

TELECOM **Review**

THE TELECOMS INDUSTRY MEDIA PLATFORM

telecomreview.com



Investing and
Innovating for
a Connected,
Intelligent Future

Steven Yi, President,
Huawei Middle East & Africa

Egypt: A Catalyst of
Digital Transformation,
Tech Adoption

**Aviation Soars
Higher:** Digital as
Fuel Power

Prospects of
**6GHz Band
in MENA**



HUAWEI CLOUD

Everything as a Service





HUAWEI CLOUD
EVERYTHING AS A SERVICE

TELECOM Review

THE TELECOMS INDUSTRY MEDIA PLATFORM

telecomreview.com

6



■ Investing and Innovating for a Connected, Intelligent Future

14



■ Ooredoo Oman Driving Innovation in Business and Telecommunications

18



NOKIA

■ Private Wireless Networks Are a Vital Step in Digital Transformation Journeys, says Nokia

26



Sofrecom
The Know-how Network

■ Digital Twins in Telecom Infrastructure

20 Egypt: A Catalyst of Digital Transformation, Tech Adoption

24 The Circular Economy Can Fast-Track Our Net Zero Future

28 Partnerships Pave the Way to a Green 5G Future

30 Don't Put All Your Eggs in One Basket: Why the North Route Is Crucial for Global Connectivity

32 2G and 3G Network Sunsets Make Way for 4G and 5G in Middle East and Northern Africa

34 Aviation Soars Higher: Digital as Fuel Power

38 NaaS: A Must for Innovation and Business Value

44 Cyber-Physical Systems: The Integrated Form of ICT

46 Prospects of 6GHz Band in MENA

50 Building Trust In Zero Trust Networks

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


tracemedia Ltd.
www.tracemedia.info

Trace Media Ltd.

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

Trace Media FZ.LLC.

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

Printing

United Printing and Publishing

© All rights reserved
Publication of any of the contents
is prohibited

Year 17 | Issue 189



Toni Eid,
founder
editor in chief
Telecom Review International

The New Devices Technology Trends: Satellite Connectivity and Wi-Fi 6E

New technology features are always introduced to devices upon their launch to mark the advancement into a new era. Two major features are set to be introduced soon to mobile phones, particularly the iPhone: satellite capabilities and Wi-Fi 6E.

The satellite capabilities feature will be deployed for emergency situations, allowing users to send texts to first responders and report crashes in areas without cellular coverage.

Apple is developing at least two pertinent emergency features that will rely on satellite connectivity rather than mobile networks. Apple declined, however, to comment or disclose any details as of now.

This feature comes at a time when satellite connectivity is assuming one of the roles set aside for 5G networks, with low-orbit satellites and mega projects by OneWeb and SpaceX, among others.

The second feature will be Wi-Fi 6E, which is the latest wireless fidelity (Wi-Fi) standard, offering faster network speeds and support for handling even more devices on a single network.

Once officially announced and introduced to mobile phones, these two features will revolutionize the mobile device industry and will set the bar high enough for competitors to take action and join in thinking outside the box to meet customers' needs and expectations.



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



Steven Yi, President, Huawei Middle East & Africa

Investing and Innovating for a Connected, Intelligent Future

As a leading ICT player, Huawei's role in telcos' digital transformation journeys is prominent. The President of Huawei Middle East & Africa, Steven Yi, spoke to Telecom Review in an exclusive interview about the telecom giant's efforts to deliver a fully connected, intelligent world.

Despite global economic headwinds, Huawei solutions continue to perform remarkably well

across domains. What are some of the key highlights with regards to the latest financial results?

Huawei generated \$45 billion in revenue in the first half of 2022, with a net profit margin of 5.0%. The Carrier Business Group (BG) contributed \$21.3 billion, the Enterprise BG \$8.1 billion and the Device BG \$15.1 billion. New business units like digital power and cloud grew rapidly, and ecosystem development efforts have entered the fast lane.

Innovation underpins Huawei's continued success. Huawei's R&D investment reached about USD \$22.38 billion in 2021, representing 22.4% of its total revenue and bringing its total R&D expenditure over the past ten years to over USD \$132.5 billion. Huawei has one of the largest patent portfolios in the world. By the end of 2021, Huawei held more than 110,000 active patents across over 45,000 families. In 2021, Huawei had about 107,000 R&D employees, representing approximately 54.8% of our total workforce. According to WIPO, for the fifth consecutive year, Huawei Technologies was the top filer in 2021 with 6,952 published PCT applications. In 2021, Huawei rose from 49th to 44th on Fortune Global 500.

Huawei is leveraging its R&D capabilities in its ambitious diversification drive. The company launched the Huawei Digital Power unit last year to digitize the energy sector. Digital Power is committed to integrating digital and power electronics technologies, developing clean power and enabling energy digitalization to drive energy revolution for a better, greener future. Its unique value lies in its long-term R&D investment in digital and power electronics technologies.

The MEA region is dynamically evolving into digital. How would Huawei solidify its position in



delivering a fully connected, intelligent world in this particular area?

Innovations in 5G, cloud, AI and other fields are pushing the digital economy into a new development phase. The Middle East is ahead of many other regions in this respect. Because of the fast roll-out of 5G, for example, some countries in the region serve as a tangible proof point of how technology can help to advance the development of all industries, especially when integrated with technologies such as cloud and AI.

Therefore, we see clear opportunities to support Middle East organizations in their digital transformation and reimagine the future. It involves bringing technological advances to even more industries and creating new value by helping governments and enterprises go digital while operating more intelligently.

The fourth industrial revolution (4IR) has touched all corners of the globe. In this context, what we have tried to

do at Huawei is keep innovating to create value for our customers, our partners and society. By doing that, we have achieved growth and many other shared successes.

In light of digital transformation trends in the region, which Huawei solutions are being adopted the most in ME markets? What could be the reason behind this?

We are a leading 5G partner for carriers in the region. Third-party test results have found that 5G networks built by Huawei for customers in many countries, including Saudi Arabia, UAE, Switzerland, Germany, Finland, the Netherlands and South Korea, provide the best user experience. Huawei has signed over 3,000 commercial contracts for industrial 5G applications by working with carriers and partners. These 5G applications are currently seeing large-scale commercial use in various verticals. Dell'Oro Group, a market research firm for the telecom industry, highlights that Huawei still leads the telecoms kit market despite a challenging global marketplace,



Third-party test results have found that 5G networks built by Huawei provide the best user experience





HUAWEI CLOUD has attracted 2.6 million developers, 28,000 consulting partners, 9,000 technical partners, and released 6,100 Marketplace products



according to a market analysis report in Q4 2021.

Thanks to continuing digital transformation trends, Huawei's enterprise business continues to grow rapidly in the region. In 2021, Huawei launched 11 scenario-based solutions for key sectors such as government, transportation, finance, energy and manufacturing. Over 700 cities and 267 Fortune Global 500 companies have chosen Huawei as their digital transformation partner, and Huawei now works with more than 6,000 service and operation partners worldwide.

Our cloud platform, meanwhile, continues to outperform competitors. Now the fastest-growing cloud services provider in the world, HUAWEI CLOUD has attracted 2.6 million developers, 28,000 consulting partners, 9,000 technical partners, and released 6,100 Marketplace products five years since launch. The new HUAWEI CLOUD Everything-as-a-Service strategy envisions a future where

all infrastructure and applications will be cloud-based. Additionally, we encourage enterprises to embrace AI fully and let data play its part in supporting operational decision-making as part of Technology as a Service. Ultimately, the right strategy as the intelligent world develops should be all-digital, all-cloud, AI-driven and everything as a service, including Infrastructure as a Service, Technology as a Service and Expertise as a Service.

Our Middle East cloud strategy is to bring services closer to our customers. We launched the Abu Dhabi cloud region in 2020, followed by an announcement this year of a Saudi Arabia region to be launched soon. Then in July of this year, Kuwait's Communication and Information Technology Regulatory Authority (CITRA) granted permission to HUAWEI CLOUD to offer cloud services in Kuwait, as the GCC country pursues a cloud-first policy.

To cultivate an even stronger technology ecosystem in the region,



we announced the Huawei Developer Competition, aimed to promote a solid, open and robust cloud ecosystem. The competition, themed “Spark Infinity” this year, encourages developers to adopt leading technologies into creative projects and applications. We also launched the Huawei Cloud Startup Program to provide startups with access to financial and technical support, and go-to-market encouragement for promising startups.

To enrich our customers' digital experiences, Huawei is keen to deepen the developer ecosystem, building on the current 2.6 million developer base. Huawei Apps UP Contest, launched in June, has set aside over USD \$1 million in prize money to encourage developers to build an app ecosystem that intelligently connects everything. The 2022 edition of the competition saw the launch of the Best Arabic App in the Middle East and Africa for developers to build app solutions customized to the region's demographic, an initiative we will continue supporting in years to come.

How does Huawei cultivate high-level stakeholder relationships across business domains and verticals?

For the past 20 years, we have endeavored to create a win-win scenario for our Middle East customers, partners and the communities we serve. We have brought the most advanced technologies to drive digital transformation in the region, invested in ICT talent development through various CSR initiatives and supported community-building events such as GITEX Global, GISEC Global, LEAP, Milipol and more. We have partnered with governments to protect mission-critical data from cybercrime and helped accelerate economic growth through strategic investments in human capital, facilities, supply chains, labs and, in the recent past, cloud data centers in some countries in the region.

Committed to creating further value in a society empowered by connectivity and the digital economy, which technologies is Huawei focusing on in the upcoming years?

Supporting our customers' shift into



For the past 20 years, we have endeavored to create a win-win scenario for our Middle East customers, partners and the communities we serve





Cybersecurity is a shared responsibility, and collaboration remains the best way to tackle cyber threats



a digital and intelligent world will be our primary objective moving forward. The next decade will see the 5.5G vision become a reality, enabling a 10 Gbps experience and a hundred billion connections. This will require frequent innovation to accommodate the new Gigabit scenarios. GSMA recommends an average of 2GHz mid-band per country is necessary as spectrum reserve for mobile, supporting downlink capacity with higher spectrum efficiency and large antenna array technology.

We will continue to invest and innovate with Huawei Digital Power. Huawei's focus on renewable energy is on converging and innovating technologies to accelerate the digitalization of energy and enable various industries to upgrade. We aim to accelerate clean energy generation, build green transportation, sites and data centers, and ultimately contribute to zero-carbon buildings, campuses and cities.

Another major priority for Huawei is cybersecurity. Cybersecurity is a shared responsibility, and collaboration remains the best way to tackle cyber threats. Together, governments, standards organizations and technology providers can develop a unified understanding of cyber security challenges. Huawei reiterates its commitment to communicating and collaborating with all stakeholders in an open, transparent and responsible manner to jointly improve cybersecurity and privacy capabilities for customers.

We will continue to invest in ICT talent development in the region. A digitally-driven region requires knowledgeable, talented individuals to move into the next era of connectivity. Through investments in programs like our Seeds for the Future CSR initiative, Huawei ICT Competition and many others, we are promoting collaborations between public and private sector entities, educators and technology companies to develop talent. In the Middle East, Huawei has set up 163 Huawei ICT Academies, and more than 3,500 students have participated in the flagship program Seeds for the Future, while over 37,000 people have obtained Huawei certification. We also have trained over 120,000 ICT talents for the Middle East.

As a leading global provider of ICT infrastructure, how will Huawei continue facilitating green and sustainable development?

Huawei's share in global ICT infrastructure currently stands at more than 30% as a major supplier of ICT infrastructure. We have always believed that the biggest value Huawei can bring to advance the green agenda is to use continuous technology innovation to help all industries enhance the ICT infrastructure energy efficiency and achieve low-carbon development. Huawei's vision is to integrate digital and power electronics technologies, develop green power and enable energy digitalization for a better, greener future.

Huawei will continue to invest in foundational digital power technologies, developing clean power and promoting energy digitalization. We are doing this today through Huawei Digital Power, including many strategic projects in the Middle East. Huawei Digital Power looks at five areas of business globally: Smart PV, data center facilities, site power facilities, mPower for electric vehicles and EV charging system. Huawei Digital Power sees the Middle East region and the Gulf specifically as one of "strategic importance" to the company as it seeks to contribute to a low-carbon, smarter society powered by digital technologies. More specifically for the region, Smart PV and green data center facilities are essential.

In the UAE, for example, we have partnered with a regional customer to build solar-powered data center. The 100MW facility will use 100% green energy, making it the largest solar data center in the Middle East and Africa.

Where do you see the telecoms and ICT sector heading in the MEA region? Will we see new trends emerging?

We will continue to see the region pioneering next-generation telecom technologies as it did with 5G. We see increased interest with 5.5G as its potential becomes apparent. 5.5G will deliver a 10 Gbps experience through MIMO technology that boasts larger bandwidth, higher spectrum efficiency and higher-order modulation. With next-generation technologies like FTTR,

Wi-Fi 7, 50G PON and 800G, F5.5G will bring a 10 Gbps experience everywhere.

Second, 5.5G will go beyond connectivity to include sensing, resulting in a wealth of new scenarios and applications. Wireless and fiber sensing technologies will be used in vehicle-road collaboration and environment monitoring. Passive IoT will integrate cellular and passive tag technologies to create 100 billion potential connections. 5.5G core networks will redefine architectures and foundational technologies to enable new service scenarios, such as industry private networks and industrial field networks.

Third, diversified computing will enable diversified applications. In the 5.5G era, computing architectures will be redefined to increase computing efficiency by 10-fold through chip engineering and full peer-to-peer interconnection architectures.

We are strong supporters of the Middle East region's green ambitions and the strategies of countries like the UAE, Saudi Arabia and others to move towards carbon neutrality. Many of our carrier partners also desire to participate in climate change action. Therefore, we see an opportunity to support these partners to optimize energy by building energy-efficient sites, networks and operations through the Huawei Digital Power unit. Through the "More Bits, Less Watts" strategy, we support our partners to reduce their carbon footprint while lowering energy expenses to meet their cost reduction goals. Improvements to energy efficiency will benefit operators in three ways. First, user migration, site upgrades and network power reduction will bring them OPEX savings. Second, improved energy efficiency will support migrating 2G and 3G users to 4G and 5G services. Third, operators' efforts to reduce their carbon footprint will positively impact the environment, helping them better fulfill their social responsibilities.

Cloud is one of the key foundational components for transforming a telecommunications company into a digital service provider. Therefore, most regional operators are exploring cloud architectures that allow them to add

services more quickly, respond faster to changes in demand and centrally manage their resources more efficiently. Huawei has distilled its over three decades of telecom experience and cloud expertise into the following key factors for carrier cloud transformation: first, the selection of a transformation strategy by factoring in a carrier's advantages; second, the planning of a transformation path considering data security, system stability and service agility; and third, the selection of a trusted, experienced and competent partner for win-win collaboration.

As a global ICT leader, Huawei will continue boosting economic growth, creating employment opportunities and enabling the digital transformation of industries across the Middle East and the world. Huawei will support local and regional industry ecosystems and SMEs while developing digital talents in all our markets. We will continue creating shared value and driving sustainable development for the ICT ecosystem. **TR**



Huawei will continue boosting economic growth, creating employment opportunities and enabling the digital transformation of industries across the Middle East and the world



AWS Opens New Region in the Middle East



The AWS Region in the United Arab Emirates is now open. The official name is Middle East (UAE), and the API name is me-central-1. It allows users to deploy workloads and store data in the United Arab Emirates. The AWS Middle East (UAE) Region is the second Region in the Middle East,

joining the AWS Middle East (Bahrain) Region.

With this launch, AWS now spans 87 Availability Zones within 27 geographic Regions around the world. AWS has also announced plans for 21 more Availability Zones and seven more AWS Regions in Australia, Canada, India, Israel, New Zealand, Spain, and Switzerland.

The Middle East (UAE) Region has three Availability Zones that can be used to reliably spread applications across multiple data centers. Each Availability

Zone is a fully isolated partition of AWS infrastructure that contains one or more data centers.

Availability Zones are in separate and distinct geographic locations with enough distance to reduce the risk of a single event affecting the availability of the Region but near enough for business continuity for applications that require rapid failover and synchronous replication. This gives you the ability to operate production applications that are more highly available, more fault-tolerant, and more scalable than would be possible from a single data center.

UAE's Digital Lifestyle Pointers High, Says TDRA



The United Arab Emirates has been ranked among the world's leading countries in various digital life indexes, attributable to the significant advancement of its information and communication technology sector, the Telecommunications and Digital Government Regulatory Authority (TDRA) has determined.

In its report, titled "Digital Lifestyle in the UAE," the TDRA notes that, based on figures included in relevant international reports, the UAE ranked first globally in the use of social media; second globally and first in the Arab region in internet use; and ninth globally and first in the Arab region in e-commerce.

