TELECOM Review

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Group CEO, stc

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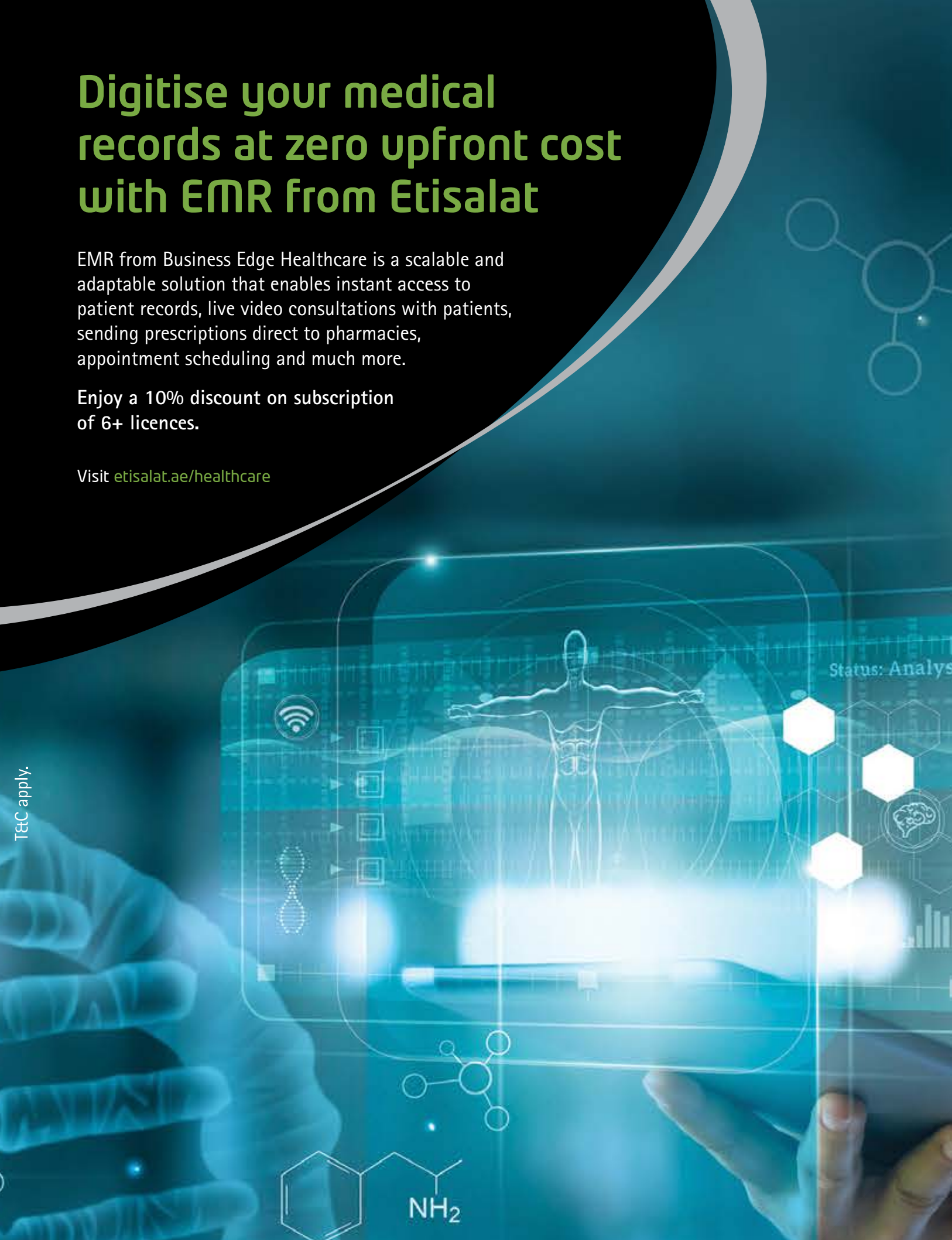


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telecomreview.com

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

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

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

Journalists
Elvi Correos
elvi@tracemedia.info

Jonathan Pradhan
jonathan@tracemedia.info

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
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Trace Media Ltd.
Zouk Mikael, Lebanon
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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

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Toni Eid,
founder
editor in chief
Telecom Review International

5G is safe: Frequency matters!

Telecom Review was among the first ICT media to give straight forward opinion about 5G and its safety when it comes to aviation.

GCC countries have been using 5G near airports and even inside airports. London Heathrow airport is using 5G to enhance its services by deploying a series of application into the ground services for planes arriving.

The issue is not with 5G itself but with the C-band frequency which was used for years for satellite connectivity. All GCC and some European Airlines are flying safely with no inference on their navigation systems from Ground 5G BTS!

So why this hype now? 5G C-band deployment in the US will remain limited after leading airline groups plead that 5G is deployed not too close (approximately 2 miles) from airport runaways until the Federal Aviation Authority (FAA) can determine how its full implementation can be done without catastrophic disruption.

The main issue until today is the possibility of frequency interference that can impact signals of aircraft radio altimeters. These are critical to the operation of every commercial flight in the United States as it helps pilots determine the distance in low-visibility operations. What's interesting now is in spite of FAA and the aviation industry's knowledge about 5G in the C-band for years, they did little to nothing until the last minute to indicate that there was indeed a serious problem related to it.

You can read more details at www.telecomreview.com

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Your Success is Our Polaris

Eng. Olayan Alwetaid, Group CEO, stc

stc outlines the future with digital transformation

Under its DARE strategy, stc has been striving to offer the best digital experience to its customers. In an exclusive interview with Telecom Review, Eng. Olayan Alwetaid, Group CEO, stc gave insight into the industry's latest topics and highlighted the operator's role in driving a digital future.

How can emerging technology lift the overall communal and economic landscapes?

The world has had a great thirst for new technologies for quite some time now. With customers demanding better, faster, more convenient solutions in the work, social and home environment for some time now. The pandemic cast that needs into sharp relief as the world switched from a physical world to a virtual world almost overnight. People, businesses and countries had to adapt and change the way they worked and lived in lockdown, with the digital world providing them the only access beyond their homes in a lockdown world. Those who were the most digitally prepared tended to do better than those who were not. Saudi Arabia had been blessed many years before, with a leadership that saw the potential in the digital world as it could provide the rapid transformation of the economy, leisure and society and set out a clear vision of what it could achieve.

For the last few years, the leadership of stc fully recognized the way the

> The scale and pace of our response to the pandemic across the whole digital ecosystem we felt was the ultimate test and vindication of our digital first strategy

> We bring the full weight of our digital products and services to help businesses grow

world was changing and put in place a bold plan to transform stc into a fully digital company incorporating all the elements of an ecosystem to serve the future. The strategy, called DARE, provided a strong sense of direction and pace of transformation for the company. That explained that the investment, services and products provided by this strategy enabled us to help people, business and society to successfully address the challenges of the pandemic. More important it helped protect the economy and speed the recovery, as is witnessed by the kingdom currently enjoying the strongest economic recovery within the G20 countries. The scale and pace of our response to the pandemic across the whole digital ecosystem we felt was the ultimate test and vindication of our digital first strategy. But there is still much more to do.

Generally, how is security in digitization important and cybersecurity in particular, to people and businesses?

Due to our digital fist strategy, we now have customers across multiple platforms, whether that is stc play our entertainment service, or stc pay, our digital wallet which is due to become the first digital bank in KSA, having attained unicorn valuation status last year, or our business customers using cloud or IoT or 5G solutions for their increasingly digital businesses. What is critical to all is that data is kept safe and secure across every platform and service they may use. We have and will continue to heavily invest in cybersecurity and the group was a driving force behind our recent set up of our advanced technology and cyber security company sirar by stc. The company is protecting platforms from threats using artificial intelligence

to identify and combat threats before they become an issue. Furthermore, we are changing people's lives by enabling the digital transformation of public services and industry applications such as utilities, transport and logistics, security, manufacturing, retail, health, and education. As a key enabler of the Kingdom's Vision 2030 goals, we have to ensure that our technology is enhancing people's lives whether that's through entertainment, financial services, healthcare or education.

How is stc leveraging its technology and expertise to enhance the overall culture and business community?

stc is a digital company. We bring the full weight of our digital products and services to help businesses grow (and even remained in business during the pandemic) as well as bringing individual customers unrivalled digital services, such as 5G, cloud computing, IoT and data analytics. We are continuing to evolve and having connected over two million households with high quality fiber optic technology we can see how our technology is improving people's lives. People are running highly successful businesses from their smartphones and laptops and for that they require the best-in-class connectivity, which we provide. Businesses are operating on cloud-based services and using AI and data to perform at higher levels and to great success. We only see this continuing to grow, as people trust digital services and capabilities more and more. One of the most exciting projects stc is involved in is the smart city of NEOM, which will be one of the most digitally advanced cities in the world. stc is also digitalizing the country's healthcare system and driving innovation and changing people's behavior and building trust when it comes to privacy and data. The future is a digital one and we at stc are striving to make it a safe and prosperous one for all.

From culture and business to sustainability, the latter is an important aspect in both fields, tell us about stc's practices to achieve sustainability?

> Our DARE strategy is digitizing stc, accelerating performance, reinventing experience, and expanding in scale and scope everything we do

> stcpay has already attracted more than 6 million registered users, which is a great example of how our payment platform is evolving

stc recently announced its accession to the UN Global Compact aiming to encourage companies around the world to adopt sustainability and social responsibility, to be one of the local networks of the UN Global Compact worldwide. Our accession to the UN Global Compact emphasizes the sustainability strategy that stc adopts in all its businesses, to be one of the leading global companies that support the global movement towards a more sustainable future for the benefit of stakeholders in achieving the SDGs, and the success of the companies' future plans on the long run. The UN Global Compact operates under a principles-based framework for businesses by aligning its strategies and operational processes with global principles including human rights, labor, environment and anti-corruption. This will take place by taking strategic actions to enforce broader societal goals like those of the UN sustainable development while focusing on cooperation and innovation, in addition to creating a local network and a platform for discussion and exchange of information regarding the UN Global Compact. This is the outcome of the stc's commitment to sustainability in its comprehensive and applying responsible business practices to ensure the continuity of business management using the most sustainable methods.

