in a hybrid format where the latest industry trends will be tackled.

Place: Intercontinental Dubai Festival City, UAE

07 - 08 DECEMBER

Latest updates on:
www.telecomreview.com


SUMMIT
TELECOM Review
LEADERS' SUMMIT
" Global, Regional, Digital "
07-08 DECEMBER 2022
Intercontinental Dubai
Festival City, UAE
THE LARGEST VIP
ICT gathering
telecomreview.com/summit

Leading global ICT media platforms

Middle East

Arabia

Africa

North America

Asia