The report also notes that the UAE was the first country in the region to establish a digital government in 2001, promoting digitization as a lifestyle to be practiced by individuals and organizations to achieve the highest levels of efficiency.

In detail, the UAE was ranked first globally in terms of mobile internet speed, with the average speed in the country being 134.48 megabytes per second (Mbps) while the global average is 30 Mbps.

The report adds that the UAE was ranked 13th globally in terms of home internet speed, with the average speed in the country reaching 124.7 Mbps compared to the global average of 63.46 Mbps.

The country was also ranked second globally in internet usage at a rate of 99% compared to the global average of 62.5%, indicating that the number of internet users in the UAE is 9.935 million.

The UAE was ranked 12th globally in time spent using mobile internet at 4 hours and 35 minutes, compared to the global average of 3 hours and 43 minutes. The country was also ranked 11th globally in terms of time spent using standard internet.

The report highlights the fact that the UAE was ranked 10th globally in average time spent using the internet across all devices, whether computers or mobile phones, with an average of 8 hours and 36 minutes, compared to the global average of 6 hours and 58 minutes.

The report further shows that the UAE was ranked first globally in average

time spent on social media per capita at 106%, compared to the global average of 58.4%. The UAE also surpassed the global rate of population engagement in social media by 200%.

The report points out that the UAE was among the top 20 countries in the use of digital videos as a source of learning at 50%, and it was ranked among the top 10 countries in terms of the digital sharing of visual blogs at 27.6%.

With regard to entertainment, the UAE was ranked among the top 10 countries in e-gaming at 90% while regarding the economy, the country was ranked among the top 10 countries in the percentage of the population possessing cryptocurrencies at 11.4%. The UAE was also ranked among the top 20 countries globally in terms of the percentage of the population undergoing telemedicine at a rate of 26.4%. In e-commerce, UAE was ranked ninth globally, with the average annual per capita share of digital spending in the country being some \$3,775, compared to the global average of \$1,766.

Furthermore, the UAE was ranked 14th globally in online weekly purchases, with 59% of the population buying their needs online each week, and it was ranked 13th in weekly online purchases using mobile phones, with 32.4% of the UAE population using their phones to buy their needs weekly.

Es'hailSat سهيل سات
Qatar Satellite Company الشركة القطرية للأقمار الصناعية



CONNECTIVITY YOU CAN RELY ON

With two satellites co-located at the MENA hotspot of 25.5/26 East, a modern Teleport and a host of services built around robust infrastructure, Es'hailSat enables broadcast, broadband, corporate and government services across the Middle East, North Africa and beyond.

Visit us at Hall-1, Stand F68
RAI Amsterdam
September 9-12, 2022



www.eshailsat.qa



Space to deliver your vision



Dr. Ahmed Abdullah Al Abri,
Chief Technology and Information
Officer, Ooredoo Oman

Ooredoo Oman Driving Innovation in Business and Telecommunications

Telcos are on a continuous journey to provide diversified services and meet the needs of their customers. In spite of all the recent crises, the ICT sector's leaders have been able to overcome the ensuing challenges and draft futurist strategies. This is the case for Ooredoo Oman. Chief Technology and Information Officer at Ooredoo Oman, Dr. Ahmed Abdullah Al Abri, discussed in an exclusive interview with Telecom Review, how the operator is driving digital innovation.

Can you share Ooredoo Oman's technological milestones so far in 2022, and how these impact your service delivery going forward?

The focus so far this year has been on using and implementing the latest technology to drive innovation in the customer experience. That has led to improvements in service delivery, speed, capacity and the methods by which customers interact with Ooredoo. We brought a new Digital Customer Relationship Management system online and made significant progress towards a Single Rating platform, both of which intend to leverage the customer touch points and customer experience, in addition to enabling legacy platform migration.

We aspire to get to the stage where the CRM can not only solve customer requests but predict customer concerns, allowing Ooredoo to exceed customer expectations and take them on a journey, offering new products or services, letting them know about promotions, allowing them to experience end-to-end service; things that their usage trends and patterns suggest they will want or need.

Elsewhere, we have enjoyed continued success courtesy of the recently-completed Data Centre, which saw Ooredoo Oman pick up the 'COMEX Excellence in Technology Award' for excellence. We have also announced plans for further Data Centres in Salalah, Sohar and Barka to support new mega-projects in each area and underpin Oman's journey to becoming an advanced digital society as part of Oman's Vision 2040. The launch of these state-of-the-art Data Centres represents a major breakthrough in hosting and data processing and has set the foundations for the development of transformative technologies such as 5G, cloud services, IoT and other high-potential, high-growth areas.

Furthermore, our nationwide 5G rollout continues at a pace, connecting communities with ultra-fast digital capabilities, which allows customers to do more online wherever they are.

Ooredoo Oman has also achieved ISO 20000-1 Certification, which confirms our commitment to proper service management of information technology and determination to provide users, whether in the public or private sector, with a network supported by an internationally-recognized framework.

What is the importance of a proper technology strategy in the digital transformation journey of Ooredoo Oman, and how is this executed?

Ooredoo's technology strategy outlines a long-term vision for the company's growth, in line with the national growth plans set forth by Oman's Vision 2040. We understand that ICT is the lynchpin of expansion, economic diversification, entrepreneurship and nationwide connectivity.

This journey of digital transformation is integral to the prosperity of the country, and we are proud to be data leaders. In order to achieve these goals, we have embarked upon a systematic program that touches upon internal processes and an external strategy which will outline Ooredoo's future goals. These include Platforms as a Service (PaaS), Infra as a Service (IaaS) and support for investment in Oman's Blue Occasion market.

Why is collaboration with varied stakeholders significant in creating, adopting and expanding the best business and connectivity solutions?

As the digital leader in the Sultanate, Ooredoo is committed to bringing customers across the country, in both the public and private sectors, the latest technology for the very best experience. We have partnered with industry leaders, including Huawei, to develop a robust network capable of meeting the needs of customers now and in the future.

In 2021, we also signed a Single Rating contract with Ericsson to migrate and consolidate our online charging system, and an agreement with Finland-based digital business support system (BSS) provider Tecnotree, as vendor for our digital billing system, which is planned for completion by Q2 2023.

We have also lent our support as an alternate wholesale operator within Oman by leveraging the strength of the Ooredoo Group as an international wholesale operator to provide telecommunications solutions to telecom operators and hyper-scalers, such as Skype, Microsoft, Google, Facebook and Yahoo.

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 up new possibilities of other businesses with Vodafone Oman encompassing indoor solutions, tower co-location, IP peering and many other areas, which will be explored as Vodafone Oman grows.

The expansion of our Data Centre footprint will ensure businesses remain online, even during times of crisis. As the centerpiece of our IT infrastructure, the Data Centre provides a power capacity of 2.5 megawatts and guarantees around 99.98%+ uptime, according to an internationally-recognized framework. This cost-effective solution helps to support Oman's growing SME and start-up sector by offering scalable solutions that grow as companies expand.

We are also transforming to be a single window service provider – PaaS, IaaS as well as Software as a Service (SaaS) provider – to fulfill business technology needs. This contributes to and expedites the process at the stage of establishment, operation and most importantly, expansion with minimal expenditure.



Ooredoo's technology strategy outlines a long-term vision for the company's growth, in line with Oman's Vision 2040



What are the products and services that Ooredoo Oman will focus on in the coming year, and which technologies will the company unleash further?

Our focus is on providing a suite of services, including capacity, infrastructure, co-location, managed services, telepresence, content provision and content delivery networks (CDNs), investment in Data Centres 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 while fulfilling our promise to upgrade our customers' world.

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

We believe that Oman is well positioned to be "the" regional data hub that connects East, West and Africa. Hence, we have invested in networks and are diversifying our international connectivity. This strengthens the network overall and brings countries closer together. Ooredoo 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.

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.

Affordable business data connectivity and solutions are instrumental for digital transformation programs in every organization. At Ooredoo, we are committed to this goal, and we continue to capitalize on and develop transformative technologies such as cloud solutions, IoT, SD-WAN and other high-growth sectors.

And, 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, which are ultimately integrated into the world's economy.

As a customer-centric telco, how will Ooredoo Oman ensure that innovation will benefit clients and consumers effectively?

The continued rollout of 5G nationwide improves the customer experience by allowing users to do more online, enjoy faster download speeds, high-quality streaming, and an altogether smoother online experience. This element of our digital transformation is powering further growth in all sectors of our business, improving connectivity and accessibility to the internet in all areas of the country – especially the more remote communities that rely on network coverage for education, trade and communications.

We have continued to streamline interactions by adding new features to the multi-award-winning Ooredoo App. Customers are now more empowered than ever before to access our full suite of services and account management, anywhere and anytime. This in turn has improved the functionality of our contact center which is now able to handle urgent enquiries quickly and efficiently.

Customer Experience is at the heart of our operations and we have been

recognized several times in this field. Our focus on providing an amazing end-to-end customer journey has elevated Ooredoo to a leader in the space within Oman, giving customers the freedom to take control of their communications needs at their own convenience.

Additionally, our investment in cloud solutions through subsidiary data2cloud and our Data Centres has allowed businesses to securely host data within the country, ensuring business uptime and recovery. We have been able to provide an increasingly important service for businesses of all sizes, in the public, private and government sectors across the country and have provided the ability for the services to grow with the organization and add value to the growing B2B segment in Oman. **TR**



The expansion of our Data Centre footprint will ensure businesses remain online, even during times of crisis





We Are Expanding!

The First Mega-Scale Data Centers in Jordan

Tier-3 Certified | Carrier-Neutral | Open Access Policy

5MW Smart Data Center in Aqaba.



NOKIA

Private Wireless Networks Are a Vital Step in Digital Transformation Journeys, says Nokia

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

In order to shed light on the importance of private wireless networks, Telecom Review had an exclusive interview with Danial Mausooof, head of sales for mobile networks at Nokia in Middle East and Africa. He touched on Nokia's contribution to the PWN market in the MEA and shared insights on the pertinent security aspect.

As a leader in the private wireless network space, what are Nokia's analyses of this market in MEA in terms of adoption, market share and technology?

Private Wireless has been around for a few years and the adoption in the Middle East has been a bit staggered compared to what we have seen in other markets. During my previous role at Nokia as the Lead for Enterprise Services globally, we saw an uptake in select industries specifically in mining, utilities and logistics. Today, Nokia has sold almost 1000 4G/5G PWNs to almost 500 enterprise customers worldwide, in industries such as manufacturing, logistics, airports, airlines, seaports, railways, mining, utilities and public safety.

In MEA, the market is on the verge of a key inflection point driven by the confluence of two major effects: the regulatory environment and the start of the transformation journey to Industry 4.0. Enterprises are starting to see connectivity as a key enabler

for transformation and acceleration to increase productivity. The post-Covid implications are also a driving factor towards the adoption.

The telecom regulatory environment in MEA has progressively evolved towards setting the right framework for spectrum allocation for PWNs and particularly in the Gulf region where this has been accelerating recently. Once this framework is in place in key markets, this will enable many enterprises to start their transformation journey.

There has been some contentious debate on Wi-Fi or Private Wireless which is now settling down as Wi-Fi will continue to play a role in the industry and complements the use of 4G/5G PWN's in several use cases. In our earlier conversations with the enterprises, we established that for low-latency, high bandwidth OT applications, PWN's are a vital step in their digital transformation journey.

Spectrum plays an important role in the adoption, and we are starting to see the public safety segment

certainly taking center stage as they have early access to spectrum. We have started seeing some examples in the GCC already, where Bahrain's Electricity & Water Authority (EWA) has chosen Nokia to provide a private LTE network to digitalize the country's distribution network. Nedaa, the Dubai-based operator that provides security networks for government entities in the UAE, commissioned Nokia to deliver a 5G-ready network for smart city solutions. The 5G-ready, mission-critical network consists of comprehensive security solutions, core and radio access solutions, IP/MPLS, optical and microwave backhaul network, along with professional services. We continue to engage with several government entities across the Gulf on opportunities to modernize and transform network infrastructures.

We are also starting to see some movement in African countries where mining operators have expressed interest in proofs of concept to enable mission-critical use cases. Nokia's private wireless offering allows flexible deployment options which have maximum reach and control



depending on the use case that the customer wants to deploy.

Nokia, as an established leader in this segment in the region, is in pole position to support all our customers with their transformation journey.

Which sectors and entities can benefit the most from private wireless networks, and what are the solutions and products that Nokia offers in the private wireless space?

We believe that PWNs can bring benefits to almost any of today's enterprises. Having said that, where we already see a significant benefit from deploying Nokia PWN solutions in MEA are in the public safety, energy, mining and transportation segments.

Examples of some use cases driving these benefits are mission-critical (eg Push-to-Talk) services; surveillance (cameras); autonomous operations (mining); monitoring/control (utilities) and signaling (railways).

Nokia offers a comprehensive set of solutions in the PWN space ranging from end-to-end 4G/5G networks to GSM-R for railways to support different deployment scenarios depending on the enterprise size, geographical spread and specific use cases. This ranges from campus solutions (e.g., ports, airports, manufacturing) to full wide area network deployments covering the entire country. Nokia's flagship Nokia Digital Automation Cloud (NDAC) and Modular Private Wireless (MPW) solutions offer our customers industry-leading solutions designed to meet their requirements in a modular way thus introducing the benefits and

use cases of PWN connectivity on an as-needed basis.

Some consider private wireless networks to be more secure. Do you agree?

Given the current volatility and uncertainty, security is top of mind for many enterprises and remains a key concern when it comes to any wireless network, as entities with nefarious motives try to exploit potential network vulnerabilities. Nokia has a long and proven history in providing security solutions which are deployed to protect our customers' networks in both the CSP and enterprise space.

One of the key benefits that Nokia provides is intrinsic security with encryption that allows you to manage your networks with the level of security that is desired. This varies by industry type and the degree of control you would like to manage your data, end users and network resources. Nokia also works with partners where enterprise can deploy bespoke security solutions that fit their exact, and in many cases, more stringent security requirements. From that perspective, PWNs can be more secure.

In your opinion, does private wireless complement wireless networks?

We believe that enterprises undertaking the complex and necessary journey to Industry 4.0 will require an end-to-end technology transformation, at the center of which is the connectivity landscape. This will be an evolutionary process which will need to be built around a complementary set-up of private and public (CSP) wireless networks interworking to support the more

complex use cases and requirements. Nokia today partners with CSPs across the region to provide private wireless networks to enterprise customers.

With the expansion of use cases in enterprise, network slicing will play a critical role for CSP's in the region. CSP's need to monetize their 5G networks, and network slicing can provide virtual and independent networks within the same physical network. As per the GSMA, the network slicing market itself will be worth 300 billion by 2025, and the bulk of this will come from the enterprise market. **TR**



We already see a significant benefit from deploying Nokia PWN solutions in MEA in the public safety, energy, mining and transportation segments





Egypt:

A Catalyst of Digital Transformation, Tech Adoption

Egypt stands out as a civilization with a rich scientific and cultural background. Serving a population of over 100 million, the Egyptian economy is one of the largest in the Arab world and is currently witnessing a digital revolution empowered by the ICT sector.



competitive, balanced and diversified economy, one dependent on science, knowledge and innovation. By 2030, Egypt will witness a comprehensive renaissance, leveraging its strategic location and unique disposition to achieve sustainable development. As per UNESCO, the Egypt Vision 2030's first stage began in 2018 and is set to conclude in 2022, aiming for a better standard of living for all Egyptians.

Since 2021, the Ministry of Communications and Information Technology (MCIT) has also made great strides in implementing the Digital Egypt strategy, where the country strives to adopt the latest technologies and foster innovation. The overall goal is to establish an all-encompassing digital society that will help Egyptian citizens, enhance various sectors and strengthen Egypt's position on the global ICT map.

Egypt's ICT 2030 Strategy

The Egyptian ICT sector has reached a level of maturity that enables it to compete at a global level and emerge as an ICT powerhouse in the region. A great many tech companies are setting up in the Arab country, creating over 250,000 jobs in the process. All the while, the value of ICT exports has also exponentially grown to \$4.5 billion since 2021. As a cornerstone of real and sustainable development and progress, a strong ICT sector has been key to Egypt becoming among the 'Top 10 Improvers in Digital Inclusion', according to Roland Berger's 'Bridging the Digital Divide' report.

• **Developing Digital Infrastructure**

Egypt is a vital internet backbone that connects across borders with its robust infrastructure's fiber-optic cables capacity and telecom coverage. It is being scaled up to stay ahead of the demand. Data from the government revealed that the number of peak hours for internet usage has increased to 15 hours per day, while the amount of cellular phone internet usage has increased by 35%, and international calls by 19%.

Because of this, MCIT launched several major projects to improve the

quality of fixed broadband, boosting the country's ranking on global indices. In January 2022, Egypt ranked first on the African continent in terms of fixed broadband internet speed. As per Ookla's Speedtest Global Index, the country recorded a median speed of 35.67 Mbps. In addition, Egypt's main roads, along with certain areas in the governorates, have received mobile network coverage to boost communication services.