What are the growth opportunities for stc and how is the Group investing in its future?

Our DARE strategy is digitizing stc, accelerating performance, reinventing experience, and expanding in scale and scope everything we do. This has required a complete transformation of our operations, methods, and speed of working. This has transformed our focus and investing from the better understanding of our customers and business clients and investing behind their most pressing needs as they digitize their lives and businesses more and more. So, opportunities are not just telecoms, but multiple other products and services such as 5G, cloud computing, IoT and data analytics. These emerging technologies, which are expected to represent more than 40 percent of new revenue growth in the technology sector through 2023, will be the fundamental building blocks of this journey. Not only will they be enablers but also crucial sources of strategic competitive advantage for stc. That is why we are already investing heavily in these areas and in related capabilities.

Other examples of our investments is stcpay, our new fintech service. stcpay believes it can change the way the world feels about financial control and turn fear into enjoyment as it becomes as easy to manage and control as any other aspect of their lives incorporating spending, saving, investment and overall management and analysis. Letting customers "simply take control". stcpay has already attracted more than 6 million registered users, which is a great example of how our payment platform is evolving. Those kinds of figures will help the government reduce dependence on cash as it modernizes the economy. We're already looking to roll out the service to other countries, with stcpay currently in talks with regulators to expand services into new territories.

We have continued to expand our scope as we have launched the Advanced Technology and Cyber Security Co. (sirar by stc); Cyber Security company focusing on security advisory, advance security professional service, providing cybersecurity platforms (i.e threat intelligence) and managed security services. sirar by stc is enabling enterprises to protect and secure digital assets as they embark on digital transformation. We have also launched stc Play, our eSports and gaming platform that provides casual and professional gamers access to online tournaments, content, and gaming merchants in one platform.

At the same time, we are maintaining our technology leadership position in the region. stc has connected more than two million households with high-quality fiber optic technology. We are also investing heavily in IoT, cloud services, and data analytics capabilities.

Could you tell us about the outlook for the telecom sector in Saudi Arabia and the Gulf?

As I mentioned earlier, we need to look more about all digital aspects, when we think about the future and our role in it. We are at the heart of the digital transformation of Saudi Arabia under Vision 2030, enhancing our customers' digital experience and services, making their lives easier and more fulfilling. To do this, we work closely with our partners to provide innovative, end-to-end ICT services and solutions to meet the needs of consumers and businesses in Saudi Arabia. These solutions and services impact nearly every aspect of their lives, including entertainment, financial services, healthcare, and education.

We are heavily involved in high priority growth opportunities vision 2030 mega projects such as smart cities like Neom, the digitalization of Saudi's healthcare system, and a cloud-first policy. We are also driving innovation in private sector companies in financial services, leisure, and tourism to adapt to changing consumer behavior and issues such as integration, privacy, and data.

We at stc are at the forefront of our industry, delivering leadership in terms of cutting-edge technology in infrastructure and its application. Looking at it in the round and the outcomes it provides is what enables us to accelerate the benefits to the people and the businesses we work within a truly transformational way.

We are determined to maintain our scale and pace of development, because unless we deliver the products and services behind all these incredible and fast-moving innovations, we will not be able to turn ideas into life enhancing and life changing, reliable products and services. That is under our DARE strategy we are creating and incubating companies, with strong focused leadership which we can then let thrive and create additional value for the economies, customers, employees and shareholders through IPOs and funding like we did with solutions by stc and stc pay/bank. Many more are planned as we build out our digital strategy to help the transformation of our kingdom under V2030 and the region as a whole. TR

Tata Communications, Zain KSA fuel digital transformation with smart solutions

Tata Communications, a global digital ecosystem enabler, and Zain KSA, a pioneering mobile telecommunications and digital services provider that is committed to supporting innovation and spearheading the next-generation's technological revolution in the Middle East, announced a strategic engagement to fuel digital transformation journeys of enterprises and government organisations in the Kingdom of Saudi Arabia (KSA). With this collaboration the combined ecosystems will deliver solutions and platforms to remodel cities with smart street lighting, smart waste management, connected workplace, healthcare and connected cars.

Tata Communications and Zain KSA are working together to bring smart street lighting solution for one of the key cities in KSA. Tata Communications IoT ecosystem will serve as one-stop-shop to provide the hardware, platform, application and insights while Zain KSA will expand the footprint with its business-to-business (B2B) offerings through joint projects related to software-defined wide area network (SD-WAN) and global contact centres, as well as the application of smart transport and Internet of Things (IoT) solutions enabling smart waste handling, smart metering and other smart city use cases, to name a few.

"The strength of the reach of Zain KSA and cutting-edge infrastructure combined with our ecosystem of advanced technologies will strengthen the country's shift to becoming a sustainable economy," said Vaneet Mehta, region head, Middle East, Central Asia & Africa, Tata Communications. "This is a demonstration of our both organisations' commitment to enable reimagining of cities in the Middle East by operating on smarter and cost-efficient models. This is a milestone project for Tata Communications for transforming the city into an intelligent and energy efficient metropolis, reducing its carbon footprint and charting the path for other cities to replicate."

"Building on our pioneering and internationally renowned 5G network and in line with our vertical expansion strategy to drive 5G applications such as IoT we will work together to contribute to our comprehensive digital solutions offering and transformation services under one roof to enterprises and governments across the kingdom," said Eng. Saad A. Al-Sadhan, chief business and wholesale officer, Zain KSA. "The confluence of reliable connectivity, agility and trust will converge to better serve communities, businesses and governments. Together we will strengthen the digital core of the country to reinforce Saudi Vision 2030 and provide businesses the tools to embrace innovation and disruption to succeed in a rapidly evolving environment."

The Tata Communications and Zain KSA strategic engagement will serve Saudi's enterprises and government institutions with advanced technologies such as IoT, 5G, low range wide area network (LoRaWAN® specification), managed security services, SD-WAN and many others. It will also support environmental sustainability measures and digital transformation of the region.

There is no disruption in the UAE between 5G and air navigation, says TDRA

With regards to the circulated news on the suspension of some flights to certain US airports due to 5G deployment, the telecommunications and digital government regulatory authority (TDRA) clarifies that this issue is exclusively related to the US airports referred to.

As per TDRA, as new spectrum frequencies have been allocated to 5G that differ from the frequencies designated for use in the region, there is no disruption or interference in the UAE between 5G networks and air navigation systems.

Noting that the 5G stations in the UAE have been installed in multiple places for many years, and no negative impact on the safety of air navigation systems has occurred.

TDRA bases its 5G plans on studies that take into account the safety of frequencies and potential impact on other sectors. TDRA also considers the decisions and procedures approved by the international telecommunication union (ITU) in this regard.

In this matter, TDRA confirms that it is coordinating with the general civil aviation authority (GCAA), which in turn communicates with the international civil aviation organization (ICAO) and European and American aviation safety regulatory agencies to ensure the highest levels of safety and security.

CRA, CMU-Q collaboration brings forth IPv6 security guidelines

The Communications Regulatory Authority (CRA), together with Carnegie Mellon University in Qatar (CMU-Q) issued the latest security guidelines for internet protocol version 6 (IPv6).

The security guidelines aim at providing support to organizations in Qatar that are currently implementing or planning to implement IPv6 in their networks and show the network configuration commands necessary for IPv6 implementation. These include diagrams that map each security measure to the role of networking equipment and outline IPv6 security vulnerabilities together with the mitigation techniques for each issue.

CRA's technical affairs department director Ali al-Suwaidi said, "We are pleased to issue these security guidelines that we have developed in collaboration with CMU-Q, which contributes to ensuring the security of IPv6 networks. The issuance of the guidelines is considered an important step towards the implementation of the Qatar IPv6 National Strategy that CRA has developed to establish foundational and high-level guidance for the IPv6 transition in Qatar."

Considered as the next generation internet protocol that will serve as the backbone of the internet for the next several decades, IPv6 provides higher internet security and ensures the readiness for new upcoming next-generation technologies such as the Internet of Things (IoT).

Dr. Michael Trick, dean of CMU-Q, said, "I am very proud of this collaboration with CRA. Together, we worked to create a roadmap to implement better and more secure computing in Qatar. Everyone in Qatar who connects to the internet will benefit from this careful, thoughtful approach to improved connectivity for decades to come".

In addition, CRA's standards and next-generation technology section head Eng Salma al-Sulaiti said, "The IPv6 security guidelines are developed as an extension of the IPv6 dual-stack implementation guidelines we have issued earlier, where we aimed to cover the technical aspects of IPv6 security and to support and facilitate organizations' smooth and wide transition to IPv6 across all sectors in Qatar. The guidelines offer practical advice and instructions to organizations that they can tailor to their needs."

NTRA issues regulatory framework for IoT services in Egypt

The national telecom regulatory authority (NTRA) has issued a framework that would serve as a regulatory tool in facilitating IoT service operations in Egypt.

IoT is one of the major technologies of the fourth industrial revolution (Industry 4.0), used to run smart city systems and digital services such as smart homes, meters, and transportation. The step comes in line with the Egypt Vision 2030 national strategy for achieving digital transformation in different state sectors and supporting the national plans for building smart cities such as the New Administrative Capital.

NTRA met with local and international companies specializing in this field and studied the best global models and practices in IoT to come up with the best regulatory policies adopted in international markets.

Eng. Hossam El-Gamal, the executive president of NTRA, has declared that the new regulatory framework aims to polarize investments to establish IoT networks and sophisticated app platforms, which would help in enforcing the state's policy of Industry 4.0 and fostering digital information.

To define, IoT describes physical objects embedded with software and other technologies that connect and exchange data with other devices and systems over the Internet or other communications networks. IoT applications vary based on the aspect of use such as end-user transactions, commercial and industrial activities, infrastructure, and government operations.

Steven Yi, President of Huawei Middle East

Technology as the common denominator in solving modern challenges and securing future progress

Telecom Review speaks exclusively to Steven Yi, President of Huawei Middle East, on how the region's tech industry is shaping up in 2022, and where Huawei is looking to create value for the ecosystem.

We have just emerged from a challenging 2021. Looking at the ICT industry specifically, what key lessons is Huawei taking into 2022?

On the one hand, the ICT sector faced similar safety and health challenges in protecting its people, as did other industries. On the other hand, our sector has become the very definition of an essential industry in meeting the goals of business continuity, economic recovery, and driving national development plans and visions across the Middle East. We felt a responsibility to not only ensure employees and partners remained safe but that we delivered the infrastructure and solutions needed to support the resilience and continuity of critical sectors of the economy.

Having accomplished that successfully over the past year, the digital economy is now recognized as the engine driving growth and diversification across the Middle East. As just one example, research firm Strategy& estimates Saudi Arabia's digital economy contributes 49% to the country's GDP.

In addition to this economic impact, we are placing greater emphasis on green and low-carbon technologies to promote a sustainable future for all. The combination of digital transformation and green development presents the ICT industry with incredible new opportunities to help organizations cut their energy consumption and go low-carbon.

All the above objectives have a common denominator: they rely on advances in technologies such as 5G, cloud and AI, which are all vital for solving modern challenges and securing future progress.

Since 2020, the pandemic has spurred a pivot toward digital products and services. Was that a temporary shift, or do you see this momentum continuing in 2022?

The last two years were certainly a turning point for the ICT sector. They proved beyond question that digitization is the biggest enabler for our society's evolution.

Digital technology and intelligence are pushing the digital economy into a new phase of development, which will create huge opportunities for not only the ICT industry, but also all other sectors and society. Research findings show that a 20% increase in ICT investment can grow a country's GDP by 1%. It is estimated that the global digital economy has grown 2.5 times faster than global GDP, and return on investment in ICT has been 6.7 times that of non-ICT investments on average.

This momentum is not going to change. Even in a post-pandemic environment, we feel obligated to help Middle East organizations in their digital transformation and to 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 task ahead is about ensuring all people benefit from technological progress.

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 real proof point of how technology can help to advance the development of all industries, especially when integrated with technologies such as cloud and AI.

The past year saw renewed commitments to environmental protection, especially in the Middle East. What role will the ICT sector play in realizing new ambitions around carbon neutrality?

Carbon neutrality has emerged as a shared mission by the global community. Existing use cases prove that technology innovation will play a central role in tackling climate change and achieving carbon reduction goals. Therefore, the global tech ecosystem needs to collaborate to build simple, green, and intelligent infrastructure that helps all industries.

At Huawei Digital Power, for example, we are now integrating digital and power electronics technologies to develop clean energy and help traditional energy sectors build a greener future. Founded in 2021, it now looks at five key areas: Smart PV, data center facilities, mPower for electric vehicles, site power, and integrated energy solutions. While Huawei will pursue cooperation with businesses in all of these five domains in the region, I believe that Smart PV and data center facilities are particularly important. As of September 30, 2021, Huawei Digital Power has helped customers generate 443.5 billion kWh of green power and save 13.6 billion kWh of electricity.

Looking at other infrastructure such as 5G, what types of investments are you anticipating from regional telcos and others in the first half of 2022?

As mentioned, digitization in the Middle East has accelerated remarkably over recent years. Global network traffic has increased by around 50% during the pandemic. Those telecom operators who invested early in 5G have in turn seen significant payoffs, faster revenue growth and have opened new revenue streams. Regulators in the Middle East have also continued to release policies that significantly promote 5G development.

We anticipate these investments in 5G infrastructure and applications to continue climbing in 2022, especially as industries such as manufacturing, energy, healthcare, and others develop more scenario-specific 5G applications in their respective fields. We have worked with carriers worldwide to build 5G networks that deliver the best possible experiences in these areas. We have also teamed up with carriers and partners to build a thriving 5GtoB ecosystem, and made breakthroughs with large-scale industry applications. We support 3GPP, working with industry partners to explore the evolution of 5G standards and ensure unified global standards for 5G. We encourage industry organizations in key verticals to work closely with 3GPP to create new value for their industries.

Being in a highly-regulated industry, how concerned are you about technological politicization this year?

This is definitely an area of concern. Huawei and others have made remarkable progress in rolling out technologies that would have been unimaginable only a decade ago. At the same time, an unpredictable business environment, the politicization of technology, and a growing deglobalization movement all present serious challenges to this progress. We firmly believe that the solution to such challenges is collaborating in an open ecosystem and upholding unified international technical standards. For instance, Huawei is an active member of more than 600 standards organizations, industry alliances, and open-source communities, where we work with our peers to develop mainstream standards and drive the industry forward.

We are more confident than ever that global integration and economies of scale can make the whole world more efficient. We must work together openly, sharing both the risks and value of shared success.

Speaking of ecosystem collaboration, what is Huawei's strategy when it comes to prioritizing investments in R&D in the region?

First and foremost, we must continue investments in future-oriented capabilities. We appreciate that cutting costs won't pave the way to sustainable success. It is why Huawei's R&D investments over the past decade have exceeded $110 billion, with more than 10% of its sales revenue going back into R&D. We have also established Open Labs in the Middle East and worldwide to support joint innovation with our partners. Only through investment can we grow stronger.

Equally important is that we continue to attract top talent from around the world in key domains like software, algorithms, and computing power. We are constantly looking at ways to encourage our employees to dig deep into science, dive headfirst into uncertain domains, and solve real business issues through technological exploration. To do this, we are nurturing an open organizational climate and supporting initiatives that cultivate outstanding young talent in particular.

Moving forward, we will continue to increase our investments in R&D – and in the future. This will create value for our customers and promote sustainable development for society, the economy, and the environment. TR

Etisalat reiterates commitment to corporate social responsibility

Etisalat reaffirms its commitment to corporate social responsibility, empowering people through technology while harnessing the power of its network to create value for subscribers, shareholders and for the communities that it serves.

With the company's overall strategy and vision focused on 'Driving the Digital Future to Empower societies', all CSR activities this year were integrated across departments to reflect innovation and digital capabilities.

Etisalat's CSR activities extended to technological development, education, healthcare, social and cultural engagement, environmental conservation, women empowerment, employee wellness, and beyond.

Hope Probe's historic journey to the Red Planet coincides with a year of celebrations to mark the UAE's Golden Jubilee. Etisalat launched a dedicated eLife channel and supported the 'Arab to Mars' campaign via SMS and its social media channels, with an aim to raise awareness on a historic UAE and Arab achievement. It also changed its network name while Etisalat's spherical structures atop its buildings lit up in red in a bid to raise awareness of this historic event. Etisalat also changed its network name to 'DMSAT-1', the name of the region's first environmental nanometric satellite that launched on 20th March in Kazakhstan.

During the holy month of Ramadan, Etisalat supported the '100 Million Meals' campaign launched by the Mohammed Bin Rashid Al Maktoum Global Initiatives (MBRGI) by pledging to donate five percent of all food orders placed on its Smiles app; promoting the campaign via text messages, social media, and changing the network name to '100M Meals' to raise awareness of the initiative; and allocating exclusive numbers in the numbers charity auction.

Supporting people of determination remained a priority for Etisalat in 2021. Etisalat launched the world's first web extension on World Autism Acceptance Day, aimed at simplifying the World Wide and making it autistic-friendly. Etisalat created animated videos of the most common words in sign language to educate people and encourage them to use those while communicating with people of determination. These International Day of Sign Language Day animated videos were posted on all social media platforms.

During the year, Etisalat participated in a number of events to raise awareness in particular sections of society. Etisalat changed its network name on World Neglected Tropical Diseases (NTD) Day, an annual event to raise awareness and call on the global community to beat NTDs. In celebration of UN's International Day of Human Fraternity, Etisalat changed its network name to 'Fraternity Etisalat', extensively promoted the summit on its official social media channels and on radio, and launched an SMS campaign.

Etisalat changed its network name to 'Aqdar SID' to mark Safer Internet Day, which aims to increase awareness about the challenges and issues that users may encounter while using the internet – especially young users.

Innovation has always been at the core of Etisalat's business operations. Etisalat changed its network name to 'AEinnovate' to mark the UAE Innovates 2021 campaign by the Ministry of Cabinet Affairs.

To celebrate Emirati Children's Day, a national occasion celebrated in the UAE on March 15 every year, Etisalat changed its network name to 'ECD Play'. It also teamed up with ESAAD to offer up to 70 percent discount at children's entertainment centres, play areas, and retail outlets across the UAE.

On World Blood Donor Day, Etisalat posted an awareness video about blood donation on all its social media channels and encouraged employees to donate blood to the blood banks in need. In support of Emirates Red Crescent's (ERC) Adahi project, Etisalat sent four million SMS to customers and posted on its social media channels to raise funds for the campaign.

Fifteen construction workers of various nationalities got a surprise of a lifetime in a touching tribute to mark International Workers Day, also known as Labour Day. Each worker received a AED25,000 scholarship towards his children's higher education.

As part of its education and youth empowerment programme, Etisalat supported ERC's education campaign, which aims to raise funds for needy students. It also welcomed university students as well as several humanitarian and charitable organisations to its GITEX Global stand, showcasing the transformative power of 5G and futuristic technologies.

Etisalat launched a special project to celebrate Emirati Women's Day by initiating a gathering of Emirati women who were actively involved in the process – from the selection of a distinctive fragrance named 'Anti' ('You' in Arabic) created by an Emirati woman to the conceptualisation of the design of the logo and packaging of the perfume – and these were all captured in an awe-inspiring video.

The Ministry of Tolerance and Coexistence organised the 'Zayed Tolerance Trail' and 'Ride For Life' initiative during the National Day of Tolerance. As the official telecom partner, Etisalat supported these events through social media posts and a network name change.

Etisalat was one of the entities that participated in an initiative by the non-performing Debt Relief Fund to waive the debts of 4,511 Emirati citizens. The Telecommunications and Digital Government Regulatory Authority, in a special message on Twitter, described Etisalat's contribution as "a step that reflects social responsibility at its finest".

On the occasion of UAE's Golden Jubilee, Etisalat coordinated with Emirates Red Crescent, Al Ihsan Charity Organisation, and Sharjah Charity International to shoulder the arrears in tuition fees of more than 100 students across the country. It also changed its network to celebrate the UAE's 50 years of remarkable progress. TR

Aji Ed, CTO, Nokia MEA

5G-Advanced will make digital experiences truly immersive, says Nokia's Aji Ed

In an exclusive interview with Telecom Review, Aji Ed, CTO, Nokia MEA talks about 5G-Advanced technology and its wide array of uses cases that are bound to transform business operating models.