Developing the digital infrastructure is one of the foundations on which the three main pillars of Digital Egypt are built. This is the reason why MCIT continues to boost and support vital projects across the country to upgrade its telecom infrastructure, and is concurrent with the efforts of the National Telecommunications Regulatory Authority (NTRA) to enhance the service quality provided to citizens.



By 2030, Egypt will witness a comprehensive renaissance, leveraging its strategic location and unique disposition to achieve sustainable development



Notably, in 2020, Egypt was the only country in the Middle East and North Africa (MENA) region with a positive GDP growth rate, avoiding economic recession from 2020–2021 due to the successful implementation of its economic stabilization and reform program.

Henceforth, the World Bank expects the Egyptian economy to grow by 6.1% in fiscal year (FY) 2021/22, with the ICT division predicted as the highest-growing state sector. As a precedent, ICT's growth rate rose to 16% in FY 2020/21, contributing 5% to the same fiscal year's GDP.

With this in mind, the emerging new Egypt is working towards a

Notable ICT milestones in the country include approving the operation of mobile networks at 40MHz spectrum in the Time Division Duplex (TDD) 2600 MHz band from the total frequencies that Vodafone Egypt, Etisalat Misr and Telecom Egypt obtained for over \$1 billion; approving the construction and operation of 2,310 cellular base stations in 2021, an increase of 80% compared with 2020; and approving using voice calls over a 4G LTE network (VoLTE) services for the first time in Egypt.

A presidential initiative called Decent Life (Haya Karima) was also launched to connect villages with fiber optic cables for better internet speed and stability, covering one million homes and improving telecom services by creating cell phone stations in those villages.

• Building Capacities

Based on Submarine Cable Networks' data, as of June 2022, there are now 15 in-service submarine cables connecting Egypt (some with multiple subsystems) with other cables still under construction for 2023 and 2025 operations. These include 2Africa, Hybrid African Ring Path (HARP), Europe Middle-East India Connect 1 (EMIC-1), Africa-1, India-Europe-Xpress (IEX), Medusa and South East Asia-Middle East-West Europe 6 (SMW6).

Egypt's unique geographical location makes the country optimal for the passage of international submarine cables. Moreover, an extensive system of fiber-optic cables transiting within the country facilitates international data traffic via a network some 4,000 square kilometers in area.

When it comes to fiber-optic and copper terrestrial networks, different capacities ranging from 2 to 10 megabytes for offices, and up to 100 megabytes for the main buildings, are utilized. Alternative wireless lines, including 4G for offices and Wi-Max for main buildings, are also implemented, in case of any baseline failure. Along with this, the ministry's Digital Egypt project aims to supply all government entities with fiber-optic cable connections. When completed, this will connect nearly 32,000 buildings at a total cost of 6 billion EGP.

Cairo is the major data center hub in Egypt, housing eight existing third-party data centers contributing to over 85% of the existing capacity in the country. In 2021, MCIT launched a data center committee to receive requests from local and international companies wishing to invest in the establishment and management of data centers within Egypt.

Some of the recent capacity-building progress includes Telecom Egypt's announcement of the first open-access internet exchange in the country. Intended to enhance the digital experience of internet users in Egypt, Africa and the Middle East, EG-IX is hosted inside the operator's largest certified tier III data center located in Smart Village in West Cairo. Orange is also set to complete the first phase of its data center in the New Administrative Capital (NAC), as part of its contract to establish the largest data center in Africa, with investments worth \$135 million.

• Ensuring Cybersecurity

Egypt ranked 23rd globally, and 4th among Arab countries, in the Global Cybersecurity Index (GCI) 2020, issued by the International Telecommunication Union (ITU) in 2021. Intensifying its cybersecurity efforts, a new national cybersecurity strategy for the period 2022- 2026 has been forged to fully secure the ICT infrastructure and create an even safer digital environment.

In March 2022, the Egyptian government's Information and Decision Support Center (IDSC), in cooperation with the Egyptian Computer Emergency Readiness Team (EG-CERT), held cybersecurity drills with the participation of various ministries to simulate some scenarios of cyberattacks and to enhance communication and coordination in assessing the response and readiness in addressing such cyber incidents at the national level.

Across Egypt, over 29 million email threats, more than 1.4 million malware attacks and over 3.6 million URL victims' attacks were detected and blocked in 2021, according to a report from a global leader in cybersecurity solutions.

Digital Egypt

MCIT has embarked on building Digital Egypt, an all-encompassing plan laying the foundations for the transformation, with its core pillars being to enhance human capacity building, foster digital inclusion, promote innovation and entrepreneurship, and develop the ICT industry at large.

"MCIT will continue to build Digital Egypt, a new digital society, that is decentralized, connected and data-driven to ensure every citizen has a chance to learn, work and receive services in a timely manner," stated Dr. Amr Talaat, MCIT Minister.

In the same context, Egypt was the Arab digital capital for 2021. Forging ahead with digital transformation and in line with Egypt Vision 2030. "The aim is to drive the transition to a society where technological applications are the key enablers for obtaining services," said HE Prime Minister Dr. Mostafa Madbouly.

• Digital Transformation

Accelerating digital transformation is a core component to achieving Egypt's vibrant economic growth, fostering productivity and advancing human capital development. A huge part of this vision is the transition of the public sector's services and processes into the digital sphere. Within the framework of building Digital Egypt, MCIT launched several projects including the Digital Egypt platform, post offices and citizen service centers.

"Recent advances in digital government transformation improve the prospects for modernized public service delivery and policymaking, through adopting a 'whole-of-government' approach to digital transformation and interoperability," said Dr. Talaat.

Egypt's score on the United Nations E-Government Development Index (EGDI) has seen improvement over the last two decades, wherein during the 2020 outbreak, Egypt's EGDI score was very close to that of the MENA region, exceeding the African countries' average. Egypt was also among the high-performing countries in the 2020 GovTech Maturity Index (GTMI), as well as among the top 10 developed countries in digital inclusion.

On the back-end, Egypt has been taking steps to digitalize core government systems, including public financial management, human resource management, taxation and customs administration while on the front-end, Egypt has launched the Digital Egypt platform to modernize public service delivery. As of 2021, there are 4.2 million subscribers on this platform, with 14 million transactions conducted in nearly 120 digital government services.

At the international relations level, MCIT has made great strides in international cooperation, attracted foreign investments to the Egyptian ICT market and strengthened the country's presence and stance on ICT matters in relevant organizations (e.g United Nations, European Union (EU), the World Bank and the Organization for Economic Cooperation and Development (OECD)).

• **Digital Skills and Jobs**

The technical training budget provided by MCIT is said to have doubled in the last three years, with the target number of trainees increasing to 200,000 and investments worth over 1 billion EGP secured in FY 2021/22. In addition, the number of employees in the ICT sector grew from 233,000 in 2017/2018 to 281,000 in 2019/2020.

The Egypt University of Informatics (EUI), inaugurated in August 2021, is the first ICT-related specialized university in the Middle East and Africa. It seeks to create a specialized ICT community and equip young people with digital skills to fill in-demand jobs across labor markets. MCIT has also launched the Digital Transformation Academy to ensure the sustainability of digital transformation and employ ICT to create a new business model within government institutions.

As part of these efforts, the Information Technology Institute (ITI) trained more than 6,000 people on in-demand ICT skills including areas of the Internet of Things (IoT), data analysis, AI, information security, embedded systems, business robots and digital arts. In addition, the National Telecommunication Institute (NTI) trained over 20,500 people in communications technology, carrying

out a range of specialized training programs such as the Fiber Optics Training Program, the Digital Egypt Youth (DEY) initiative and the Wazeefa-Tech initiative.

Establishing partnerships with tech giants, including AWS, Huawei, Cisco, VMware and Microsoft has honed the learners' technical skills by providing access to excellent training opportunities and international certifications.

In early 2022, Benya signed a strategic partnership agreement with Egypt's first smart university, Galala University. Students will benefit from Benya's expertise and capabilities through internships and scholarships, while Benya will have access to the University's periodic scientific research outcomes.

• **Digital Innovation**

With the efforts of both the public and private sectors, Egypt is positioning itself as a regional innovation hub. Driven by smart infrastructure, startup culture and a host of digital advancements, the country's reputation in tech adoption solidifies.

Achieving great progress in the field of artificial intelligence (AI), Egypt is the first Arab and African country to formally join and adhere to the OECD Recommendation on AI. Furthermore, in line with Egypt's National AI Strategy, the country's official AI portal was launched in 2021, together with applications for different domains such as the Hudhud app (smart assistant for farmers) as well as knowledge mining for the Egyptian Postal museum. Among the AI firsts that occurred last year was the organization, along with Nvidia, of the world's biggest training camp on the use of AI in scientific fields, as well as the presentation of C(4F) Hackathon, Egypt's first AI competition.

ITIDA has also established the first Egyptian Industry 4.0 Innovation Center (IIC) in the Knowledge City in the New Administrative Capital, which will help employ Industry 4.0 and digital transformation technologies in the local industry starting in 2022. Smart villages and technology parks are also part of

the bustling Egyptian ICT development, providing a competitive business environment and world-class ICT and outsourcing services.

The volume of investments in startups in Egypt also grew from \$190 million in 2020 to \$465 million in 2021, most being devoted to the burgeoning entrepreneurship and startup sector. As of September 2021, Egypt has the fourth-largest startup ecosystem on the African continent based on the number of companies (<500).

E-commerce is the leading sector where over one-fifth of the country's tech startups are active. Egypt is among the top four predominant African countries in the fintech industry – from merely two startups in 2014 to over 100 Egyptian fintech and fintech-enabled startups by 2021. **TR**



With the efforts of both the public and private sectors, Egypt is positioning itself as a regional innovation hub





The Circular Economy Can Fast-Track Our Net Zero Future

Decarbonizing the world is a momentous, multi-faceted effort with numerous moving parts. Energy transition from fossil fuels to green sources, energy efficiency, zero emissions transport systems and more all contribute significantly to reducing CO2 emissions. However, an emerging paradigm promises an equally impactful effect on the environment as the others.

The circular economy refers to a production and consumption model involving sharing, leasing, reusing, repairing, refurbishing and recycling products as long as possible to reduce waste to a minimum. It seeks to replace the traditional, linear economic model built on a take-make-consume-throw-away culture.

In the ICT sector, an effective circular economy strategy must cover the entire product lifecycle by emphasizing product durability and reparability, reducing the amount of e-waste generated by electronic devices, reducing the need for new mineral resources and curbing carbon emissions. A recent study estimates that a circular economy could reduce global GHG emissions by 39%.

Huawei, a company that has integrated sustainability into its core corporate mission, is spearheading industry sustainability efforts by building a business model that

incorporates circular economy practices and a closed-loop value chain. The company's environmental protection efforts are guided by its green pledge, "Tech for a Better Planet."

The first phase of a circular economy is to build quality products from the get-go; this prolongs their lifecycle. Huawei is working to improve the quality of its processes and results and to provide customers and consumers with quality, durable products and convenient, affordable repair services. These practices have helped slash product costs over their lifecycle and reduce their consumption of natural resources. For example, Huawei's high-end NetEngine routers have highly sophisticated, large-capacity line cards that contain more than 20,000 components and nearly 100,000 solder joints. By building high-end router manufacturing lines and an end-to-end quality assurance system to ensure the quality of such products, Huawei has achieved 1.56 defect parts per million (PPM) opportunities for board solder points, significantly

lower than the Six Sigma benchmark of 3.4. Huawei's board return repair rate is only one-third of the industry average.

These efforts are complemented by improving the energy efficiency of products. The 2021 Huawei Sustainability Report reveals that Huawei was able to increase the average energy efficiency of its main products by 1.9x compared to 2019 (base year).

Another highly effective method to reduce the environmental impact of electronic products is to reuse e-waste and recoup its value. A report by Accenture shows that the circular economy could generate an additional \$4.5 trillion of economic output by 2030 through job creation and innovation.

In close collaboration with recycling service providers, Huawei categorizes its e-waste so it can be efficiently recycled and reclaimed. Through its global recycling system, Huawei works with scrap service providers to recycle the raw materials of e-waste

in more than 170 countries worldwide. In 2021, the company disposed of 11,826 tons of ICT e-waste, only 0.78% of which was landfilled, and processed 8,643 tons of smart device e-waste, none of which was landfilled, the report shows.

Additionally, in 2021, Huawei launched a second-hand phone service on Vmall for recycling, refurbishing and resale, together with industry-leading recyclers and service providers. All Huawei-certified second-hand mobile phones must pass stringent tests to ensure they are equipped with 100% original Huawei components (including original brand-new batteries) and have HarmonyOS 2 pre-installed.

Reducing the use of plastic in products' production processes is critical to the circular economy goal. The United Nations Environment Program (UNEP) estimates that about eight million tons of plastic end up in the ocean every year, and 60% to 90% of the litter that accumulates on shorelines, the surface and the sea floor is plastic. Reducing plastic is, therefore, an imperative for all businesses. Plastic bags take decades to decompose. In addition, toxic substances are released into the soil when plastic bags perish under sunlight, and if plastic bags are burned, they release harmful substances into the atmosphere, causing ambient air pollution.

To reduce plastic waste, Huawei keeps improving its product packaging and reducing the amount of plastic used in packaging materials. For example, the surface of a packing box is usually covered with a layer of plastic film to protect the text and printed graphics. Huawei's packaging designers developed water-based inks to replace the plastic film, which has been applied to the HUAWEI Enjoy 20 Pro and nova 7 SE (5G) models and will be used in the packaging of more products in the future. This optimization alone is expected to reduce the use of disposable packaging plastics by approximately 46.3 tons for every 10 million phones.

The company is also reducing the amount of plastic used inside gift boxes. For example, the amount of plastic used inside the gift boxes of P50 series phones decreased by 89% compared with the P40 series. The Sustainability Report reveals that plastic now makes up less than 1% of the packaging of a P50 phone, an industry-leading figure. Huawei is applying these plastic reduction measures to headphones, watches, bands and many other products to provide eco-friendly products to our consumers and drive green consumption.

Green and low-carbon development has become a globally recognized goal and helps reduce products' environmental impact across their lifecycle. By the end of 2021, Huawei's digital power solutions had helped customers generate 482.9 billion kWh of green power and save about 14.2 billion kWh of electricity, equivalent to offsetting 230 million tons of CO2 emissions. At the same time, Huawei itself used over 300 million kWh of electricity from renewable energy sources in its operations in 2021, up 42.3% over 2020.

Sustainability is a team effort, and ecosystem-wide collaboration is essential to have an impact on the environmental challenge. In May 2021, Huawei held its Supplier Carbon Emissions Reduction Conference. At the event, 98% of the company's top 100 and energy-intensive suppliers set carbon emissions reduction targets with Huawei's support.

These efforts by Huawei and others can help Middle East countries accelerate their own circular economy objectives. Dubai Municipality announced that it would establish the largest plant in the Middle East to convert solid waste into energy at a cost of AED2 billion. The move aligns with the UAE National Agenda to reduce landfill by 75% by 2021 and thus protect the environment from methane gas emitted by landfills. Meanwhile, the Saudi Investment Recycling Company, established in 2017 as a wholly owned subsidiary

of the Public Investment Fund, seeks to divert 85% of hazardous industrial waste, 100% of solid waste and 60% of construction and demolition waste away from landfills by 2035.

The current linear model of consumption is unsustainable. A regional shift to a circular economy that replaces virgin resource usage in manufacturing with recycling, repair and remanufacturing practices alleviates the need to consume new raw materials. This, in turn, helps reduce carbon emissions while creating new green jobs for the region's workforce. **TR**

By Shunli Wang, Vice President of Huawei Middle East



Huawei was able to increase the average energy efficiency of its main products by 1.9x compared to 2019



Digital Twins in Telecom Infrastructure



The digital twin is truly eye-catching! Ideally, this concept gives forth a digital model reflecting a real system, in real time, and provides it with automated calculation, prediction, and management functionalities for marketing, assets, maintenance... This concept is often associated with a 3D visual representation (in reference to the Building Information Modeling (BIM)), which direct transposition in the telecom industry may raise some business issues.



Originally, a 3D Visualization Model

The 3D BIM model designed for the needs of the construction

industry facilitates the operation of complex systems where a lot of maintenance is required. It was developed to address problems of planning between a multitude of actors and harmonization of information on common plans that improve the sequence of the various parties in construction workshops. Throughout the design, construction, and operation phases, it allows the centralization of information that is essential for the professional functions related to energy, structural calculation, conflict detection, compliance with standards, budget, deadlines, and intervention planning.

Is this model adapted to a network or to a telecom infrastructure?

The control and optimization of the value chain requires a digital representation allowing the automation of business functions, but which representation will be adapted in the optimization of infrastructure

management and network service delivery?