Though 5G has been picking strong momentum across the globe, it is still at the beginning of the maturity cycle of this standard. Meanwhile, there has been talk about 5G-Advanced in the industry. What's 5G-Advanced and what's Nokia's involvement in this?

5G-Advanced will bring out the richest capabilities of 5G over the coming decade, breaking down boundaries and expanding connectivity. From immersive extended reality (XR) experiences to high-precision location, presence and timing technologies, 5G-Advanced will profoundly transform what you can achieve with your network. AI/ML data collection and analytics coupled with introducing AI/ML technologies in CORE, RAN and network management is expected to bring many benefits, vital new levels of energy efficiency among them.

Through the 3GPP standards body, Nokia is in the process of making 5G-Advanced happen. The first release of the 5G-Advanced era, Release 18, is due in 2024.

How do you think 5G-Advanced will transform the industry compared to 5G?

5G-Advanced is much more than a list of enhancements and features over 5G; this will be a means for service providers to transform their networks in profound, yet clearly defined ways. Specifically, 5G-Advanced will enhance network capabilities in four dimensions: experience, expansion, extension and operational excellence. We call these dimensions "the four E's."

Experience

5G-Advanced will make digital experiences truly immersive, empowering us to engage with distant physical environments and other people in new, exhilarating ways. These new extended reality (XR) technologies will make it possible to make oneself digitally present in a board room while physically located on a moving train. Prospective tourists could walk the beachfront and inspect their rooms at a destination resort before making final bookings. The distinction between in-person and virtual conferences will disappear as every event becomes a mixture of physically and digitally present attendees.

To create this new XR experience, 5G-Advanced will support features like: radio resource-allocation optimization to match XR service requirements such as latency, periodicity, jitter and reliability; mobility and beam-management add-ons and device power savings enhancements; and quality-of-experience enhancements through

edge cloud capabilities and application awareness.

Expansion
5G networks today excel at providing the "what" to any query we may have, bringing the world's vast repository of information to our screens. But 5G-Advanced will be particularly adept at answering the questions of "where" and "when." High-precision location, presence and timing technologies are key innovations planned in 5G-Advanced, which will expand the role of the network beyond communications. Not only will they make navigation and logistics systems more efficient, but they will be critical to the operation of driverless cars, autonomous robots and industrial automation systems in the future. Enhanced timing will be boon to multiple economic sectors like finance and energy that demand a high degree of precision in transactions. 5G advanced will offer features like carrier-phase positioning using signals from the NR base stations to give sub-10cm accuracy. Other positioning enhancements in Rel-18 include: Sidelink positioning / ranging: especially targeting automotive; Integrity for RAT-based positioning (only GNSS integrity was handled in Rel-17); and RedCap positioning: evaluate accuracy achievable with reduced bandwidth, and consider enhancements where possible.

Extension
Broadband has become essential to our social lives and the world's economies but there are still many "white spots" where no coverage exists. 5G-Advanced will help bridge, thanks to NTN (Non-Terrestrial Networks) improvements, that digital divide in order to give more people and more industries access to the economic opportunities and benefits mobile connectivity provides. 5G-Advanced, however, will do more than extend broadband connectivity into rural and underserved geographies. It will provide lifelines to critical industrial networks like smart grids. Farmers could take advantage of 5G-Advanced's extension capabilities to monitor irrigation systems and optimize crop yields. New categories of consumer wearable devices would link to the mobile network, benefiting from the IoT enhancements planned in Release 18 with RedCap (Reduced Capability) which will help to provide extremely low-cost, low-data-rate connections and longer battery life. Using new beamforming techniques, 5G-Advanced will even look to the skies, bringing fleets of drones into the network fold, while sidelink technologies will enable the networking of interlinked devices.

Operational excellence
5G-Advanced will continue the evolution of many 5G and mobile features such as network slicing and wireline-wireless convergence, while boosting mobility and introducing new features that will hone operational performance to unprecedented levels. Energy efficiency will be a major priority in the 5G-Advanced era, and thanks to AI/ML we will achieve far greater levels of energy savings across the RAN and core. Energy efficiency and sustainability is a key topic all around the world including Middle East and Africa. Service providers will also gain the ability to manage devices in new ways. They will be able to identify groups of users engaged in communal or collaborative activities on their networks in real time. Then they could assign that group the exact right mix of resources necessary to ensure each user has the most optimal experience.

5G is still at nascent stage. Monetization is very important for wider adoption of this technology by all operators. What difference 5G-Advanced will make for improving monetization?
5G-Advanced is set to enable and expand many exciting new consumer and industrial use cases in 2025, and beyond.

- **Mobile XR and cloud gaming** which both need short set-up times and power efficiency, making them available anywhere, anytime on compact devices with small batteries.
- **Industrial process monitoring and quality control** demanding the frequent transaction of small data packets transmitted efficiently to support network performance.
- **5G connected tags for asset trackin**g requiring very low energy consumption – one day, these tags may even be able to harvest energy from their environment.
- **Autonomous vehicles, robots, drones and drone-mounted** devices which will thrive with 5G-Advanced networks tailored to ensure reliable communications with base stations
- **Indoor and outdoor positioning accuracy technologies** using advanced new capabilities such as carrier phased positioning applied to signals emitted by 5G base-stations to locate connected devices, with centimeter-level accuracy.
- **Resilient timing services** supporting everything from industrial automation to real-time financial transactions.
- **Smart wearable electronics** with small form factor, long lasting batteries that demand efficiency.
- **Specialist industry applications** across sectors from railways and utilities to public safety for example delivering next-generation signaling and communications for railways by adapting 5G to their allocated spectrum bandwidth, connecting next generation smart grids and powering ultra-connected and responsive blue-light services.

What will the journey towards 5G-Advanced look like and when will the industry require it?
3GPP has approved the final RAN feature set for the 5G-Advanced in Release 18. Though there are still a few details to be ironed out in the coming weeks, it is fairly clear what 5G-Advanced will look like when it is commercially deployed. This means the standards bodies can begin doing the detailed work on the specifications that will go into the final Release 18 standard in 2024, and we can expect the first commercial deployments of 5G advanced to start from 2025. TR

Noor Al-Sulaiti, chief executive officer, Ooredoo Oman

"Never stop learning, embrace change and accept new challenges," says Noor Al-Sulaiti

Celebrating empowering women in the tech industry, Telecom Review gets an exclusive with Ooredoo Group's first-ever appointed woman CEO. Noor Al-Sulaiti, chief executive officer, Ooredoo Oman, shares how Ooredoo plays a significant role in Oman's digital transformation journey and the ongoing strategies being carried out under her leadership.

What are the corporate and financial strategies being carried out at Ooredoo Oman under your leadership?

The next phase of our long-term strategy is centered on driving the country's Vision 2040 through ongoing digital transformation, nurturing the development of people and enterprises, and catering to ever-evolving communications needs. As our journey to be more digitally-driven continues, we are carving out an even bigger path for technologies like 5G and IoT, as well as providing better, more value-added mobile and home internet services. We are also focused on supporting entrepreneurship and SMEs; the backbone of Oman's developing economic focus. Meanwhile, we are finding new ways of segmenting our business to put us ahead of the curve when it comes to competition.

Being the first woman appointed as CEO in one of Ooredoo Group's main markets, what are the challenges and expectations you face and how do you handle these?

Ooredoo Group has been the incubator for a diverse talent pool. We already have female leadership across all the OpCo's. I am honoured to be appointed as the first female CEO and I hope that in few years it will not hit the news headlines as it becomes the norm to appoint female CEOs.

What is the significant role that Ooredoo plays in Oman's digital transformation journey?

Oman is in the midst of a new phase of growth, defined by its digital transformation ambitions and goals. As data experience leaders, we have played a leading role in this from the beginning by broadening internet accessibility, championing innovation and value in our products and services, pioneering disruptive technologies like IoT, cloud and 5G, all while offering a superior, digital-led customer experience through channels like our multi award-winning app.

Through numerous partnerships with the public sector, we are sharing our experience and best practices to help the government enhance its administrative performance and facilitate its move to digitalization. These include a variety of training courses for employees working in different ministries and sectors to develop their professional capabilities, as well as conferences on the telecommunications industry which helps the government and community align with the country's goals to become a digital and knowledge-based society.

Along with our government sector partners, we have also been working with DIAM and NEC on the country's first Internet of Things (IoT) network in the form of smart water meters.

Ultimately, we are supporting Oman to keep pace with global technological and industrial trends, which is ultimately integrated into the world's economy.

How would Ooredoo Oman keep up with the ever-evolving communications demands of consumers and enterprises?

The telecoms industry has always had to be fast-paced and constantly changing to keep up with new technologies and rapidly evolving consumer demands. With our customers' needs always evolving, we make sure that we upgrade, enhance, supplement and reward to give them exactly what they want and more.

For example, during the COVID-19 pandemic, there has been an increased demand for data. In response to which, we had a variety of offers, add-ons and enhanced plans, to give our customers everything they need to work, play and connect. In addition, when businesses were working from home, we increased our bandwidth speeds going up to 1Gbps and offered unlimited calls, data packages, extra speeds and much more, all of which can be purchased online, to make working remotely easier.

Meanwhile, we continue to tune ourselves into the needs of our customers and companies alike, and strive to ensure that people can enjoy the most of what modern technology has to offer, in a way that suits their needs, lifestyle, budget and business needs.

With women in tech industries now stepping ahead of the corporate ladder, what words of motivation can you give these aspiring leaders of the future?

Exactly what I would say to any man or women in the workplace. Never stop learning, embrace change and accept new challenges. Ensure you have high standards for your work and delivery and know that with grit and consistency, you will achieve your ambition. TR

> We are supporting Oman to keep pace with global technological and industrial trends

Saleem AlBlooshi, chief technology officer, du

5G promises the enablement of digital transformation, says du CTO

Along the sidelines of the recently-concluded International Telecommunication Union (ITU) CxO meeting, Saleem AlBlooshi, chief technology officer, du, had an exclusive interview with Telecom Review to elaborate about du's latest 5G developments and what this technology entails to enterprise customers as well as to the digital transformation journey within the United Arab Emirates (UAE).

What are du's most significant accomplishments and use cases to date in terms of 5G deployment? Which organizations have you collaborated with on this?

We have embarked on our 5G journey since 2019. During this year, we started the rollout in line with the decision to lead in 5G. Despite the pandemic in 2020, we continued the investment in our 5G infrastructure, and during 2021, we accelerated by almost doubling the usual investment in our infrastructure rollout.

Today, due to our strategic direction, plan, and vision to drive value for the stakeholders at large, we have active engagement with multiple local and International stakeholders and we are working together in sharing best practices in 5G rollout.

All these contributed to our position today. We are working with different organizations for our 5G SA use cases. To cite an example, we are working with

DEWA in building a private network with network slicing capabilities as well as some use cases of using drones for power grid inspection.

All these things are happening at a fast pace while we are continuing the journey of 5G enablement. Today, we are at the early stage of 5G monetization where the main usage of the infrastructure is mobile broadband traffic. We are working with the stakeholders to enable the new use cases that will add value to society.

Transformational benefits are promised, thanks to 5G technology. What are the biggest advantages that du's enterprise customers have availed from 5G?
5G promises the enablement of digital transformation. From a connectivity perspective, we have a wide band of connectivity, plus the enablement of the service delivery platform that 5G promises for the first time in all mobile generations.

When we say digital transformation, it means adding value to the organizations by being more efficient in the way they do business, having faster time-to-market by using the digital platform available in the different infrastructures, and enable innovation to drive new services

We can now interact directly with the RAN, leveraging collected data. Such connectivity enablement involves IoT capabilities and mobile edge computing. All these variables, on top of security, are platforms to enable digital transformation for any organization — being governmental, private sector, or even the consumers.

du deployed the first 5G leased line for UAE enterprises. Could you tell us more about this project and why its success was so important?
5G promises to drive digital transformation and the outcomes of digital transformation are efficiency, cost, faster time to deploy, and quality from a performance perspective.

All these variables, prior to the 5G leased line, we used to connect site offices where there is no infrastructure available in the area. In parallel, for the backup solution, we used to have a point-to-point radio solution where there is a dedicated spectrum cost, it takes time to deploy, and it has lower efficiency as well from a connectivity perspective.

All these issues are being addressed by the 5G leased line solution where we have a deployment of a CPE that does not require a line of sight or a dedicated spectrum. Thus, we are hitting all the advantages of 5G by such simple use case which is still connectivity. The difference is we manage to deliver connectivity in a more efficient manner, with faster time-to-market, and with higher capacity as well.

As a result, customers are enjoying capacity while we also have real use cases deployed with some private enterprises that brought good value to them and they are appreciating such implementation.

How will 5G support the UAE's transformation and development objectives aligned to national programs such as the Centennial Plan 2071 and 'Projects of the 50'?
Telecommunication infrastructure, in general, is a key pillar for the enablement of future transformational strategies, visions, and plans.

Connectivity is one of the important pillars and from our perspective, we are committed as we are leading in the 5G rollout. We are increasing as well our fiber footprint nationwide and building our new data centers. Recently, we had two big data centers, one in Kizad in Abu Dhabi, and the other one at Silicon Oasis in Dubai.

We are also working with CPE providers and IoT capabilities providers, allowing us to connect IoT on our data center and computing environment with the 5G capabilities and fiber. All these variables are the key pillars for any transformational plans, from our government's perspective and the ecosystem at large.

You were recently selected to join the External Advisory Board (EAB) for the European Union's 5G-Heart project. How would you contribute to this?
It's an honor to be part of the advisory group of the European Union 5G-Heart project. To positively progress in the 5G rollout and add use cases, collaboration is very important as we share the learnings and experience as well as exchange information.

As I said, we are in an early stage of 5G monetization and the only way we can collectively progress is by exchanging information and collaborating. We have seen this as an opportunity for us to be part of such a strong organization and learn from their frameworks within the European Union, plus our contribution as an early adopter of 5G is we can share some information like implications and value of the use cases we have implemented in the UAE.

du is the co-host of the invitation-only CxO meeting hosted by Telecom Review at the InterContinental Dubai Festival City on December 7, 2021. This event is prior to the 15th edition of the Telecom Review Leaders' Summit, the most anticipated and largest VIP ICT gathering in the industry. TR

Telecommunication infrastructure, in general, is a key pillar for the enablement of future transformational strategies

5G in the sky: No turbulence in plain sight

The 5G C-band deployment in the US has been put out of its airplane mode, but still with restrictions. It has been weeks of back and forth negotiations between the telecom operators involved and the aviation players just to kickoff the midband spectrum on air.

The 5G C-band networks of AT&T and Verizon which went online between the 3.7-3.98 GHz wavelength are capable of both traveling long distances and carrying enough data to deliver faster internet connections. On the other hand, with the proposed restrictions at selected airports, the aviation industry is preparing for some service disruption assumed to happen due to the proximity of the frequency band to be used for the new 5G mobile services and the radio altimeters used by aircrafts (4.2-4.4 GHz).

The federal aviation authority (FAA) and the White House are yet to finalize

solutions that can safely mitigate as many schedule impacts as possible with the mid-band spectrum launch. In parallel to this, US-based airlines asked AT&T and Verizon to implement 5G C-band everywhere in the country except within the approximate 2 miles (3.2 km) of airport runways, particularly at high-traffic airports. Airline officials expressed concern about whether Boeing 777s will be able to land safely with the new 5G service.

As a result, a lot of airline operators had to halt flights bound to the US as a last-minute precaution. The debate of whether 5G C-band is actually a risk to the western country's airspace continues and has no clear vision yet of settlement. What's interesting is that as per the cellular telecommunications industry association (CTIA) shared data, nearly 40 countries aside from the US have managed to launch 5G in the C-band at similar frequencies without reporting any harmful interference with aviation equipment.

Hence, an important question arises: what has actually brought up the abrupt and alarming response from the recent 5G C-band spectrum launch in the US?

Complicated roadblock

The C-band is known as the centerpiece of the 5G wireless policy and networks, particularly the 280 MHz of airwaves at 3.7-3.98 GHz band which resides in a sweet spot for 5G small-cell networks. This is the reason why years of planning by the wireless industry and consultations with airlines have been done leading to the success of the 5G C-band rollout.

Despite that, the fear of signal interference within radio altimeters has driven another delay for AT&T and Verizon's 5G C-band full deployment which many seasoned observers think is an antic of the aviation industry to buy new altimeters to replace the old ones now operating in most of the fleet. In a commentary published at the center for strategic and international studies (CSIS), the FAA warning and consequent deployment delays were unnecessary, as early deployment of C-band spectrum for 5G is critical to the US global leadership in next-generation wireless 5G products and services. Moreover, delaying 5G could impact all kinds of economic activity and sectors such as smartphones, transportation, smart infrastructure, advanced manufacturing, and construction, among others.

In 2020, the radio technical commission for aeronautics (RTCA) published findings affirming that business aviation and rotorcraft are far more likely to experience radar interference due to 5G networks but whether or not the 5G C-band spectrum actually interferes with airplane safety equipment, the FAA doesn't have actual proof to show yet. Thus, allowing 62% of the US commercial fleet of aircraft for flight near 5G C-band towers.

Furthermore, one of the reasons unfolded is that the US doesn't have the safety standard that antennas be tilted forward to limit interference like in France. No official technical standards for altimeters are being followed as well, unlike the mobile industry's compliance to technical 5G standards.

Impact on aviation

Dubai's Emirates, the world's largest international passenger carrier and the largest Boeing 777 operator, briefly suspended US destinations as president Sir Tim Clark described the situation as one of the most delinquent, utterly irresponsible in his aviation career. Clark was clear that Emirates was not aware that the power of the antennae in the US has been doubled compared to other countries.

UAE's telecommunications and digital government regulatory authority (TDRA) has also clarified that the 5G C-band issue is exclusively related to the relevant US airports as there is no disruption or interference in the UAE between 5G networks and air navigation systems. 5G stations in the UAE have been installed in multiple places for many years, and TDRA based its 5G plans on studies that take into account the safety of frequencies and potential impact on other sectors. The authority also considers the decisions and procedures approved by ITU in this regard and is coordinating with the general civil aviation authority (GCAA) to ensure the highest levels of safety and security in this context.

In contrast, the UK civil aviation authority (CAA) says it has no reason to believe that 5G services using the C-band spectrum could interfere with sensitive aircraft equipment. Although it had acknowledged the FAA's assessment, CAA did not believe there was any need to take any immediate action as there have been no reported incidents of aircraft systems being affected by 5G transmissions in the UK airspace. It is worthy to note that all four major UK operators have licenses for mid-range frequencies located between 3.4GHz and 4.2GHz.

Japan's All Nippon Airways (ANA) and Japan Airlines have also announced flight suspensions to the US. As per NTT Review, a technical magazine produced by local telco NTT Docomo, relevant Japanese 5G allocations are 3.6-4.1GHz and 4.5-4.6GHz which are closer to the radio altimeter band than in the US, yet there hasn't been a backlash from Japanese airlines regarding 5G interference. Local scientists told the international civil aviation organization (ICAO) last year that to avoid the blocking of radio altimeters, the location of the high-power 5G base station should be avoided within 200m from the aircraft route.

While in the European Union, business is as usual because EU's aviation safety agency (EASA) stated that "The technical data received from EU manufacturers offers no conclusive evidence for immediate safety concerns at this time." The technical difference is that within EU countries, the 5G network is running between 3.4 and 3.8 GHz while the US frequencies are between 3.7 to 3.98 GHz, showing a considerable buffer in the EU than in the US.

Even in Australia, the Australian transport safety bureau (ATSB) has had no reports of radio altimeter incidents linked to 5G since its rollout two years ago as 5G transmission is currently top out at 3.7 GHz, well below the radio altimeter frequencies. TR

Dr. Bilel Jamoussi, chief of the ITU study groups department

ITU is the unique spot for international dialogues to take place, says Bilel Jamoussi

On the occasion of the 15th edition of the Telecom Review Leaders' Summit, the largest VIP gathering in the field of ICT, Telecom Review sat down with Dr. Bilel Jamoussi, chief of the ITU study groups department, to discuss the smart projects he plans to accomplish in the future and the challenges faced amid Covid-19 in addition to cyberattacks.