A digital twin is a virtual model designed to accurately reflect a physical object or system. The system under study, for example, a wind turbine, is equipped with various sensors related to vital areas of functionality. Accuracy here applies to the vital parameters on which the representation must be based and thought out to enable services to function (not necessarily the visual aspect only).

In the telecom sector, it is a database of network or infrastructure elements with their interconnections and dependencies and the parameters necessary to control services and their evolution (construction, operation, maintenance, marketing, QoS)

The nature of the form of representation (3D visualization or other) must be guided not by the problems of the construction industry, for which 3D representation is necessary, but by the identification of the vital functionalities: what parameters of the active and passive infrastructures (resistance,

temperature, capacity, consumption, etc.) must be collected? How often should this be done to improve the construction, operation, maintenance, and marketing of network and infrastructure services?

Example of a telecom tower

If we take the case of a telecom tower, the vital information can be:

- Corrosion
- Equipment inventory
- Available locations
- Load
- Energy consumption
- Access/intrusion

As soon as the sites are designed, we can anticipate the methods that will allow us to identify these elements in an optimal way. The digital twin can be established from the design plans of a site that will be added, and connected to the digital model of the system. It is not necessary that an optical capture is made, what is important is that the model reflects the reality on the ground in the information considered vital to the control and optimization of the network and infrastructure management.

Even if the site is already built and we do not have access to reliable plans, we find that 3D image capture and post-processing only address a small part of these "vital" needs, due to the nature of the information to be collected and the ability to measure it by image processing.

3D Image Capture Does Not Yet Fully Capture Vital Information

Today, the trend for the management of networks and infrastructure by digital twins is to automate the outputs of real elements and update of databases by optical captures. It offers a virtual 3D visualization, but it does not provide vital business functions with information. Which parameters, for example, can be taken from a photo to be used in a calculation note? Some of them, without any doubt, but not all...

Current Image Processing Features Are not Mature

Image processing features allow the automatic detection of some equipment (e.g., antennas) or corrosion detection. However, reviewing these few elements by drone and post-processing is considered incomplete today, in addition to being less advantageous than an audit by 2 technicians equipped to collect "vital" information by form.

In general, capture and post-processing companies offer a service of drone or 360° capture, post-processing to build a 3D visualization, and licenses to libraries of features (not very developed and limited by the nature of the elements to be recorded and the ability to deduce them through image processing).

A drone service on a tower site and its post-processing cost today on average more than 1 000€ and the average deadline for this service is about one week. In addition, the combination of capture/post-processing does not allow for near-real time.

If the digital twin depends on the drone capture means that it will only be updated between the period of capture and the next modification of the site (voluntary or not).

The Issue of "Real-time" and the Automation of the IS Update: Necessary Inputs for the Vital Functionalities

In this context, the evolution of the status of the site(s)/network(s) in real-time is a fantasy.

It is easier to take readings on active equipment (alarm feedback), but how do you do this for passive equipment?

On certain functionalities, AI makes it possible to predict the evolution of the state of passive infrastructures when we know how to record a certain number of past states allowing to feed predictive scenarios. However, the cost of data acquisition can be very high (e.g., repeated drone captures) to regularly capture the whole infrastructure.

How to Consider Passive Infrastructure in Digital Twins?

Should we select so-called sensitive passive infrastructures and operate these captures to feed a digital twin?

Or isn't this the nature of passive structures that are by design made to last over time and do not require the real-time factor in the IS update or the low frequency? And if the frequency of evolution of passive structures is high, how do we "activate" it?

In this framework, IoT is the right tool to select the right sensor(s) to measure vital information and feed it back to the digital twin.

However, there are still cases that can be examined for optical capture and 3D reconstruction.

Case of Flat Roofs

Without questioning the need to identify the nature of the vital information to be collected, a 360° capture of the roof during a technical visit in the design phase has a lower cost (~500€). This capture allows to have a visual model, to see the site at any time, to make distance measurements and automatic extractions of terrace plans.

In the case where we do not have plans of the existing, it can be interesting to carry out a campaign of optical capture. The functionalities of distance

measurements and production of automatic plans .dwg and .pdf are mature.

Reducing the Number of Intervention Cases to Obtain Information that is not Present or Inconsistent in the IS

Checking a serial number, the dimensions of a free space for new equipment or the presence of a power supply, the 3D site visit makes it possible to avoid certain trips. The question is to know if these are not marginal in the operation of the park depending on the infrastructure (optical connection node, mutualization point, towers, rooms ...). Is it necessary to redo all or part of the 3D visualization capture of the site when the site is modified (frequency of modifications)?

The Case of Visual Representation in the Marketing Process: the Showcase Effect

Is there an added value to proposing a virtual visit of technical sites in the process of renting sites to operators?

For all these reasons, it is difficult to replicate BIM in the telecommunications sector.

The fact that BIM is mature today to serve the needs of the construction industry, meaning that solutions exist and can be industrialized, does not allow us to meet the challenges of control and optimization of the value chain of network operators. The use of these tools is too costly for an added value that is still undetermined in terms of the needs of the telecom network business functions.

However, it is relevant to continue to evaluate the progress of methods for capturing and recording "vital" parameters (IoT, sensors on drones, and image post-processing) as well as their costs. Certain advances in sensors and post-processing could lead to the profitability of a capture service or an installation of an on-site system (IoT) if it responds to this automation of "vital" parameter readings and "automated" updates in the IS. **TR**

By Clément Grégoire, Practice Leader Very High Broadband, Sofrecom



Partnerships Pave the Way to a Green 5G Future

Sustainability and collaboration are proving to be the keys to a better digital future for MEA, as 5G networks continue to enable Industry 4.0, smart cities and other forward-thinking applications.

5G networks will account for nearly a fifth of mobile connections in the Middle East and Africa (MEA) by 2025 and almost half of the connections in the Gulf Cooperation Council (GCC) states, according to the GSMA. As this momentum builds, 5G has great potential to spark innovation and economic growth across the region.

Consumers in the GCC states are already among the earliest adopters of 5G globally. With high smartphone

penetration and increasing acceptance of remote work, e-learning and online gaming as examples, people are taking full advantage of 5G for fast downloads, ultra-high-definition (UHD) video and augmented and virtual reality. We are now also seeing new use cases for smart homes and autonomous public transport, alongside industry applications that promise to transform the region's critical mining and oil and gas sectors, agriculture, infrastructure and more.

There is particular potential in applying next-generation digital technologies,

including 5G, to the development of smart ports. The Middle East ports are already among the most productive in the world, driving both economic growth and diversification across the entire region. 5G will further strengthen port productivity and efficiency by enabling application scenarios such as port machinery remote control, intelligent tallying and unmanned horizontal transportation. This has been proven successful in the smart ports in China's cities of Xiamen, Tianjin and Shanghai, as China Mobile worked closely with partners to upgrade innovation and improve key

technologies, including 5G networks of different frequencies and the intelligent cargo handling system, to empower the industry's advancement.

The development of 5G-enabled industrial parks is another trend with great promise for the MEA region. One such successful case was a recent project conducted by China Mobile International (CMI) for a European-based manufacturing customer, where 5G was adopted as the basis of connectivity across the industry park and as the foundation for AI and cloud solutions. With multi-access edge computing (MEC) and 5G networks, a full assortment of comprehensive coverage, real-time monitoring and analytics and easy management of operations and maintenance across business lines – from manufacturing and R&D to back-end office, logistics and sales – is now possible. The industrial park can easily improve efficiency, reduce energy consumption and ensure security for factories with a dedicated 5G network.

In addition to each of these exciting use cases, the potential exists for 5G to support sustainability, which is also a top priority for countries across MEA. Enabled by 5G, breakthroughs in IoT, AI and automation can help industries, infrastructure like ports and parks, and even whole cities operate more efficiently to save energy and reduce carbon emissions. The telecom industry also needs to step up with a sharper focus on sustainability and partnerships. As a world-leading 5G pioneer and advocate of 5G integration, CMI is committed to shaping a better and greener digital future by driving 5G innovation and adoption through healthy cooperation with carriers, enterprises and industry peers worldwide.

Dedicated to Sustainability

As part of China Mobile, CMI leverages its strengths to uphold a model of sustainability that contributes to wider economic, social and environmental development.

With faster speeds, more bandwidth and reduced latency, 5G networks can capture data and respond in real

time to avoid inefficiency and waste. Driverless public transportation, which is now undergoing trials in several major cities in China, is a case in point. And in the MEA, Dubai is among the first cities globally to be exploring the use of self-driving electric taxis and buses as part of a plan to enhance urban life while saving fuel and reducing congestion.

Beyond supporting enterprises and organizations to leverage 5G technologies to improve sustainability, CMI also works to reduce the energy used by 5G networks themselves.

China Mobile has over 510 million 5G subscribers and the world's largest 5G coverage, building more than 50% of 5G base stations globally. By introducing new technology layers and devices since 2019, it has already been able to reduce the electricity consumed by base stations by nearly 25%. CMI helps other carriers leverage China Mobile innovations to save electricity costs with, for example, a 5G Power Cabinet that increases energy efficiency by up to 17%, making the transition to 5G networks faster, simpler and more economical.

Committed to Partnership

In 2021, China Mobile launched its Green 5G Joint Innovation Lab with more than a dozen partners from various industries. This lab focuses on the development of new energy-saving technologies and products based on 5G, as well as the end-to-end integration of solutions. It is part of a global network of more than 30 China Mobile joint and open 5G innovation labs.

CMI believes that cross-industry partnerships are vital for helping energy-hungry enterprises in industries like energy generation, smelting and chemical manufacturing become more sustainable. To foster a more cooperative telecom ecosystem, CMI has presented its Hand-in-Hand Program (hi-H Program) since 2015. The program now has 27 members—leading companies in the industry that serve more than 4 billion mobile users and share a commitment to working together to advance 5G, IoT and other

technologies to enable seamless global connectivity.

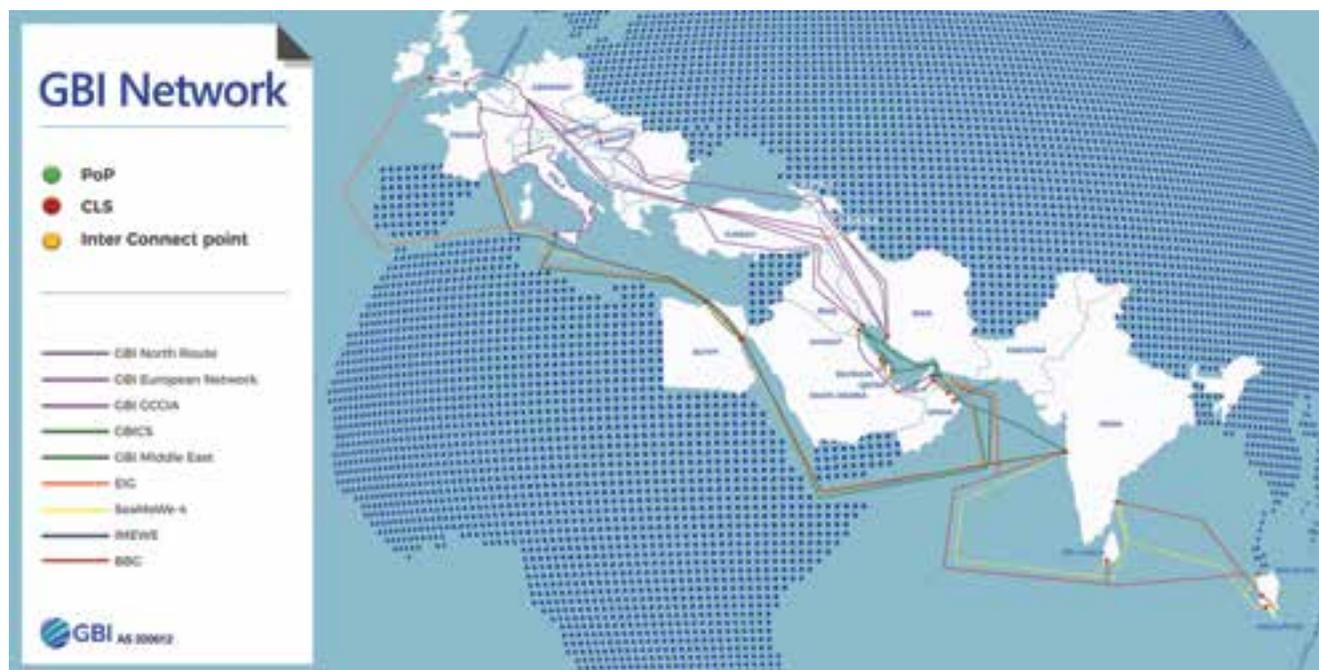
Further supporting telecom operators to seize opportunities afforded by 5G, China Mobile recently teamed up with Huawei and other partners to publish the 5G New Calling Technical White Paper. This resource provides a roadmap to guide operators in developing their 5G capabilities to optimize voice and video calls and deliver a variety of new applications. These include 5G UHD video calls, intelligent translation, smart customer service, remote collaboration and content sharing.

With telecom operators in MEA collectively building the infrastructure and solutions necessary to make exciting 5G services and innovations possible for consumers, businesses and industry, CMI will continue to work with partners across the region to help build an ecosystem for a smarter and more connected future. **TM**



China Mobile worked closely with partners to upgrade innovation and improve key technologies, including 5G networks





Don't Put All Your Eggs in One Basket: Why the North Route Is Crucial for Global Connectivity

98% of the world's internet traffic is carried by submarine cables. From enabling video calls to initiating bank transactions, these conduits are crucial to the makeup of today's society. They not only have vast economic benefits, boosting industries from manufacturing to financial services, but with data demand increasing, it's clear that subsea cables have a pivotal role to play in the world's infrastructure and technological revolution.

While their significance in the global connectivity landscape is undoubted, the routes they take are not as simple. This is because there is a multitude of ways content can be connected and a host of destinations that traffic can travel through before a person sees their colleague's face on Microsoft Teams or completes a bank transfer, for instance.

Think about it this way; on paper, driving along the highway always tends to be the fastest option from point A to B, but if everyone takes the same route then bottlenecks and accidents occur. Sometimes, then, it may be quicker to diversify and take an alternative route using smaller, local roads. Subsea cable networks are the internet superhighways of the world. While capacity and latency should always remain at the forefront of decisions, the value of having diversified routes should not be overlooked.

The North Route Offers a Viable Alternative From East to West

Almost all subsea cables and traffic from West Asia, South Asia and East Asia pass through Egypt and the Mediterranean Sea on the way to Europe. This means that they are heavily dependent on a single route for all Europe-Asia connectivity – via Egypt and the Suez Canal – which can create bottlenecks. And bottlenecks in this context can be costly, as outages and high latency can impact individuals, businesses and countries on a vast scale.

It's therefore crucial that there is full diversity for Europe-Asia connectivity, and the Gulf is integral to this. Leveraging cable and assets in Asia, as well as the Gulf countries such as Iraq to carry traffic via diverse terrestrial networks to Europe, provides a multitude of benefits. For instance, latency can be significantly improved.

Adding diversification to existing terrestrial routes through different countries provides redundancy, which means users remain connected in the case of an outage. This is vital in

ensuring the continuation of mission-critical operations, particularly as more and more companies accelerate their digital transformation strategies. It's clear that by diversifying routes through the Middle East and Caucasus region, availability, quality and stability can be ensured for both existing and new traffic too.

Connecting Content in the Middle East

It's no surprise, then, that over-the-top providers (OTTs) are prioritizing such diversification. A significant amount of internet traffic is related to social and messaging platforms, video streaming, gaming, music and backup storage data. Consuming content in this way shows no signs of slowing down either, as data-hungry generations expect more from their devices every day.

That's why major providers of content, such as Meta, Google, AWS and Microsoft, are now investing in the Middle East. They are putting diversified routes and locally hosted data centers at the top of their agendas to ensure that growing demands can be met and that local customers will benefit from having a better quality of experience for various applications and services. Whether that's reducing the amount of time a YouTube video buffers or improving the speed at which colleagues can collaborate, a more diversified cable route to and from the region ensures that the Middle East isn't left behind.

GBI is leading the way in the region to ensure that the Middle East is a safe investment too. For instance, end-to-end remote peering capability is now available by utilizing various Gulf networks and landing stations. This means that ISPs (Internet Service Providers) can enjoy hassle-free remote peering as network providers will be a one-stop shop, enabled by leveraging relationships with suppliers in the region.

Connecting content in this way could not come at a more important time, either, as the region prepares to meet the surge in internet traffic anticipated around World Cup 2022 in Qatar. It's clear the North Route will play a critical role in keeping the world connected when all eyes will be on the region.

The Need for Diversification

Due to the complexity of the geopolitical landscape and its ability to impact how businesses and individuals operate as well as regional investments, data cables are intrinsically linked to a country's global standing and security. Just as the Silk Road was once the vital network of trade routes connecting countries from East to West, designed to streamline the transport, exchange, distribution and storage of goods, now, cables provide new trade routes with data as the commodity. And this enables a new complex global power balance. The diversification of cable routes between countries is an effective tool for multiple stakeholders to minimize risk and maximize output.

This is why we should look to providers that can furnish alternative routes to ensure diversity and lower latencies. We need to diversify connectivity routes to enable innovation, connect individuals and businesses across the world, and protect countries and customers. It's only by working with providers that have multiple routes and options that countries and companies are able to remove bottlenecks, connect content effectively and drive digital transformation. **TR**



Adding diversification to existing terrestrial routes through different countries provides redundancy





2G and 3G Network Sunsets Make Way for 4G and 5G in Middle East and Northern Africa

Covid-19 placed considerable strain on societies globally as they dealt with the consequences of the pandemic that restricted people to their homes and placed unprecedented reliance on digital connectivity. This forced several traditionally in-person practices to the online space, resulting in substantial increases in online shopping, socializing and learning, as well as the shift to remote working, which predicated the popularization of hybrid working.

For societies to keep pace with the growth in demand for reliable connectivity, the mobile industry has made a considerable investment in the Middle East and North Africa (MENA) to deliver infrastructure rollouts across the countries involved. The investment, which is expected to continue until 2025, successfully brought the number of mobile internet users in MENA to exceed 300 million in 2021. This penetration is due to reach 50% of the population by the end of 2022 according to GSMA, the industry organization representing over 750 mobile operators and 400 companies in the broader mobile ecosystem.

Fundamental to the success of this endeavor has been the shift away from the legacy infrastructures that have become largely outdated. Despite extensive updates extending their lifespans, 2G and 3G cellular networks are incapable of servicing the data traffic which is only expected to further surge as the influx of innovative solutions and devices continues to integrate into economies globally.

With this in mind, many mobile carriers are driving the industry forward with the implementation of 4G networks to replace the increasingly obsolete 2G and 3G infrastructures. Delivering more powerful 4G networks across MENA enables the opportunity for more powerful devices to be used nationwide, providing a myriad of benefits to consumers including:

- Reliable availability
- Empowered security
- Reduced interference
- Diminished latency
- Increased speed

As the leading mobile technology in MENA, 4G had almost 270 million connections by the end of 2021, a rate of adoption that had doubled over the previous five years. This momentum for 4G uptake is expected to continue as mobile network

operators (MNOs) implement their plans to migrate users across from legacy 2G and 3G networks, which will free up an array of bands. This will allow 4G to become ubiquitous across MENA, as sufficient infrastructure is provided throughout both population-dense and more rural underserved areas to address poor broadband connectivity.

Companies such as du and e& have already taken advantage of the various growth opportunities this presents in the Middle East and areas of North Africa. Offering a portfolio of valuable services, MNOs operating in the area have placed increasing emphasis on upgrading the digital capabilities of businesses and consumers by offering large-scale transformation.

Access to both banking on the go and digital payments has empowered individuals to consider new purchasing methods and has attracted a variety of new services to these developing markets, increasing economic activity and improving the quality of life.

As MNOs continue to explore growth opportunities within the altered digital landscape, the opportunities to introduce new solutions and new devices are endless. Capitalizing on the new mobile spectrum will be integral to scaling successful businesses and continuing to develop economies throughout MENA as investment and adoption rise.

Radisys has solutions for MNOs needing to sunset their 2G and 3G networks and can provide a seamless transition and revenue assurance with devices that deliver tremendous capabilities while priced for the masses. One such device offered by Radisys is a powerful, yet affordable, smart feature phone with an array of cutting-edge capabilities. The smart feature phone is more than a handset; it is a premium device that brings advanced elements and capacities to the masses, enabling subscriber growth, new revenue streams and increased broadband usage for operators.

Immediate monetization is possible with the right devices and the right vendor partner. Radisys is committed to innovation and service in the region and has developed a full range of capabilities that can be white-labeled by Mobile Network Operators (MNOs), including exciting and alluring applications which will drive data usage and therefore average revenue per user (ARPU). Whether these are business collaboration apps, music stores, gaming experiences or mobile payment solutions, transforming to 4G is rich with growth opportunities with the right mobile ecosystem partner. **IT**



Radisys has solutions for MNOs needing to sunset their 2G and 3G networks and can provide a seamless transition and revenue assurance?





Aviation Soars Higher. Digital as Fuel Power

Aviation enables both physical as well as informational connections between people and businesses, and its global approach has changed considerably over the years. New technologies and standards are giving rise to connected-anywhere concepts that are enabled by digital ecosystems.



navigating airports, tracking luggage and receiving real-time updates of in-transit cargo.

Unsurprisingly, innovation is rapidly changing many industries, and aviation is not exempt. A new era for the aviation industry is ready for takeoff, further bridging the distance between people, services and goods.

While evolving every day, the connectivity brought by 5G through private networks is expected to boom in time. Despite some security concerns raised behind 5G deployment for the aviation sector, the benefits certainly outweigh any possible risks. With proper frequency allocation and suitable preparation for interferences, flights will be undisturbed, with people's means of communication remaining intact.

What Digital Connectivity Brings

As per Ericsson's Connected Aviation report, to maximize value from this transformation journey, the sector must align the Aviation 4.0 vision with the use of real-time data from connected devices and the four key pillars for digital transformation: improved productivity, economy progression, enhanced passenger experience and increased safety and security.

More often than not, the connectivity needs of airports and airlines result in private wireless networks – from the passenger terminal and maintenance hangars to hotels and car-rental facilities. This is because cellular engages high-speed, reliable mobile connectivity that enables convergence with existing technologies such as artificial intelligence (AI), edge computing and augmented/virtual reality (AR/VR).

The abovementioned report also estimates that each flight itself needs to offload between 500 GB and 1 TB of data related to sensors, direction and entertainment.

To this end, in Inmarsat's digital aviation roadmap, within five to ten years, seamless digital communications mobility using

heterogeneous and integrated technology environments using LTE, 4G, 5G, satellite and L-band digital aeronautical communication systems (LDACS) will provide greater communications resilience and capacity for both existing and future flight (UAV) systems.

With ultra-reliable and low-latency connectivity, the principle of the "conscious aircraft" can be realized. This includes monitoring the current platform health and then automatically reconfiguring to optimize every aspect of an aircraft's engineering, connecting all with a human-like nervous system. By using sensing and communication technologies, the increasing awareness that removes risk and unnecessary costs can also avoid problems caused by component degradation, unpredicted technical failures and human error.

Connectivity technologies within the aviation industry, such as 5G, will be at the forefront of growth and represent some of the greatest opportunities for its mid-and-long-term future.

Private 5G Networks

5G is proclaimed to be revolutionary in different sectors of society, including aviation. The sky is truly the limit when it comes to 5G's ability to transform this particular industry. If leveraged properly, 5G deployments will touch every facet of the aviation lifecycle: manufacturing, airport and airline operations, and passenger experience.

The fifth generation of mobile technology is poised to take the industry to new heights in the form of dedicated private networks. Also known as the isolated non-public network as per 3GPP, this built-for-purpose network, in contrast to those open and publicly-available, provides dedicated resources that enable high security and privacy as well as full control over design, timeline and service-level agreements (SLAs).

Ericsson research suggests that the ultra-reliable low-latency

The complexity and interoperability of aviation ecosystems are seen as significant challenges for technology providers, regulators and airlines alike and are driving an accelerated digital transformation.

Now more than ever, air travel is expected to be safe, accessible and convenient. There's a huge need to adapt rapidly to changing market needs, pushing industry players to be more flexible and agile. As a result, a more connected journey is enhanced digitally through common scenarios such as the booking and managing of flights, creating more efficient ways of

communication approach of 5G is most applicable to the digital aviation ecosystem. Wi-Fi and LTE networks are not dependable enough for critical operations, effective fleet management and coordination within an increasing number of connected devices. Private 5G may be the answer.

Through secure and reliable connectivity, airports see performance gains of 20-40% for operations with private 5G networks. This is highly beneficial within the connected architecture in airports and the inflight-connectivity within airlines delivered through its connectivity providers.

To cite an example, 5G can support the automation and smart utilization of airport spaces and provide dedicated coverage and capacity when public networks are congested. Furthermore, by making an easy-to-consumer network in-air similar to enjoying 5G connectivity on the ground, passengers could enjoy and benefit from a 5G-enabled experience via AR/VR capabilities to access 8K or UHD content, or by tapping into faster in-flight entertainment services.

Indeed, private networks pave the way towards a robust and scalable communications infrastructure that integrates data and emerging technologies for a unified experience in which employees, customers and operators are continuously connected.

By delivering high bandwidth, strong capacity and safeguarded private 5G networks, the future connectivity needs and digitalization strategies within the aviation sector can be addressed and actualized.

Flying into Digital

Airports and airlines should look for partners with the ability to meet the needs of passengers both today and in the future. This requires a network provider with the commitment and ability to invest in realizing the potential of this vast connectivity opportunity.

Key players present in the 5G market within the aviation industry include Ericsson, Nokia and Huawei, with PCCW Global and Intelsat also making significant contributions to aviation-specific solutions.

Airbus is working with Ericsson to provide a secure connectivity solution that supports aeronautical engineering and final assembly line production by providing secure onsite data transfer between engineering teams and device connection on-site via narrowband IoT (NB-IoT). This features a 4G private network that is 5G-ready and includes a robust and redundant core network connected to radio solutions running on mid-band 700 MHz and 2600MHz TDD.

Huawei's smart airport solution propels airport digital transformation by improving passenger satisfaction and airport operational efficiency. Utilizing the Horizon Digital Platform to integrate multiple new technologies – including AI, IoT, video cloud and big data – this solution focuses on three airport business domains: operations control, security and services. One ID for Airport Travel and One Map for Airport Operations are two tailor-made solutions that streamline passenger and flight flows. On the airline side, Emirates has boosted its partnership with Huawei to elevate its digital customer experience, expanding the Emirates app availability in the AppGallery.

For Nokia, deploying an industrial-grade private wireless solution with its Digital Automation Cloud (DAC) provides easy-to-deploy, pervasive connectivity that can help airports ensure safe, on-time and fully connected journeys. It provides a dedicated, 5G-ready operational network that delivers the reliability, predictability and low latency needed for critical operational services and applications. Ukkoverkot, a Finnish private network operator, has signed local airport operator Finavia as their first micro-operator customer, building a private LTE network for Helsinki airport with Nokia technology.

PCCW Global and Frequentis have collaborated to deliver aviation-specific software-as-a-service

(SaaS) technologies over the newly-commissioned Common Aeronautical Virtual Private Network (CRV) that serves International Civil Aviation Organization (ICAO)'s Asia Pacific and the Middle East (APAC and MID) regions. Offering value-added services on top of the advanced aeronautical network, it provides critical information through the globally interoperable system-wide information management (SWIM) infrastructure, interfaces and exchange models.

Intelsat has also launched a new inflight connectivity (IFC) solution powered by electronically-steered antenna (ESA) technology. Lighter, and more versatile than previous options, the new ESA-based solution is the first in a new line of ground-breaking multi-orbit terminals developed by the satellite operator, with the capability to interoperate with GEO, LEO and MEO satellites. **TR**



If leveraged properly, 5G deployments will touch every facet of the aviation lifecycle



GITEX
GLOBAL

X

ai
عالم الذكاء الاصطناعي
EVERYTHING

X

GLOBAL
**DEV
SLAM**

THE WORLD'S LARGEST
AND MOST INFLUENTIAL
TECH + STARTUP EVENT

10-14 OCT 2022
DUBAI WORLD TRADE CENTRE



GET YOUR
EVENT PASS



Believe the hype, it's here.
**ENTER THE NEXT
DIGITAL UNIVERSE**

#GITEXGLOBAL
gitex.com

170+
COUNTRIES

700+
STARTUPS

4000+
COMPANIES

DIAMOND SPONSOR



PLATINUM & LANYARD SPONSOR



GOLD SPONSORS



SILVER SPONSOR



ATTENDEES BADGE
SPONSOR



CONNEXIONS
LOUNGE SPONSOR



MAJLIS
LOUNGE SPONSOR



INNOVATION PARTNER





NaaS:

A Must for Innovation and Business Value

NaaS – network-as-a-service – is expected to become increasingly deployed within companies as the ultimate cloud service model suitable for a digital business technology approach.

With the advance of cloud computing and pay-per-use, the NaaS market has continued its rapid growth, with various projections claiming that it could surpass \$50 billion by 2025. This means NaaS is one of the fastest emerging service-based solutions of this generation.

The current socio-economic environment has turned business flexibility from a competitive advantage into a necessity, and this is directly proportional to the flexibility of an organization's network infrastructure.

In response, instead of investing in physical infrastructure and on-premise equipment, organizations can now simply tap into NaaS for an optimized, managed network

experience that is tailored to their own specific business requirements.

NaaS in Brief

NaaS refers to a cloud service model where customers can obtain network services from providers, without having to incur the cost of maintaining their own infrastructure. Purchased on a subscription basis, this model helps companies to be scalable, easily deploy applications, reduce network complexity and digitalize faster.

Implementing NaaS within the enterprise technology ecosystem facilitates not only budget flexibility, but resourcing flexibility as well, as it enables you to acquire the network you need when you need it. It transforms the business through automating workflows, solving problems, optimizing processes, increasing security and typifying the next-generation workplace.

This "as-a-service" model has been extended to network infrastructure and capacity, optimizing resource allocation by considering network and computing resources as a unified whole.

Indefinitely, this will improve the way organizations acquire, deliver and manage their networking solutions. In deciding whether to invest in NaaS and selecting an optimal partner, enterprises should identify and evaluate their specific requirements. This covers the "must-have" functionalities as well as extended but important needs like performance and data analytics.

A clear "make or buy" business analysis will be helpful to determine the business's core priorities and competencies in line with improving the local IT team for innovation and business value.

With NaaS, we're seeing network architecture move from CAPEX to OPEX, giving businesses far greater control and flexibility as they scale. To utilize the NaaS architecture, the user will first log in to the web interface from which he can obtain an online API, make the necessary modifications and pay for the capacity consumed. This can also be deactivated after the agreed-upon period.

Why It Works

Anticipated to be a real game changer, NaaS is an all-encompassing enterprise networking solution that offers equipment, capacity and proactive management. It is an ideal way to offer more services, gain new customers and create stronger partnerships.

Having said that, the proliferation of NaaS could be a win-win arrangement among cloud vendors, network service providers and equipment manufacturers. The latter two can lean on the cloud vendors' experience of facilitating multi-tenant services and the elastic infrastructure of NaaS to provide end-to-end solutions globally.

On the other hand, cloud vendors will get to leverage the networking domain expertise from service providers and OEMs to extend their reach to users and devices connected through various means like 5G, fiber and satellite.

NaaS is now empowering a transformed business and customer experience to enterprises, giving them the choice, agility and control to match their needs as well as enabling them to engage and interact with employees, partners and end customers.

Seen as a low-risk endeavor, NaaS also results in cheaper TCO because there's no need to invest in physical on-site infrastructure or hire in-house teams to manage, monitor and maintain it. Ergo, NaaS serves to actively streamline and optimize connectivity as opposed to just providing basic access to network infrastructure.

NaaS in the Cloud

NaaS certainly elevates the cloud transformation journey by enabling faster connections without the need for new infrastructure. According to a Console Connect report, there are three ways NaaS can enhance cloud access: cloud interworking, cost efficiency and automation. To explain, moving workloads between clouds over a faster, more secure and resilient private network is much more efficient. Also, a dedicated connection could be less volatile in terms of pricing, while APIs give businesses the agility to orchestrate connections in an instant.

To work, the NaaS model requires network virtualization technologies such as software-defined networking (SDN) and network function virtualization (NFV). By using standard-based architectures and open APIs, NaaS provides common abstraction between the network, operations and BSS/OSS layers.

Through open APIs, automation is carried out and becomes key to streamlining processes across the entire network. As per TM Forum, in 2020 alone, 886 companies downloaded 106,300 API assets.

In managing NaaS, the core networking management functionality moves to the cloud. A NaaS offering will include a cloud-based central management hub and dashboard that allows customers and partners to set and enforce policies and manage the services and products they need. This should include the ability to quickly take advantage of new technologies and services as they are continuously released.

NaaS would bring to life a cloud-native network that is no longer seen as an obstacle to continuous innovation, but the very thing that enables it.

NaaS in Telecom

By 2030, ABI Research expects that about 90% of enterprises will have migrated at least one-quarter of their global network infrastructure into a NaaS model. Telecom companies are presented with an opportunity to dominate the NaaS market.

Telcos must virtualize network infrastructure to deliver cloud-native services and continue to invest to integrate automation throughout network services. This includes paying attention to 5G slicing and other value-added services that are critical to monetization.