What are the ICT issues that will be raised during the ITU plenipotentiary conference in 2022?

The ITU plenipotentiary conference in 2022 in Romania will tackle many important topics. Primarily, the election of the five elective positions for the ITU, the council members and the regulatory board. The plenipotentiary conference also looks at the financial plan for the ITU and agrees on a number of resolutions that are important for the union for the next four years. Topics of great importance to the membership will be discussed such as connectivity, managing post Covid-19 era, and improving the lives of citizens through digital services, as well as the cybersecurity aspects to ensure trust and security in the use of ICTs.

These are all critical topics for our new digital society, and the ITU being the United Nation's specialized agency for information and communication technologies with many private sector companies over nine hundred entities, is really the unique spot for this international dialogue to take place.

In a sector that has experienced a lot of changes and challenges due to the outbreak of Covid-19, how did the ITU address these challenges?

The Covid- 19 was very painful on human scale but on the other side, it has been an opportunity to accelerate digital transformation worldwide, probably by at least six years.

During confinement, countries around the world found no other refuge than to connect citizens remotely for teleworking, education at home, telemedicine and for financial transactions. Many countries sent remittances to their citizens to help them during the pandemic through mobile phones. So, it was an opportunity to really highlight the importance of connectivity and digital services in many countries.

Members of the ITU have worked very closely with us to leverage all of the standards that we have developed over the years for users' authentication, financial inclusion, and mobile money, for instance. These services could be rolled out for citizens in a record of time.

Due to the high number of cyberattacks in the region and around the world, how has ITU been able to address and reduce this type of security threat?

Security and identity management are one of the fundamental outputs from the ITU standards process. The public key infrastructure which is the use of protocol to secure all transactions in the network is an ITU standards called the "X.509" and a great importance lies in using that protocol, deploying it and having the certificates to digitally sign to have strong authentication that is passwordless.

The ITU also works with all of our member states to ensure that we have cyber centers and cyber capabilities, so capacity building among our member states is an area that the ITU is very involved in. There's a workflow between the standards bureau and the ITU team that develops standards, that looks at projects and capacity building and ensuring that those projects are built on international standards. Our member states can thus move very rapidly in securing their infrastructure, providing digital identity to their citizens and authenticating users on the network.

What are the smart and digital plans and projects that the ITU aims to achieve in the future?

Digital transformation is on the agenda of every policy maker, ICT minister, telecom regulator and digital regulator, because the physical world needs the technology to transform quickly in the post Covid era. Smart cities are an illustrative example with the ability to connect citizens to all the city services and then to smart nations so that the nation provides digital services to its citizens.

Digital health is another example. We are working very closely with the World Health Organization to use AI in the health sector. AI algorithms on smartphones can help countries with low number of doctors to benefit from all remote health services.

Transportation is the third example where ICTs are used to reduce the number of fatalities on the road through intelligent transportation systems and autonomous and assistant driving. Recently, we launched a new initiative on AI for road safety to encourage the least developed countries and low- and medium-income countries to start collecting data about accidents, drivers, automobiles, locations of the accidents and how quickly the emergency services came in order to use that data and AI algorithms to predict, prevent and try to mitigate and manage accidents.

Last but not least is third areas natural disasters management based on satellite imaging and the IoT. We can manage fogs, fires and much more. All of these rely on two critical components, connectivity - 4G, 5G with robust fiber optical infrastructure - and digital infrastructure - the data centers. TR

Security: An obstacle in the way

Security climbs up the ladder of priorities when it comes to elements of success and adoption of a technology trend. Given its significant importance, it has caused controversy in many instances, notably when a new trend emerges. Open RAN is one of many examples.

Opinions about Open RAN among ICT and telecommunications experts and players vary between opponents and proponents. The former finds several gaps at the level of open RAN while the latter finds in it an impactful cost-saving solution.

What the technology architecture's opponents agree on is that unlike what has been marketed, open RAN does not save money, claiming that the whole total cost of ownership (TCO) of a network needs to be considered and not just the RAN infrastructure. They acknowledge the role that open RAN will play in the future but emphasize that the technology is still in its very

early stages and a lot still needs to be done.

"I have come from a background where I ran a network that had a huge number of suppliers in it and just by reducing the suppliers you made the cost reduce," BT's chief architect Neil McRae explains. "I think the more people you are working with, the more effort you entail, the more debugging you've got to do, the more testing you've got to do. By working with fewer, you ultimately get quicker outcomes, better outcomes and more economic outcomes most of the time."

Moreover, Open RAN isn't standardized, it can't be easily integrated with existing network infrastructure, and it's not ready for the most intense period of 5G deployments coming up with 5G SA core networks, according to Paul Scanlan, CTO of Huawei Carrier Business Group.

"It's not that it's not going to happen, and I believe it will in different guises but I'm not sure whether … from a commercial perspective, is it too late practically? The challenge is it's not standardized. It's an association. Because things are not standardized, no standards, you don't get cooperation, you don't get competition, you don't get innovation to drive this," Scanlan said, describing groups such as the O-RAN Alliance as "just a bunch of friends", noting that the O-RAN Alliance or TIP Open RAN project are not standards development organizations (SDOs).

One of the main challenges of open RAN is security. Many more interfaces will be exposed among different vendors and given the technology's architecture, there will not be one entity that can be held responsible if any problem occurs. Furthermore, open RAN might not be secure because it works with open-source code, which typically takes contributions from hundreds of programmers.

In addition, unexpected vulnerabilities, such as a vendor's security flaws may expose another vendor's security or technology flaws.

Germany's Federal Office for Information Security has just weighed into the open RAN debate with a potentially devastating report about the resiliency of networks based on the new-fangled concept. Its main conclusion seems to be that a mash-up of products from different suppliers – as open RAN champions – is inviting trouble, and that not enough has been done on the specifications side to ensure open RAN is secure.

In the same context, many argue that the main purpose behind all the hype around open RAN is political. National security concerns that rose following Trump administration's war against Chinese telcos Huawei and ZTE were the main drivers of open RAN discussions and increased interest in the technology.

The role that open RAN can play in the industry is undeniable, whether you're with or against the technology's adoption, however, the main question here is whether it is the right time. "As ever, the key issue here is timing. And by that I mean when the open RAN systems and components… will be able to work to the standards …and the availability that we deploy today in the dense urban environments. That's what I'm keenly watching", said Howard Watson, chief technology & information officer, BT Group.

Open RAN is one of 5G's success elements, however for it to work, security concerns need to be debunked. A clear framework should address end-to-end security concerns in terms of data protection and user security. The next step for open RAN proponents is seeking accredited standardization for the technology to gain even more trust among industry players. TR

Many more interfaces will be exposed among different vendors and given the technology's architecture, there will not be one entity that can be held responsible if any problem occurs

Bernard Najm, vice president, telco, MEA, Amazon Web Services (AWS)

AWS provides the most extensive, reliable global cloud infrastructure with 5G edge solutions

Along the sidelines of the 15th Telecom Review Leaders' Summit, Telecom Review had an exclusive interview with Bernard Najm, vice president, telco, MEA, Amazon Web Services (AWS) with a focus on edge computing, cloud, and 5G.

Which industry trends do you see around the edge?
The edge of the network is becoming increasingly important with the launch of 5G smart devices and new applications that will generate and consume a vast amount of data outside the traditional data center. In fact, according to Ericsson's mobility report, 75% of the enterprise-generated data will be created and processed outside a traditional data center by 2025.

In general, the edge cloud is a hot topic in the industry as it provides telecom operators the opportunity to create new business models and monetize 5G for enterprises and consumers alike. Edge cloud is essential for emerging applications, such as industrial robotic automation, connected vehicles, AR/VR, infotainment, and media streaming which require very high bandwidth and low latency as well as local processing of a large amount of data to reduce the volume of traffic transported back to centralized data centers.

Hence, processing data closer to the source can save network bandwidth, device memory, and power. This can be done through the edge cloud and 5G's unique combination which creates a unique opportunity for telecom operators to offer enterprises and consumers innovative services, growing beyond the typical connectivity.

We at AWS work with telecom operators to bring the cloud computing capabilities closer to the end-user and the network edge. With easy access to feature-rich AWS cloud services at the network edge, telecom operators, enterprises, and independent software vendors enable the development of innovative 5G applications.

What is AWS doing in cloud edge computing?
Now what sets AWS apart is our unique capabilities. We have a consistent programming model that provides the most secure cloud computing environment as well as the most extensive and reliable global cloud infrastructure. We offer the broadest and deepest capabilities for edge use cases.

What our customers desire are centralized control and decentralized execution. We provide this with a cloud-to-edge continuum, which is a consistent programming model for the cloud on-premises infrastructure and local devices. With a combination of cloud and edge computing, customers can seamlessly move code and workloads based on evolving requirements using the same common set of APIs and tools. This creates a lot of flexibility and the common deployment and management model, providing the inherent cost benefits of cloud computing.

Moreover, our AWS edge cloud services provide infrastructure and software that deliver data processing analysis and storage as close to the endpoint as necessary. This approach enables customers to build high-performance applications that rely on data processing and storage closer to where it is generated. It delivers ultra-low latency and intelligent real-time responsiveness, reducing the amount of data transfer.

One key benefit that our telecom operators customers value the most is

the broad developer and independent software vendor community that builds on AWS. Using the experience of AWS and bringing edge cloud together with 5G, we can enable telecom operators to cloudify the network and accelerate the delivery of 5G at the edge. This allows telecom operators to unlock growth by creating new revenue streams and accelerating business value.

How is AWS enabling telecom operators to innovate around 5G and edge?

AWS enables telecom operators to provide a consistent experience from cloud to edge as an innovation platform for new services to their end customers. As such, we see different use cases as each application requires different performance from the network based on latency, bandwidth, and storage capacity. For example, VR and autonomous vehicles require high bandwidth and very low latency to deliver the right experience while home sensors and surveillance require much lower bandwidth and speed.