Moreover, by restructuring business and operating models, they would lean towards openness and partnerships across the industry and reduce internal fragmentation to drive cross-business service continuity. Telcos would also be developing vertical and enterprise size-specific sales strategies and establishing consultative processes for enterprises.

The positive outlook in the NaaS market is impacted by the rising demand from startups and SMEs. There is no single telco or cloud provider that can cater to all cloud connectivity needs, which is why as well-established managed connectivity providers, CSPs are already offering certain kinds of NaaS services, such as managed LAN/WAN services, virtual private networks, datacenter interconnect, cloud-based managed Wi-Fi and private LTE services.

In a Nokia survey, 91% agreed that offering NaaS is critical to the successful delivery of enterprise 5G services, and most are already investing in NaaS-essential technologies as part of their digital transformation programs.

Huawei has announced its latest innovative NaaS offering for the Middle East region, powering enterprises across different industries. Enterprise NaaS models allow them to outsource provisioning, deployment, ongoing management, decommissioning and end-of-life for their enterprise networks.

Huawei's NaaS solution is built with the focus on business agility and continuity, security and compliance resulting in achieving greater efficiencies and optimization for customers, said David Shi, President, Huawei Enterprise Business Group, Middle East.

On the other hand, with NEC/Netcracker NaaS, service providers can fundamentally change how business services are delivered and consumed, leveraging cloud and virtualized technologies to deliver value-added services on top of their provided connectivity. Striving for the best possible experience, NEC/Netcracker NaaS brings together a broad scope of services including network and value-added services bundled with IT and IoT apps into a single digital marketplace.

Additionally, ARC, a joint venture between UAE's du and Bahrain's Batelco, has deployed Nokia IP and optical solutions to provide high-capacity connectivity between SmartHub (UAE), datamena (UAE), GlobalZone (Bahrain) and Muscat MC1 (Oman). **TR**

etisalat by e& Integrates UAE PASS With App and Website



Etisalat UAE, branded as etisalat by e&, has integrated the UAE PASS login on the "My Etisalat UAE" app and portal (www.etisalat.ae), enabling all subscribers to seamlessly log in with their secure national digital identity details.

UAE PASS is the first secure national digital identity for citizens and residents, allowing users to access many online services across various sectors; sign and authenticate documents; perform transactions digitally; and request a digital version of their official documents.

This new feature will enable all customers with a verified UAE PASS account to use the UAE PASS authentication to access accounts registered against their Emirates ID,

enhancing security and fraud for users and making it convenient for the subscribers. Additionally, subscribers can register for the UAE PASS on its app and website without the need to go to any physical outlet.

etisalat by e&'s continuous efforts to digitize customer journeys now offer a "zero-touch" experience with a focus on enhancing digital channels such as apps, websites and social media; optimizing contact center performance with the introduction of virtual agents; and revamping and digitizing its stores. This integration of the national identity across the digital channels is in line with etisalat by e&'s main objective to combine the optimum mix of physical and digital channels and offer a truly omnichannel and digital-first experience.

A superior and differentiating customer experience is a foundational block in etisalat by e&'s transformation into a

digital telco. The company is harnessing the power of analytics and AI to offer personalized experiences across all digital and physical channels. The digital experience of customers is enhanced through the "My Etisalat UAE" app, as they can fully view and make all their required transactions on the app, such as access and payment of bills, account management, plan changes and contracts – all these are now accessible via an easy log in with UAE PASS. Other features including device purchases, new service subscriptions and technical troubleshooting are also available using the self-care support modules on the app.

To further enhance the customer experience, both the app and website interfaces are undergoing a full revamp along with additional features. Currently, there are more than 4 million customers who are actively using the "My Etisalat UAE" app on a regular basis.

Ooredoo Oman Connects Society With Smart ICT Services



Marking a major new milestone in its digital leadership and transformation, Ooredoo Oman has partnered with Dahua Technology, a leader in smart IoT solutions, and Starlink, one of the region's largest outsource-managed services providers. The partnership will be focused on: delivering some of the key objectives of Oman's 2040 Vision; connecting society through many ICT services, e.g., CCTV and IoT; assisting in large-scale infrastructure mega-projects and smart cities to support economic development; and enhancing government performance with monitoring and support services that can help with traffic congestion, monitoring wildlife, tracking waste streams and boosting sales at retail outlets.

On the occasion, Sultan Ahmed Al Wahaibi, chief business and wholesale officer at Ooredoo, stated, "We continue to invest heavily in smart technologies that drive digital transformation and unlock new opportunities for development. By leveraging Dahua's world-leading capabilities in smart IoT, we are able to enhance the customer experience and provide greater security for a variety of sectors including healthcare, energy, retail and e-commerce, manufacturing, media and entertainment, and government departments."

Chief Executive Officer of Starlink, Munera Al Dosari, said, "We are excited and proud of this tri-party partnership which will empower and bring forward Oman's 2040 Vision. This is a historic step ahead which will enable the provision of high-tech security experiences for customers throughout Oman, in turn supporting a safer society and smarter living."

Brant Shen, UAE group country manager at Dahua, added, "We seek

to cultivate partnerships with major companies that open up opportunities for transformative technologies for smarter and safer living. As a leader in the technology field, Ooredoo can provide the Omani market with advanced solutions that meet the requirements of various sectors and carry out our commitment to providing 'innovation for all'."

The agreement elevates Ooredoo's position as a leading technology provider within Oman, expanding its diverse range of digital services that benefit all sectors of the economy. Capitalizing on its seamless network and customer-centric approach, Ooredoo offers businesses smart solutions to enhance their IT infrastructure, while keeping them connected, working and engaged every day. From cloud services to video conferencing, email collaboration suites, cloud storage and contact center solutions, the company's tailored solutions are shaped to transform businesses of all sizes and sectors, helping them achieve growth and contribute to Oman's development.

Game Time: Zain KSA Launches Esports Platform



Zain KSA and Zain Group have partnered with global gaming platform PLAYHERA to launch their new regional esports platform PLAYHERA MENA to target the Middle East's markets. Headquartered in Saudi Arabia, PLAYHERA MENA will create a suitable environment for innovators, content creators and esports amateurs, fostering the capabilities of professional gamers. The exclusive joint venture (JV) agreement was signed, at the beginning of this year, at LEAP 2022, the tech event held in Riyadh.

Targeting the region's lucrative market of an estimated 100 million gamers, PLAYHERA MENA is designed to be a

gaming powerhouse that generates countless opportunities for regional competitions and championships. It will also incorporate new gaming services such as cloud games backed by Zain KSA's state-of-the-art 5G infrastructure to attract digital entertainment stakeholders.

Commenting on the partnership, Zain KSA CEO, Eng. Sultan bin Abdulaziz Al-Deghaither said, "We are proud that Saudi Arabia is home to PLAYHERA MENA esports hub as it enhances the Kingdom's capacity to incorporate fast-growing and lucrative digital services and boost the Saudi economy in line with Saudi Vision 2030. We are committed to promoting the growth of an ecosystem that supports the development of gaming platforms, hence unlocking the countless opportunities that will arise for all stakeholders in this field. We look forward to driving growth in the gaming market in the region, and at the same time, we are

certain that PLAYHERA MENA will raise the level of the services in this sector that caters to a large segment of users and businesses. The same goes for the Kingdom's expanding gaming market which currently hosts over 19.8 million gamers and posts a significant annual growth of up to 22% and a market value of SAR 2.6 billion."

Meanwhile, PLAYHERA CEO, Naif Mulaeb, said, "We are proud to be a Saudi-born brand that has gone global with a fast-growing partner like Zain KSA who share our same passion and enthusiasm toward digital entertainment."

Zain will notably celebrate the launching of PLAYHERA MENA platform by announcing a regional PUBG Mobile tournament from August 29 to October 3, 2022. It is estimated that the tournament finals will attract around 7,000 participants from across the MENA market.

Telecom Egypt and Orange Jordan Sign Collaboration Agreement to Serve IRAQ



Telecom Egypt, Egypt's first integrated telecom operator and one of the largest subsea cables operators in the region, announces the signature of a strategic collaboration agreement with Orange Jordan, the leading operator of integrated communications services and one of Orange Group's subsidiaries, to create a highly reliable terrestrial system connecting Iraq to Europe through Jordanian and Egyptian territories.

The new system will commercially be named "Cairo Amman Baghdad System" or "CAB System". It falls in line with both operators' strategies to extend their footprints to the Middle East market generally, and to

the Iraqi market specifically, for the purpose of providing state-of-the-art telecommunications and connectivity solutions. The system will capitalize on Telecom Egypt's position, international assets, and facilities as well as Orange Jordan's fully diversified infrastructure in Jordan. Integrating the companies' distinguished and robust networks will offer reliable, low latency internet connectivity services through highly resilient, diverse routes to meet Iraq's growing market demand.

CAB System will be ready for service in the third quarter of 2022. Once launched, it will be the most advanced, scalable gateway and express route connecting Iraq to Europe using the companies' networks.

Adel Hamed, Telecom Egypt's Managing Director and CEO, commented:

"We are pleased to be part of this new solution in collaboration with Orange Jordan. The new CAB System will

enrich user experience for the Iraqi market by serving it through a new, highly resilient and completely diverse route.

Telecom Egypt and Orange Group are strategic partners and we're very proud of the special relationship with Orange Jordan that is reflected in this collaboration agreement between the two companies."

Thierry Marigny, Orange Jordan CEO, said:

"The CAB System is a true game changer for creating new routes reaching the Iraqi market. This strategic partnership with Telecom Egypt will enable us to serve this rapidly growing market with new, highly reliable terrestrial routes that connect Iraq to Europe seamlessly. Orange Jordan is proud to be part of the CAB System, which will contribute to an enhanced, high-speed highway between Europe and Iraq, affirming its position as a responsible digital leader."

etisalat by e& Successfully Tests the 6GHz Spectrum for the First Time in MENA Region



Etisalat UAE, branded as etisalat by e&, announced the successful completion of its first trial of the 6GHz spectrum, creating history by taking this monumental step for the future of 5G and opening up a world of possibilities for next-generation technologies and economies of the future.

This trial conducted with Huawei Technologies was integral in today's technology evolution as the full speed and capabilities of 5G depend on mid-band spectrum that both secures performance in the long term and adds more capacity if required. Here, 6GHz plays a critical role, especially considering the use of mobile technologies has grown exponentially; devices have become more powerful and services more diverse for both consumers and enterprises. Along with bandwidth-hungry applications, the number of connected devices per person has also increased, which means more bandwidth will further be

required to limit service degradation and deliver a good quality experience.

The 6GHz range is a mid-band frequency and sits at a balancing point between coverage and capacity, providing the perfect environment for 5G connectivity. Extending the bandwidth of 5G through the harmonization of 6GHz spectrum will provide more essential bandwidth and improve network performance. On top of this, the broad, contiguous channels offered by the 6GHz range will reduce the need for network densification and make next-generation connectivity more affordable for all.

Khalid Murshed, Chief Technology and Information Officer (CTIO), Etisalat UAE, said: "5G allows the industry to support national digital transformation goals by providing reliable, high capacity, low latency, and wide-area connectivity to consumers and industries. The metaverse is opening untapped opportunities with hyper-personalised experiences powered by AI. Telcos will be the entry point to the metaverse because of connectivity but also because the customer wants access to a digital world. The future is powered by AI and analytics, with metaverse playing a role yet to be defined. This

kind of technology disruption will create challenges but simultaneously bring massive prospects to this dynamic industry.

"The trial for 6GHz was influenced by these future market requirements as we foresee a significant growth accelerated by these applications. As a digital telco, we focus on our core while curating digital experiences that maximise engagement by building new capabilities across AI and digital to thrive in an increasingly competitive and ever-changing market environment."

The focus on 6GHz is also in line with etisalat by e&'s future roadmap as part of the e& group transformation drive to become a global technology conglomerate.

etisalat by e& has also been working towards meeting the various requirements of IMT (International Mobile Telecommunications) set by ITU (International Telecommunication Union) and the World Radiocommunication Conference to be held in 2023 in UAE. This adherence is in line with various countries undergoing similar trials supporting the spectrum for IMT along with other regulators and operators.

Ooredoo Oman Upgrades Internet Plan for B2B Customers



Ooredoo Oman has renewed its popular Ooredoo Internet Professional (OIP) plans, offering all-new speeds, economical rates and more choice so that businesses can get cutting-edge connectivity services. Available on all new and upgraded plans, B2B

customers can enjoy all the benefits of unlimited fixed internet with speeds ranging from 5 Mbps to 1 Gbps, unlimited calling minutes to Ooredoo landlines, up to 1,000 local voice minutes to mobile and international calling discounts of up to 35%. Plus, with a dedicated helpdesk and after-sales support available 24/7, it makes it easier than ever to stay ahead of the game.

Saied Al Lawati, director of business marketing and ICT solutions, at Ooredoo, said, "As a chosen digital partner for businesses, Ooredoo continues to offer smart solutions to keep them connected, working and

engaged every day. Capitalizing on our seamless network and superb customer service, we are supporting companies across a multitude of economic sectors to achieve growth and contribute to Oman's economic development."

Ooredoo offers a wide range of ready-made and customizable internet, mobile and ICT solutions, including cloud services, video conferencing, email collaboration suite, cloud storage and contact center solutions. In addition, it is consistent in introducing new ways to hone and improve digital communications and cater to the needs of an ever-evolving market.

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**





Cyber-Physical Systems: The Integrated Form of ICT

Cyber-physical system (CPS) is the new generation of intelligent, digital systems composed of physical hardware capabilities and computing software techniques. Optimizing functionality, autonomy, reliability and safety, CPS is a major step for future technology that could change and improve lives for the better.

Designed to act like a network of multiple variables with both physical input and output considered, this smart network is one where the physical and virtual worlds merge. Falling under the embedded system category, CPS can interact seamlessly with real-world systems by means of computation, communication and control.

CPS is commonly characterized to be adaptive, robust and user-friendly, and will eventually lead to the advanced implementation of the Internet of Things (IoT). Like IoT, every cyber-physical system is designed to support real-time applications that can manage various environmental datasets.

Moreover, CPS and the digital twin (DT) model also share the same goal: having an integrated and compatible framework between physical and virtual landscapes.

DT applies a comprehensive approach to CPS in features like cyber-physical mapping, closed-loop control and virtual representations.

With CPS's huge potential in bringing about significant social benefits across domains, being able to design and build secure CPSs to deliver consistent and dependable action is of particular importance. A lot of cyber-physical systems are being used in manufacturing, transportation, healthcare and energy, among other industries.

CPS must have a fully integrated and connected private network that can remotely connect with other untrusted systems when necessary. The smartness of the network must be based on intelligent data available from big data analytics resulting from collected data of sensors and external devices. With the help of intelligent decision-making, the complete process of communication, control

and computation will be delivered simultaneously.

By and large, every CPS is networked, has a strong sensing capability, has higher performance capability and can work in a real-time environment with highly predictable behavior, influencing risk mitigation and failure response effectively.

a. Robotics in Smart Manufacturing

Robots have become more sophisticated, with one of their main applications being within factories. In general, a robot is made from an embedded system tasked to communicate information between two components: a mechanical structure that is purpose-built to interact with its surroundings, and sensors to collect data from the environment. Together, these allow the robot to interact appropriately.

By tying together different subsystems, cyber-physical systems or embedded

systems play a vital role in the functioning of almost every robot. As an example, within the Nokia Bell Labs architecture for smart manufacturing, you can combine intelligent networking with digital technologies to support innovative applications such as robots, sensors, tracking systems and smart tools with the highest security and reliability.

b. Intelligent Traffic Control and Smart Cars

Over the years, the number of vehicles on our roads has increased dramatically, which, in turn, has led to serious problems such as traffic jams and accidents. To address these challenges, intelligent traffic management systems have been built to effectively detect and reduce the overall density of traffic. These systems' functions are based on several modern technologies, including wireless sensor networks (WSNs), surveillance cameras and IoT.

Huawei has worked closely with ecosystem partners to develop the Intelligent Traffic Management Solution (ITMS), supporting system integration on an open platform. As one of the largest industrial cities in Saudi Arabia, Yanbu deployed Huawei's ITMS in 2019.

The solution consists of three modules – Sharp Eyes, Powerful Brain and Intelligent and Simplified O&M. The first module replaces the traditional single functionality sensors with intelligent sensors to better detect violations and collect comprehensive traffic information, while the second module analyzes the data in real-time. The last module supports the end-to-end (E2E) multi-dimensional management.

To explain, the deployment of a cyber-physical system on an intelligent traffic control design connects various smart subsystems. Sensors can be integrated in the vehicle's controller system and communicate via embedded telematics, sending command inquiries to perform desired actions through the actuators connected to the system.

Relevantly, smart cars of today and of the future will need artificial intelligence

(AI), big data, cloud computing and other ICT technologies to achieve the deep integration of smart cyber-physical systems (hardware and software) for the necessary levels of safety and autonomy.