Having said that, AWS has a long history of developing services that deliver the right balance of storage, speed, and bandwidth to deliver the best customer experience at the edge of the cloud.

Let me outline two of the most prominent edge use cases and the solutions AWS has to address them.

First, we see the ultra-low latency mobile application use cases. We enable telecom operators to combine their 5G network with our AWS Wavelength servers so they can offer public 5G multi-access edge computing services to enterprises and developers.

Wavelength zones are AWS infrastructure deployments that embed our compute and storage services within the telecom operators' data centers at the edge of their 5G network. They offer the same developer experience, as in the cloud. In this way, application traffic from 5G devices can reach application servers running in Wavelength zones, without leaving the telecom network. It takes full advantage of the ultra-low latency and bandwidth offered by 5G.

So far, we have deployed Wavelength zones with Verizon in the US, Vodafone in the UK and Germany, KDDI in Japan, and SKT in South Korea. Through the Verizon Wavelength zone, Zixi is providing media distribution to Bloomberg while Dedrone is providing an airspace security platform hosted on the Vodafone Wavelength zone in the UK. Woowa Bros has also deployed food delivery robots on SKT's Wavelength zone while TVT has run mobile gaming on KDDI's Wavelength zone.

Second, for private network use cases at the edge, we provide telecom operators with AWS Outposts. This is a fully managed service that offers the same AWS infrastructure, services, APIs, and tools to data center colocation spaces, both virtual and on-prem, providing a truly hybrid experience.

AWS Outposts is ideal for workloads that require low latency access to on-premise systems, local data processing, data residency, and migration of applications with local system interdependencies.

In the case of integrating Verizon's 5G edge MEC platform to this service, one customer example is Corning Incorporated. Verizon has deployed a solution on AWS Outposts at the Corning factory in Hickory, North Carolina which allows Corning to run computer vision software in enabling the autonomous mobile robots that roam within the factory.

Other use cases include private networks in challenging environments, such as mines and oil rigs where we offer our industry-leading AWS Snow Family that includes edge cloud computing and storage devices that can run in poorly-connected edge locations. In terms of IoT solutions, telecom operators like BT utilize AWS to improve the management of millions of consumer devices in the home.

Which industries have the biggest demand for the edge?

The demand is high in every industry sector, may it be for manufacturing, distributing, or providing significant portions of their value chain near end customers. These verticals include automotive, transportation, logistics, gaming and entertainment, as well as event and conferencing.

I'll give you a couple of examples. In automotive, HARMAN is using Verizon 5G edge with AWS Wavelength to support cellular vehicle-to-everything computing. This technology lets vehicles communicate with multiple devices on the go, lowers latency, and offers higher bandwidth so that customers can deliver improved communication and connectivity between drivers and applications.

In manufacturing, we work with Verizon and Tata Consultancy Services on industry 4.0 use cases, enabling real-time responsiveness for connected factories. This is critical for data to flow seamlessly between machines and the cloud to enable AI-powered real-time decisions.

In the transport sector in the UK, Aurrigo uses the Vodafone business distributed edge computing with AWS Wavelength to achieve the latency and speed needed to run a fleet of autonomous shuttles seamlessly and safely across the city.

For the event industry, CrowdVision uses Verizon's 5G network and edge cloud for streaming sensor data and performing video analytics. This enables them to analyze crowds in public places, counting people in and out of venues, or determining social distancing for people to use.

In healthcare and education, a mobile virtual reality headset developer analyzes end-user reactions to content through eye-tracking brainwave sensors and machine learning using AWS Wavelength.

These are some of many actual deployments at the cloud edge. I'm very excited to work with our customers — telecom operators and developer ecosystem — to unlock innovation and growth at the edge. TR

Hisham Ibrahim, CCO, RIPE NCC

'RIPE NCC fostering good cooperation within intergovernmental and standardizing bodies'

In an exclusive interview with Telecom Review, Hisham Ibrahim, CCO, RIPE NCC talks about his organization's efforts in building a well-functioning internet community during the Telecom Review Leaders' Summit 2021 at the Dubai Intercontinental on December 8.

As a new CCO for RIPE NCC, how would you be implementing the organization's strategies in community development and engagement with members?

RIPE NCC is the registry for internet resources – IP addresses and ASNs for Europe, Middle East and Central Asia. We get our mandate from our membership and the community and we do serve the RIPE community and the internet community at large. Moving forward, we are planning and focusing on three pillars when it comes to community engagement. The first one is community building and engagements where we are building and fostering environments for discussion and dialogue so that people can benefit from the different experiences. The second one would be community learning and developments where we are working on enhancing the skills and teaching new technical best practices to the different members and community members. And last but not least, is community collaboration and cooperation, where we do see ourselves as a part of a bigger puzzle in trying to make sure that we have good cooperation with the intergovernmental and standardizing bodies. Between those three pillars is exactly what we are defining now as our external engagement community.

What are the initiatives needed to continually strengthen the internet's infrastructure in the Middle East?

At RIPE NCC, we have different ways of engagement. The approach we take to determine the best one is by looking at two different criteria. The first one being the ability to execute and self-coordinate within the community and the second being the knowledge level and experience within that community and between these two axis points. With these, we end up with four stages of evolution within any community, which dictates to us what engagement would be the most effective whether it's learning and development, building communities or collaboration and cooperation. We define it per technology, seeing that a certain community or country could be very advanced in one technology and not so much with the other one.

What are the developments in RIPE NCC's capacity-building programs?

At RIPE NCC, we have been looking for a couple of years into how we can bring more online engagement especially that we do look after a very vast geographical region. We have more than 70 countries within our service region and have memberships. There are a lot of countries that have secondary markets and they are not necessarily the main capitals. For us, to scale in terms of capacity building, we have been looking to do a lot of online engagement. With the pandemic taking place, it made it potent that this was the way to go. We do have E-learning for our learning and developmental aspects and we are creating a lot of certifications that can be done from home rather than a physical workshop. When it comes to community building and engagement activities, we are looking into organizing a lot more hybrid events. We have been doing virtual ones for the past two years, but moving forward, we are investing more in hybrid so that people participating from the physical location or their homes, get the same first-level citizen experience. TR

MYCOM OSI CTO: "a phenomenal traction for Saas model"

Mounir Ladki, President and CTO at MYCOM OSI

In an exclusive interview with Telecom Review, Mounir Ladki, President and CTO at MYCOM OSI, spoke about the enterprise assurance solutions for CSPs. He also talked about how AI helped to innovate the ability of the company and growth coming in the future.

MYCOM OSI recently released its Enterprise Assurance Solutions for CSPs which deliver both high capacity and reliability. How can these solutions impact CSPs in the long run?

MYCOM OSI believes that the future telecom should focus on the enterprise segment because it's where the biggest opportunity for growth and monetization is found. This can help also CSPs to tap into that market segment and expand their market share. We help them deliver, ensure and monetize advanced connectivity services that will underpin the digitization of various industry verticals like transport, logistics, aviation, manufacturing and much more. In addition, there's definitely room for service providers to deliver services with guaranteed SLAs and quality of service and monetize them, beyond that we are working with service providers to help them deliver assured monetized advanced digital services beyond connectivity and these services will be in real time on demand and will combine this advanced connectivity like 5G slices with cloud services and data analytics, to deliver value to the enterprises and for them to share a part of their value and growth.

Software and AI are becoming the brain of telecom networks. How has this helped MYCOM OSI with its innovative abilities?

MYCOMY OSI firmly believes that this promise of growth and delivering real-time on demand and digital services to enterprises, can only be successfully met, if operators are able to massively automate their operations and move from a reactive to a predictive mode of operations, in addition to using AI to deliver higher value to their customers and come up with agile product offerings and delivery ethics at a much faster pace. The company has been focusing in the past month on augmenting our various service assurance and analytic solutions with AI and machine learning capabilities to turn this into the brain of the network and this brain will enable the evolution towards what we call "autonomous network" that can underpin this business model and allow the operators to deliver these digital services to their customers.

What is the importance of assurance, automation, and analytics software as a service (Saas) application for the digital era?

Today it has become consensual in the industry that applications such as the experience assurance and analytics have to be agile, have to scale on demand and then have to be based oriented with AI and the cloud model. Saas model is really the best suited to achieve these objectives because it provides the required agility, it allows our customers and us to benefit from the cloud economics offered by these models in collaboration with public cloud providers. Furthermore, it is the model that enables AI at scale, because telecoms require a massive amount of storage and processing to reach the desired levels of accuracy and that can only be fulfilled with this.

The company has seen in the last couple of years some phenomenal traction for the Saas model with an increased adoption rate and we have seen a lot of opportunities going forward. TR

The new wireless fiber: 5G mmWave network

The tremendous growth in mobile phone usage worldwide and a number of trends will underpin the continued emergence of a 5G market that uses the millimeter wave (mmWave) spectrum.

In order to sustain future growth, there is a need to tap into mmWave, a revolutionary cellular technology which provides access to massive bandwidth and capacity available in frequency bands above 24 GHz. As of December 2021, GSA data revealed that 192 operators are investing in mmWave for trials, licenses, or deployments while 140 operators have been assigned mmWave spectrum to enable 5G network operations.

As per GSMA, the GDP impact of mmWave spectrum by 2034 in the MENA region alone would reach $15.4 billion, with the share of 5G services using mmWave to be 15% by 2025 and would increase further to 27% by 2034. Countries like Saudi Arabia and UAE are anticipated to contribute to this growth.

One important part of the modern connectivity puzzle is access to mmWave spectrum. The use of this range in mobile networks is a chance to offer performance levels that can benefit areas such as fixed broadband, industrial automation, healthcare, intelligent transport systems, and virtual reality.

At present, 5G mmWave commercial deployment keeps gaining momentum around the world – from the US, Japan, Australia, Europe, and the Middle East. Set to be a game-changer for businesses and

consumers alike, 5G mmWave is believed to be wireless fiber as it can bring download speeds of up to 10 Gbps.