As an example, Qualcomm QCA7006AQ, a next-generation powerline communication (PLC) device, is designed to address the needs for electric vehicle (EV) charging station communications. It is compliant with the Home Plug Green PHY (HPGP) specification, which is the leading designation for implementing vehicle-to-grid (V2G) systems. By integrating smart grids, vehicles can seamlessly authenticate on the network through Plug and Charge automated payments, coordinating the EV charge timing and direction of energy to and from the grid and home.

c. Smart Solutions for Energy Demands

As we increase our use of technology services, networks and devices, the resultant energy consumption and emissions also surge. However, digital technologies can also be part of the solutions resolving such issues. Through cyber-physical systems, the scaling up of renewable energy markets, the support of smart power grids and smart metering for buildings, and the enabling of emissions reductions all become more feasible.

Ericsson's Global Utilities Innovation Center is an integrated state-of-the-art device testing lab where partner utilities and original equipment manufacturers (OEM) can test interoperability of their field and IoT devices over mission-critical networks. As a fully functional E2E operational lab, it contains a physical representation of a utility smart grid, enabling real-world demonstrations of E2E private networks operations across the power grid – from generation and transmission until distribution.

Moreover, 5G-ready Ericsson solutions will modernize enterprises' current communication infrastructure to simplify the communication for

Ooredoo's oil and gas enterprise customers.

d. Advanced Medical Systems

Most medical systems use cyber-physical systems for real-time monitoring and remote sensing of patients' conditions. Through wearable sensors or non-intrusive environmental monitors, sub-optimal vital signs are recognized early and emergencies are responded to immediately. This leads to a higher quality of healthcare in hospitals, clinics or even at home, incorporating high-grade security, interoperability and high system assurance.

Improving people's health and well-being through meaningful innovation, the infrastructure provided by du and paired with Philips' technological advancements will provide predictive analytics, data visualization and reporting capabilities to healthcare workers. This combination lets local health systems access critical patient information and make split-second life-saving decisions.

Assisting Saudi's healthcare providers in preventing the spread of COVID-19 in 2020, stc launched the "Virtual Clinic" service, a clinical engagement provided through cloud computing solutions. This service offers a medical bag to measure the patient's vital signs at their place of residence wherein a doctor is able to view and interpret results and provide medical advice accurately through a video call.

Etisalat also introduced its Business Edge Healthcare platform, offering a plethora of services dedicated to enhancing and empowering hospitals, ambulatory practices and medical staff with seamless, secure and practical solutions to better improve day-to-day operations.

Cyber-physical systems and embedded networks are projected to account for more than half of the value share in diverse sectors. One report estimates that the technical innovations of cyber-physical systems could find direct application in sectors, with the potential to grow over \$80 trillion of economic output by 2025. **TR**



Prospects of 6GHz Band in MENA

With the rapid growth in spectrum demand due to the surge of new digital services, spectrum management is becoming increasingly critical for ensuring consistent, affordable and equitable connectivity. As such, the opening up of the 6GHz band is considered key to addressing the forthcoming challenges of reliable, high capacity, low latency and wide-area connectivity.

With the deployment of 5G networks, the future of the 6GHz band in the MENA region is paramount for supporting the national digital transformation goals and various other digital initiatives

for consumers and industries. The 6GHz range is a mid-band that strikes a perfect balance between coverage and capacity, providing the perfect environment for 5G connectivity. Extending the bandwidth of 5G through the synchronization of the 6GHz spectrum will ensure more bandwidth and improve network performance. Additionally, the broad,

close-link channels offered by the 6GHz range will reduce the need for network densification and make next-generation connectivity cost-effective for all.

Mid-band Demand Drivers

Mobile data usage has been growing and will continue to do so into the future, requiring the availability of

the mid-band spectrum. The 6GHz spectrum band comprises up to 1,200 MHz of new spectrum. Such a large amount of spectrum is a sweet spot for making new, fast and low-latency services such as driverless vehicles and on-demand video applications a reality.

Video Consumption: Access to the mid-band spectrum is essential for the efficient relay of audio-visual communications, in-vehicle entertainment, streaming of high-definition video content, etc. Cisco reports that 82% of global internet traffic will come from either video streaming or video downloads in 2022 alone. Furthermore, add to that the demand mix of high-quality video for augmented or virtual reality (AR/VR).

Safer Networks in Smart Cities: High-bandwidth hungry applications such as video surveillance, real-time text translation, video-based sensor networks and additional applications are an increasing part of public safety and emergency response systems in urban cities.

Industry 4.0 Connectivity: Networks that can support Industry 4.0 applications such as 5G-based machine control, vehicle-to-network (V2N) services, robot connectivity, campus multimedia services and AR overlays for remote maintenance or construction support.

Fixed Wireless Access (FWA): FWA-based 5G networks can increase the level of competition among operators as well as access technologies, providing high-speed internet services to homes and businesses rather than traditional fiber optic cables. The Global mobile Suppliers Association (GSA) predicts that 5G FWA consumer premises equipment (CPE) shipments will reach 7.6 million in 2022.

Digital Transformation: There are very few countries that have not embraced digital transformation as a way of developing their economies. Consequently, access to mid-band frequencies will be important to meet connectivity policies in an economically viable manner.

Furthermore, 6GHz also supports Fixed-Satellite Service (FSS) as well as Fixed Service (FS). It is expected that coexistence between IMT and fixed links will be possible through coordination.

As per GSMA research, the mid-band 5G spectrum will deliver more than \$610 billion in global GDP in 2030, accounting for almost 65% of the overall socio-economic value generated by 5G.

State of 6GHz in MENA

In the Middle East, Etisalat UAE, branded as etisalat by e&, just announced the successful completion of its first trial of the 6GHz spectrum, accelerating the future of 5G and opening up a world of possibilities for next-generation technologies and economies of the future. The trial was conducted with Huawei Technologies which successfully completed several field tests on the 6GHz band, exploring the full speed and capabilities of 5G in the mid-band spectrum.

Last year, Saudi Arabia released the full 6GHz band to unlicensed use, opening up 1.2 GHz of new spectrum available to Wi-Fi. With this new expansion, Saudi Arabia became the first country in the Europe, Middle East and Africa regions to release the full 6GHz, securing the potential of leading the world in the availability of mid-band license-exempt spectrum.

Push for the Mid-band

To achieve 5G's potential, every country will require 2GHz of mid-band spectrum to meet demand by 2030, says GSMA. The industry body recommends governments around the world determine the most efficient use of the 6GHz spectrum and subsequently invest in the future of mobile deployment of 5G in the upper 6GHz band to maximize those socio-economic benefits delivered by 6GHz.

"5G development is gearing up globally; most of the countries have taken 5G in a strategic position to enable the national digitalization in the coming decade. It is highly recommended that governments implement favorable industry and spectrum policies to

facilitate the evolution of 5G in the MENA region," says Asmae Lachhab, Senior Marketing and Solution Manager, Huawei Northern Africa.

In June, the 3rd Generation Partnership Project (3GPP) completed the standardization of the upper 6 GHz spectrum (U6G, 6425–7125 MHz) as an IMT licensed band for NR and as part of Release 17. 3GPP approval of the band's RF specifications for both network and user equipment facilitates the development of products for this spectrum. This will be supported by IMT identification at the World Radiocommunication Conference 2023, and taking these steps will provide the necessary spectrum capacity to secure 5G innovation and growth.

"We have reached an important stage of the WRC-23 preparation. ITU-R working parties and task groups are completing the technical studies for each agenda item," said Mario Mankiewicz, Director of Radiocommunication Bureau, ITU.

With WRC-23 approaching, positive engagement on mid-band solutions for International mobile telecommunication (IMT) will provide vital support to the harmonization of the spectrum, and hopefully give clear technical guidance for regulators. Coordinated regional decisions will lead to a WRC which enables the future of 5G and supports wider broadband take-up by increasing capacity and reducing costs.

The UAE and the Middle East are focused on embracing the digital transformation wave across various industries. As per Gartner, IT spending in the MENA region is forecast to total \$173 billion in 2022, growing 1.2% from 2021. While worldwide IT spending is projected to total \$4.5trln in 2022, an increase of 3% from 2021. With the rise of digital advancements such as the metaverse and other digital systems, the importance of future readiness, competitiveness, flexibility and digital alignment between projects and digital systems will become all the more critical and complex. Harnessing the capabilities of high-bandwidth supporting band such as 6GHz warrants unbiased priority. **IB**

Nokia Radio Technology to Enable Direct-to-Cell Phone Connectivity From Space



Nokia has announced that they have signed a five-year 5G deal with AST SpaceMobile, Inc., the company building the first and only space-based cellular broadband network accessible directly by standard 4G or 5G mobile devices. Under the deal, Nokia and AST SpaceMobile will work to achieve their joint ambition to expand universal coverage and connect underserved communities around the world. The launch of AST SpaceMobile's BlueWalker 3 test satellite later this year will kick off global testing with mobile network operators on six continents.

AST SpaceMobile's mission is to eliminate the connectivity gaps faced by over five billion mobile subscribers worldwide and to bring cellular broadband to approximately half of the world's population who remain unconnected. Their approach will mean that subscribers outside

the reach of cellular coverage could have access to broadband speeds without having to invest in specialized hardware and be able to roam from land networks to space networks for the first time. Through its mobile network operator relationships, AST SpaceMobile has entered into agreements and understandings with mobile network operators which collectively service over 1.8 billion cellular customers.

Nokia's AirScale Single RAN equipment aims to enable AST SpaceMobile in providing mobile services to new and existing subscribers in regions currently not served by terrestrial communication networks. This includes connecting devices globally on land, at sea or in flight. Nokia will provide equipment from its comprehensive, energy-efficient AirScale portfolio, including its AirScale base stations powered by its latest generation of Nokia's ReefShark System-on-Chip (SoC) chipsets. AST SpaceMobile will benefit from Nokia's modular baseband plug-in cards which add capacity where it's needed, offering flexibility and efficiency. Nokia will also provide its NetAct solution for network management and seamless daily network operations as well as optimization and technical support services.

"Connectivity should be considered an essential service like water, electricity, or gas. Everyone should be able to have access to universal broadband services that will ensure that no one is left behind," said Tommi Uitto, President of Mobile Networks at Nokia. "Nokia has a long history of delivering connectivity solutions that have had a major and positive impact on society. We have worked closely with AST SpaceMobile on this important initiative for two years which seeks to provide crucial connectivity from space to underserved communities around the world. We are of course proud our technology is playing an important role in underpinning the networks."

For testing purposes, AST SpaceMobile plans to launch its BlueWalker 3 satellite in early to mid-September from Cape Canaveral, Florida. BlueWalker 3 is a low Earth orbiting satellite and has an aperture of approximately 64 square meters (693 square feet), which is designed to communicate directly with cellular devices via 3GPP standard frequencies. Ultimately, AST SpaceMobile is aiming to deploy approximately 100 satellites to achieve substantial global mobile coverage.

Ekow Nelson Takes Charge as Country GM of Ericsson UAE



Ericsson has announced the appointment of Ekow Nelson as the Country General Manager of Ericsson United Arab Emirates (UAE), effective immediately.

Ekow assumes the role in addition to his current role as Vice President and

Head of Global Customer Unit for e& (Etisalat) and Pakistan at Ericsson Middle East and Africa.

Ekow is a global telecom, technology and business leader, with a proven track record in strategy & innovation, sales and large-scale delivery and transformation in over 50 countries

Since joining Ericsson in 2012, he has held senior leadership roles in the Middle East, India, Europe and Latin America. Prior to Ericsson, he spent several years in senior telecommunications and media

industry positions at IBM Corporation and PricewaterhouseCoopers (PwC). Commenting on his new role, Ekow said, "The United Arab Emirates continues to blaze the trail in technology innovation and is well placed to drive the next generation digital transformation for industries. My key priorities in this additional role will be to mobilize Ericsson's innovation and technology leadership for the UAE national agenda through collaboration with key government institutions, regulators and policymakers. It is a privilege to be asked to lead Ericsson UAE as we write the next chapter of our industry."

Nokia's iSIM Secure Connect Clears Highest Security Standards



Nokia's iSIM Secure Connect solution has been accredited by the telecom industry group and leading wireless industry representative body, after a rigorous process of demonstrating an ongoing and systematic approach to managing information security risks and protecting data.

GSMA's Security Accreditation Scheme (SAS) confirms the quality and capabilities of security and privacy policies, procedures and controls that play an important role in supporting additional certifications in compliance with other external standards like the International Organization for Standardization (ISO) 27001, System and Organization Controls (SOC) 2 and Cloud Security Alliance. With the GSMA

accreditation in hand, Nokia will now pursue those additional certifications for its other SaaS services later this year and into 2023.

GSMA's SAS is typically required as the necessary security grade by CSPs globally, so reaching this significant milestone gives operators and enterprises a high degree of confidence in using Nokia iSIM Secure Connect in a SaaS delivery model.

iSIM, or integrated SIM, Secure Connect through a SaaS delivery model, manages machine-to-machine and consumer device subscriptions for embedded SIM, or, eSIM- and iSIM-enabled devices. iSIM Secure Connect gives control to automate the entire eSIM/iSIM profile lifecycle management process; enables CSPs and enterprises to quickly onboard and manage connected devices at a massive scale; and opens opportunities to monetize services linked to trusted digital identities.

Since November 2021, Nokia has introduced seven SaaS services, including iSIM Secure Connect, NetGuard Cybersecurity Dome, Nokia Home Device Management and Nokia AVA NWDAF, which enhances network operations with AI/ML-driven closed-loop automation.

Mark Bunn, senior vice president, Cloud and Network Services at Nokia, said, "Achieving the GSMA certification validates the strength and effectiveness of Nokia's SaaS information security management system (ISMS) and how we are providing the highest security standards and flexibility that meet or exceed the needs and expectations of our customers in all of our SaaS services. Hitting this milestone underscores the progress we are making to greatly improve the time-to-value that CSPs and enterprises can realize by having on-demand access to our SaaS services."

CommScope Q2 22: Core Net Sales at \$1.8B, up by 8.5% YoY



CommScope reported its results for the second quarter of 2022, showing an 8.5% year-on-year (YoY) increase in core net sales. Momentum continues to build in the Connectivity and Cable Solutions segment as net sales increased 26% year-over-year (YoY).

Core financial measures reflect the results of the following segments: Connectivity and Cable Solutions; Outdoor Wireless Networks; Networking, Intelligent Cellular and Security Solutions; and Access Network Solutions segments.

"I am pleased to share that we delivered Core net sales of \$1.88 billion and Core adjusted EBITDA of \$287 million for the second quarter of 2022. As discussed over the last several quarters, we have taken actions to continue to grow our business and offset inflationary impacts. Our second quarter results are a step in

that direction, as we have sequentially improved our top-line and profitability, a trend that we expect to continue. Despite supply chain and other macroeconomic challenges, with our robust backlog and solid demand in our key end markets, we believe we are positioned to deliver a stronger second half," said Chuck Treadway, President and Chief Executive Officer.

Treadway added, "We continue to make great progress on our CommScope NEXT initiatives. We are ramping capacity to fuel top-line growth, while our general manager model and re-segmenting are helping drive greater focus, accountability and operational efficiencies in our business... As our CommScope NEXT initiatives begin to drive results and pricing improvements work through our backlog, we expect to see improved adjusted EBITDA and cash flow."

The company is investing heavily in R&D and new product introductions for future growth such as its DOCSIS 4.0 RMD Node Platform selection with Liberty

Global as well as its wireless networking developments in the PROPEL, the XGS-PON and the MOSAIC product lines.

In 2021, CommScope announced CommScope NEXT to drive shareholder value through three pillars: profitable growth, operational efficiency and portfolio optimization.

"With the continued progress we are making through CommScope NEXT, we are re-affirming our commitment to full year 2022 Core adjusted EBITDA between \$1.15 - \$1.25 billion, as well as our year-end net leverage target of 6.8x - 7.2x," noted Kyle Lorentzen, Chief Financial Officer.

In terms of total net sales by region, Canada and the US recorded the highest YoY increase of 41% and 14% respectively. The US reported \$1.4 billion in sales for Q2 2022 followed by the EMEA region with \$378 million worth of sales. The company ended the quarter with \$229.3 million in cash and cash equivalents.



Building Trust In Zero Trust Networks

A UAE-based corporate and retail bank became the first bank in the UAE and the Middle East region to open a virtual Metaverse location in Decentraland, a popular blockchain-based virtual world. What such moves by organizations foretell is the growing trend toward the adoption of a digital economy that embraces the use of technologies such as blockchain, virtual assets, artificial intelligence, mixed reality, and so on, both in a business environment and everyday consumer services.

As global enterprises become increasingly reliant on information and technology assets, they are also becoming vulnerable to constant and evolving cybersecurity threats.

Fortinet's global 2022 State of Operational Technology and Cybersecurity Report reveals that industrial control environments continue to be targets for cybercriminals – with 93% of Operational Technology (OT) organizations experiencing an intrusion in the past year. The report uncovered widespread gaps in industrial security,

including ill-designed Programmable Logic Controller (PLC) security, a lack of centralized visibility across OT activities and growing connectivity to OT. As such, OT security is a mounting concern for executive leaders, prompting the need for organizations to move toward full protection of their industrial control systems (ICS) and supervisory control

and data acquisition (SCADA) systems. OT incorporates hardware and software that detects or initiates change through the direct monitoring and/or control of physical devices, processes and events in asset-centric enterprises, particularly in production and operations.

One of the best practices for OT security challenges is the establishment of Zero Trust Access to prevent possible breaches. With more industrial systems being connected to the network, Zero Trust Access solutions ensure that any user, device or application without proper credentials and permissions is denied access to critical assets. To advance OT security efforts, Zero Trust Access solutions can further defend against both internal and external threats. The ZT concept entered the market most prominently in 2009, when Google implemented a Zero Trust architecture referred to as BeyondCorp. And in 2010, analyst John Kindervag of Forrester Research used the term to denote stricter cybersecurity programs and access control within corporations. Their most recent update on the revision reads thus: "Zero Trust is an information security model that denies access to applications and data by default. Threat prevention is achieved by only granting access to networks and workloads utilizing policy informed by continuous, contextual, risk-based verification across users and their associated devices."

This simply means that Zero Trust is a security strategy that by default denies implicit trust to a user, device or application based on their property specs such as network location, identity, etc.

Zero Trust is not something that can simply be delivered by implementing a new piece of technology, nor is it a point product or service that can be bought. The validation of ZT warrants the below considerations:

Organizations are increasingly transitioning from perimeter security of networks using firewalls and thus stopping malicious actors at the access points. The sole reason for such a move is that network perimeters are no longer defined by the four walls of a company building. Employees are now working remotely, and the hybrid cloud is the

preeminent platform for enterprises. It's an increasingly complex task to define a perimeter.

Secondly, the concept of trust in the context of computer security is based on a human definition of "trust" and is therefore vulnerable to the inherent limitations, particularly in an environment where attack strategies are becoming increasingly sophisticated. Attackers are using social engineering to trick unsuspecting employees to gain access to corporate networks. Without a Zero Trust model, once the attacker is in the corporate network, they can move laterally to new systems with relative ease.

Zero Trust strategy has 3 core principles:

Firstly, the defining principle of ZTS is "never trust, always verify". Hence every time a user, device or application tries to establish a connection, that attempt should be strictly authenticated and authorized, and not simply greenlighted because it is coming from inside the corporate network.

A second practice is that of "least privilege access" where users and applications are given the minimum amount of access they require to perform their job effectively and no more. Privilege access management is a hands-on method of implementing the least privilege concept for admin users of IT networks and applications.

Third, being ever mindful of the worst-case breach scenario will motivate IT teams to build robust and tested incident response plans so that when attacks occur, the initiation of response is rapid and well-rehearsed. This principle encourages organizations to shrink the target and impact zone of an attack through networking principles such as micro-segmentation, etc.

In general, organizations need to understand Zero Trust is not an end-to-end solution, but rather a logical approach to looking at variant parameters of network security. It will likely require significant upgrades or policy and application changes across the infrastructure. The many categories and use case scenarios should motivate

organizations to prioritize why and how a ZT should be deployed in their cases.

Dealing with the dynamics

The ever-changing threat landscape of our hyper-connected world will require network service providers to recognize the varied and unique requirements of clients in the deployment of ZTS. Experts have suggested four primary actionable goals be incorporated into the ZT format; 1) reduce the risk of insider threat; 2) secure the remote workforce; 3) preserve customer privacy; and 4) protect the hybrid cloud ecosystem. Despite advancements in network security practices, there is no 100% guarantee that modern network systems will not get attacked or breached. However, preparing for the worst will go a long way in mitigating the risk of potential data and digital asset losses.

The adoption of robust Enterprise mobility management (EMM) – a set of technology, processes and policies to secure and manage the use of corporate- and employee-owned mobile devices within an organization – can be a good place to start. **TR**



Zero Trust is not
an end-to-end
solution, but rather
a logical approach
to looking at variant
parameters of
network security



SES Announces H1 2022 Financial Results

SES made public its financial results for the first six months of 2022, announcing revenues of €899 million (+2.8% YoY as reported) and adjusted EBITDA of €545 million (flat YoY as reported). Adjusted Net Profit improved by 11% YoY to €168 million, while leverage reduced to 3.0 times.

Steve Collar, CEO of SES, commented, "I am pleased with our H1 2022 results reflecting solid execution across the business and affirming that we are fully on track to deliver on our full year revenue and EBITDA outlook.

"Our Networks business delivered growth of 2% year-on-year and this trajectory will be further strengthened by important wins with ARSAT and AXESS Networks, agreements signed with Explora Journeys and another leading cruise provider reinforcing our leading position in cruise, and the entry into service of SES-17 which is now operational and delivering commercial services to customers."

He went on to explain that the acquisition of DRS GES allowed SES to combine the best-in-class Government solutions provider together with its state-of-the-art multi-orbit satellite networking capabilities at SES Government Solutions, and expand its value proposition toward US Government end users.

"We secured several important renewals at our core video neighborhoods in the first half and, with limited contract maturities in the second half, have clear line of sight to our full year revenue outlook, with first half performance complemented by growth in our HD+ and Sports & Events businesses and our C-band clearing is proceeding well with the successful launch of SES-22.

Dr. Jamoussi Officially Submits Candidacy for ITU TSB Director to ITU Secretary General

The Permanent Representative of the Republic of Tunisia to the United Nations Office and other International Organizations in Switzerland, Ambassador Sabri Bachtobji, has formally presented to the ITU Secretary General, Mr. Houlin Zhao, the Tunisian Government nomination and full support to Dr. Bilel Jamoussi for the post of Director of the Telecommunication Standardization Bureau (TSB) of the ITU.

The nomination letter from Minister of Communication Technologies of Tunisia, Dr. Nizar Ben Neji, and Dr. Bilel Jamoussi's curriculum vitae, vision statement, biographic information and link to the dedicated website (<https://Bilel4TSB.tn>) are now officially published on the ITU website: <https://pp22.itu.int/en/elections/candidates/>

Dr. Jamoussi is well known in the ITU for his past 12 years as Chief of the Study Groups Department in Telecommunication Standardization Bureau. He is a world expert in Telecommunications and holds 23 US patents that he received while working for the private sector in the US and in Canada as Director of Standards for 15 years before joining ITU. Dr. Jamoussi's candidacy was endorsed by the African Union during its executive council session in 2021 as the only African candidate to the Telecommunication Standardization Bureau of ITU and also endorsed by the League of Arab States ICT Ministers in Riyadh, Saudi Arabia in 2019, making Dr. Jamoussi the only Arab candidate to any elected position in the ITU, in Bucharest Romania, September 26 to October 14.

Console Connect Partners With Master Concept to Deliver Cloud Networking Solutions to Businesses Across APAC

Console Connect announced that it has teamed up with cloud technology advisor, Master Concept, to provide cloud networking solutions to businesses across Asia Pacific.

This partnership aims to help boost the efficiency of enterprises and improve overall business outcomes through a single management portal.

Through the integration of Console Connect Software-Defined Interconnection platform within its cloud solutions portfolio, Master Concept can provide added value to major cloud platforms and SaaS providers across the globe with more advanced network security and performance for its enterprise customers.

The single management portal will also allow Master Concept to offer a variety of cloud connectivity solutions for its customers. These include direct

Layer 2 connections to hyper-scale cloud providers, such as AWS, Google Cloud and Microsoft Azure, and Layer 3 mesh connectivity between and among different cloud providers and cloud regions.

This platform offers wide-ranging end-to-end SLAs that enable it to access mission-critical and latency-sensitive applications and workloads. It can be integrated via API, which is bolstered by PCCW Global's high-performance network.

The benefits of the PartnerConnect program include the ability to integrate Console Connect services and applications via API, private connections over one of the world's largest high-performance networks with assured quality of service and the ability to scale and flex on-demand, and access to tools, technical and commercial support, training and sales/marketing expertise.

MTN Group Weighs Strong Performance in H1 2022

MTN Group reported a resilient performance in the first half of 2022, balancing an accelerated investment into its networks, reducing the cost of communication and delivering solid financial results.

The delivery of its strategy persevered under challenging conditions, which included macroeconomic and geopolitical volatility, global supply chain disruptions, constrained on-grid power supply in South Africa and greater regulatory requirements across many markets. The investment in networks extended access to broadband services to 85.5% of the population, leading to an average 22.5% reduction in data tariffs. This societal and economic contribution also included cash taxes of R7.3 billion paid to nation states in the period. In constant-currency terms, service revenue grew by 14.8% to R92.5 billion, earnings before interest, tax, depreciation and amortization (EBITDA) rose by 15.1% to R43.9 billion before once-off items, and the EBITDA margin expanded by 0.3 percentage points to 45.3%.

"Growth in data revenue was particularly strong, up 35.9%, driven by MTN Nigeria, MTN Ghana, MTN Cameroon and MTN South Africa," said President and CEO Ralph Mupita, adding that fintech

revenue grew by 14.0%, with solid performances from Nigeria, Uganda and Ghana. "The introduction of fintech taxes in some markets slowed revenue growth in Q2, but we remain encouraged by the ecosystem growth as users, agents and merchants continued to grow healthily during the period under review, with transaction volumes growing by 31.5% during the period."

As part of "Ambition 2025", the company is building five scale platform businesses on top of a very strong connectivity network. The fintech platform is the most mature of these, and in the first half, it had 60.7 million Mobile Money users (up 24% year-on-year), generating six billion transactions worth US\$116.3 billion. The total number of MTN subscribers in the period was 281.6 million, up 5.6%.

Underlying operating free cashflow growth was strong at 24.0%, and return on equity increased to 24.2%, reflecting the consistent delivery of earnings. "We accelerated our portfolio transformation, delivering R9.2 billion in asset realizations in the first half and bringing the total realized since March 2020 to R15.8 billion, with proceeds supporting the group leverage and liquidity positions, which strengthened during the period," MTN stated.

India's 5G to Rollout by October 12

India is expected to roll out 5G services by October 12, according to Ashwini Vaishnav, union communication, electronics and information technology minister.

Vaishnav revealed that 5G prices will be reasonable for users and that 5G services will be scaled up after launch to reach more parts of the country in the coming two to three years, with a focus on delivering 5G connectivity to both urban and rural areas.

India has entered its final stage of rolling out 5G services, with the government having issued spectrum

allocation letters to telecom operators in preparation for the impending 5G rollout

During the initial phase of rollout, 5G will reach 13 cities, namely Ahmedabad, Bengaluru, Chandigarh, Chennai, Delhi, Gandhinagar, Gurugram, Hyderabad, Jamnagar, Kolkata, Lucknow, Mumbai and Pune.

Separately, PM Modi said during the Grand Finale of Smart India Hackathon 2022 that India is preparing to launch 6G by the end of the decade – which will be a boost to sectors such as gaming and entertainment.

AWS Introduces Private 5G Networks

Amazon Web Services has announced the general availability of AWS Private 5G, a managed service that helps enterprises set up and scale private mobile networks in their facilities in less time. Using the AWS Management Console, customers can specify the location of a mobile network and the number of devices to be connected. AWS then delivers and maintains the small cell radio unit, the mobile network core and radio access network (RAN) software, and the subscriber identity modules (SIM cards) required to set up a private mobile network and connect devices. AWS Private 5G automates the setup and deployment of the network.

Mobile network technology, such as 4G/LTE and 5G, augments existing networks with higher bandwidth, lower latency and reliable long-range coverage to an increasing number of devices. With AWS Private 5G, private mobile networks can be set up to take advantage of the technological benefits of 4G/LTE, which it currently supports, or 5G while maintaining the security and granular application and device controls of a private network.

AWS Private 5G aims to address the networking challenges that come with increased video content, new applications requiring ultra-low latency connectivity to end-user devices and thousands of smart IoT devices that demand extended coverage, more capacity, better reliability, and robust security and access control. AWS says no upfront fees or per-device costs are incurred with AWS Private 5G, apart from the cost of requested network capacity. Each radio unit is billed at \$10 per hour, with a 60-day minimum. Current private mobile network pricing models charge for each connected device, making it costly for each additional connected device.

ITU Warns of Harmful Interference With Radio Navigation Satellite Service

The International Telecommunication Union (ITU) has warned its 193 member states that harmful interferences, such as blocking, jamming or serious degradation of radio-wave-based services, could be accidental or intentional.

The harmful interference poses a significant and growing threat to critical infrastructure and safety services used every day, from commercial aviation to energy distribution to satellite navigation systems, states the ITU.

As per ITU's statement, harmful interference occurs when a radio system receives unwanted energy to an extent that inhibits the functioning of a radio-navigation service – such as those used onboard ships or aircraft – or seriously degrades, obstructs or repeatedly interrupts any radiocommunication service that is operating in accordance with the Radio Regulations.

The radio navigation satellite service (RNSS) is an essential component of global critical infrastructure, providing a "safety-of-life" service that must be protected from interference. It is used in GPS (the US-based Global Positioning System) and other global navigation satellite systems (GNSS) platforms, such as Europe's GALILEO, Russia's GLONASS and China's BeiDou systems.

Between February 1, 2021, and January 31, 2022, ITU received 329 reports of harmful interference or infringements of the Radio Regulations – the international treaty safeguarding the equitable and efficient use of the radio frequency spectrum.

Singtel to Divest 3.3% Stakes in Airtel for S\$2.25 billion

Singtel's wholly-owned subsidiaries have entered into a share purchase agreement to sell a 3.3% direct stake in regional associate Airtel to Bharti Telecom, a joint venture between Bharti Enterprises and Singtel, at any time before November 23, 2022. The sale will unlock approximately S\$2.25 billion as part of the Singtel Group's capital recycling strategy. The transaction is expected to crystallize an estimated S\$0.6 billion net gain on divestment for Singtel. This will follow a number of recent capital management initiatives to rebalance and optimize Singtel's associates portfolio, including an increase in stake in Intouch Holdings, the parent company of Singtel's regional associate AIS, and a partial divestment of Airtel Africa.

Arthur Lang, Singtel's group chief financial officer, said, "As long-term strategic investors and partners, the value of our stakes in our regional associates has risen substantially over the years but has not been properly reflected in our share price. This sale in Airtel will be our first ever and seeks to address this gap by illuminating the sizeable value of our holdings in Airtel. It is also part of our capital management approach to take monetisation opportunities that allow

us to increase our return on invested capital and enhance total shareholder returns. With this transaction, we will raise over S\$2 billion, which will help to fully meet the Group's needs for 5G and growth initiatives in the next few years, and put us in a strong position to grow our dividends in a sustainable way in line with our dividend policy." After this transaction, the Singtel Group is expected to own an effective stake of 29.7%, which is estimated to be worth S\$22 billion. This comprises a 19.2% indirect stake through Bharti Telecom and a 10.5% direct stake.

Sunil Mittal, chairman of Bharti Enterprises, said, "Bharti Enterprises and Singtel have had two decades of an exceptional partnership based on mutual respect and trust. Over these years, Airtel has acquired a strong pan-India leadership position and also expanded to 16 countries in Africa and South Asia. After this inter-se transaction, Bharti Telecom will remain the principal vehicle to hold controlling shares in Airtel. Bharti Enterprises and Singtel have agreed to work towards equalising their effective stake in Airtel over time. Bharti Enterprises looks forward to working with Singtel over the long term in taking Airtel to an even greater position of success."

Safaricom Begins Network Testing in Dire Dawa

Safaricom Ethiopia has begun a large-scale customer trial of its network after announcing plans to launch commercial operations in Ethiopia within the year, in Dire Dawa.

The customer pilot in Dire Dawa will be on 2G, 3G and 4G networks; customers will be able to purchase SIM cards and choose their preferred numbers on Safaricom Ethiopia's 07 prefixes. The Safaricom Ethiopia SIM cards will be available in branded shops and will include offers for data, voice and SMS, allowing customers to test and experience the network for one month. Three shops, in the Keira, Meskelegna and Cornell areas, will be open to the public for

customer registration, device purchases and dedicated customer support. In addition, customers can access customer care services by dialing 700 to speak with a customer experience agent in their preferred language (Amharic, Afaan Oromo, Ag-Somali, Tigrigna and English).

Safaricom Ethiopia's network and services should be available in 25 cities by April 2023, funded by an estimated US\$1 billion investment and a large recruitment drive. In preparation, Safaricom Ethiopia also secured approvals for tower development, built two data centers, made the first test call, sent out the first test SMS and completed the first data session.

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
16th Edition

“ 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