Critical role of 5G mmWave

5G mmWave not only promises to deliver multiple-gigabit data rates to end-users but also significantly support more capacity for a better experience. Complementing existing 5G sub-6 GHz networks, high-density locations with massive consumption and movement of data (e.g airports, railway stations, stadiums, production facilities, and convention centers) can benefit the most from this technology.

An analysis from Qualcomm Technologies ESG shows that the benefits of 5G mmWave are shown by measuring traffic in areas where the technology has been deeply deployed. Field measurement data shows that when 5G mmWave capacity is available, offloading traffic to the wider capacity helps achieve dramatically higher burst rates and average data rates, compared to 5G sub-6 GHz and LTE.

Due to this, 5G mmWave has been purposely viewed to help deliver massive increases in localized capacity. This addresses the ever-growing demand for data in key areas. For example, mmWave is very compatible with indoor wireless solutions in large venues, with their significant footfall, that may have capacity concerns. This can be seen particularly for fixed wireless access (FWA) and backhauling.

Important aspects related to this are regulators carefully considering how to release spectrum and to whom and SDOs establishing frameworks that can help MNOs deliver the 5G availability that almost everyone demands. In fact, superior everyday experiences are built on 5G mmWave such as voice and video collaboration using cloud-based applications, professional live TV video transmissions, and machinery and sensors connectivity.

Per Narvinger, head of product area networks, Ericsson, said that mmWave and 5G can enable new creative use cases to explore. These involve hybrid reality, media, remote healthcare, and smart manufacturing. "As a leader in mmWave, Ericsson welcomes a wider ecosystem support for this important technology."

"mmWave spectrum is the fuel for the rocket backpack that makes 5G fly," expressed Jan van Tetering, senior vice president, head of Europe, Nokia. He emphasized that with 5G mmWave, we hold the key to unlocking a new category of user experience in dense urban areas as well as new, value-creating use cases across various industries.

Moreover, Huawei boasts leading mmWave beam adaptation and tracking technologies that ensure mmWave-capable terminals in real-life environments. Case in point, the Huawei 5G CPE mmWave is the world's first 3GPP 5G router that supports all 5G bands and 4G network backward, providing Gbps-level data downlink speeds, and allows NSA and SA networking.

Having said that, a 2021 analysis from GSMA Intelligence said that in dense urban and enterprise settings, 5G mmWave and sub-6 deployments are more cost-effective than sub-6. Bell Labs Consulting's research found that 5G mmWave deployed in hot zones at high-density locations can offer an average of four-year payback period with 20 to 30 percent ROI after the fourth year. Furthermore, such deployments offer up to a 75% reduction in cost per gigabyte delivered. This data proves that 5G mmWave is indeed a game-changer, simultaneously lucrative for operators and beneficial to users.

Now, the global 5G mmWave ecosystem is becoming mature, with more than 120 5G mmWave devices like smartphones, PCs, hotspots, modules, and customer premise equipment (CPE) supporting the technology. In line with this, 5G mmWave enables telecom operators to strategically select and scale 5G services to serve high-capacity requirements at various locations. Without a doubt, 5G mmWave isn't just an evolution of 5G technology; it's a 5G business imperative that would help cater for future growth as well as enable a range of new use cases and services that will benefit from the speed, latency, and capacity the technology offers.

5G mmWave in MENA

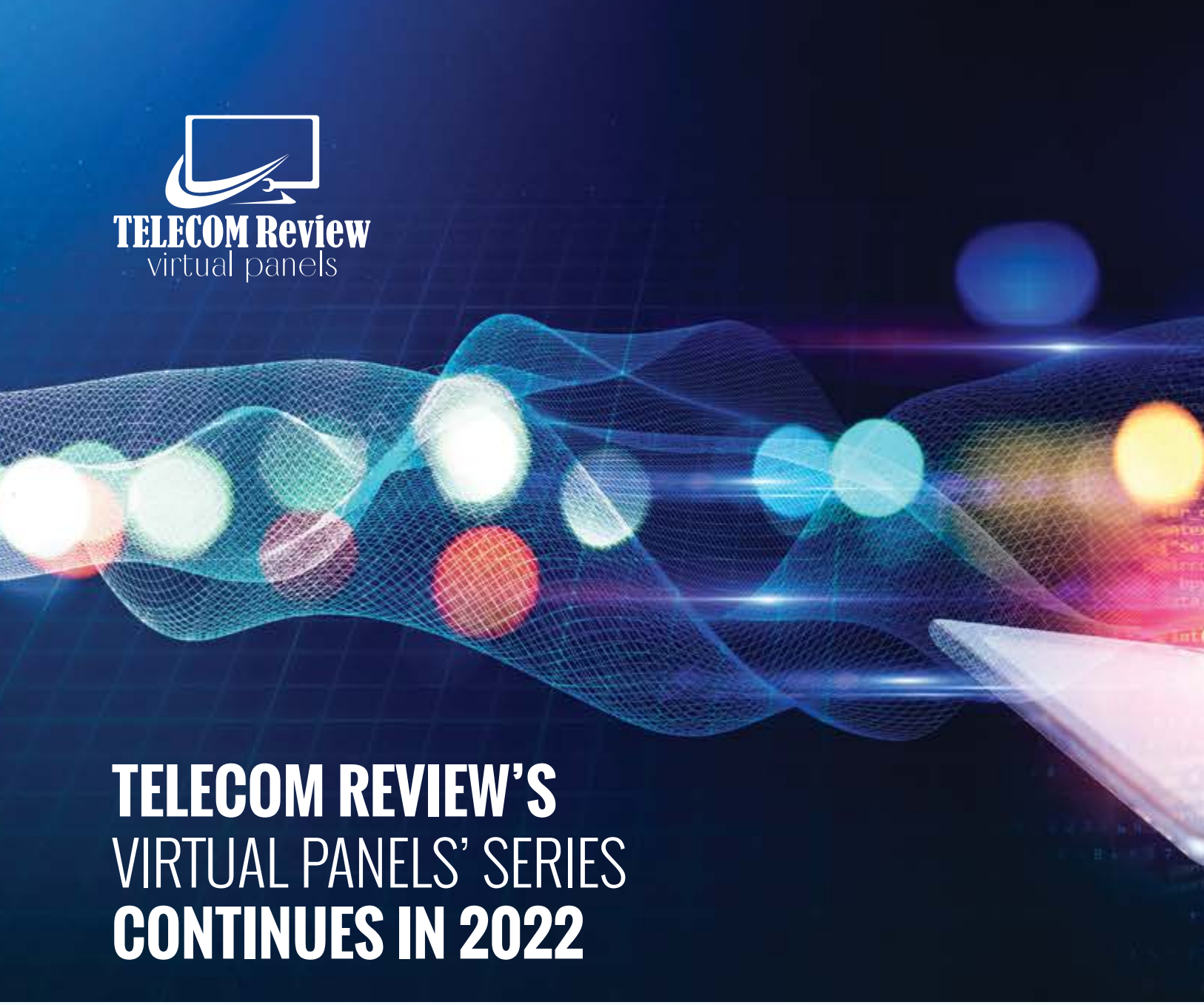
UAE was the first country in the MENA region to allocate frequencies in mmWave to expand the application of 5G for telecom operators. In 2020, the Telecommunications and Digital Government Regulatory Authority (TDRA) allocated 24-27 GHz mmWave spectrum to Etisalat and du, making the UAE the first country in the Middle East with a live mmWave 5G network. In addition, the 40 GHz band will be considered for 5G in the future.

One specific use case is the 5G mmWave commercial deployment between Etisalat and Ericsson. This partnership aims to support the automation and massive bandwidth demands of futuristic technologies and advanced use cases.

While in Saudi Arabia, the biggest 5G market in the region, mmWave adoption is yet to come. In 2021, the Communications and Information Technology Commission (CITC) published its spectrum outlook for 2021–2023, with plans to allocate more than 23 GHz of spectrum for a wide range of uses, including the spectrum auction at 26 GHz in the second half of 2022.

Another scenario for this matter is achieved in Riyadh where Nokia has successfully completed a mmWave technology trial on Mobily's live 5G commercial network. Using Nokia's mmWave AirScale technology, Mobily has a critical competitive advantage to address the growing network capacity demand in busy locations.

More so, the Communications Regulatory Authority (CRA) in Qatar is considering boosting 5G mobile services by auctioning the 26 GHz band (26.5–27.5 GHz). TR



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Etisalat to offer first of its kind digital insurance services in UAE

Etisalat's Easy Insurance, the latest addition to its insurance programme offerings, is a new innovative insurance platform hosting various digital insurance products, providing a state-of-the-art experience and instant policy issuance.

Both Etisalat and non-Etisalat customers can use Easy Insurance through partnerships with key local and global insurance leaders. In addition, they can enjoy a seamless experience by accessing the product through Etisalat's digital channels, My Etisalat app or www.etisalat.ae.

Since the onset of the COVID-19 pandemic in early 2019, customers have preferred to conduct all their transactions online, with the majority moving to use various digital platforms for their purchases. With its insurance partners, Etisalat aims to meet the growing requirement in the insurance sector by digitalising the insurance buying journey via its website and My Etisalat app.

Easy Insurance's offering through the application of AI, machine learning and Intelligent Automation enables UAE citizens and residents to obtain insurance services for health, auto and travel in the most convenient, fast and efficient manner. It is an extension of the company's current insurance offerings of device insurance, home protection and Takaful accidental starting at AED1 a month.

Etisalat's suite of insurance products aims to meet customers' daily needs ranging from health insurance to auto insurance and travel insurance. They can choose customised health insurance plans for essential and comprehensive coverage for themselves, their family members and domestic helpers. For auto insurance, car owners have access to third-party or comprehensive insurance coverage for either new car registration or renewal of existing car registration. Customers and their families can also get coverage of up to AED734,600 (or USD200,000) for a single trip or an annual multi-trip whenever they purchase an insurance policy before travelling abroad or visiting the UAE. The travel insurance product also includes COVID-19 coverage for inbound and outbound travellers, starting from AED25 per week.

stc's InspireU program supports KSA's innovation and digital economy

In the presence of His Royal Highness Prince Mohammed K. ALFaisal, chairman of the board of stc, and a group of government officials and investors, as well as the GCEO of stc Group, Eng. Olayan Alwetaid, stc celebrated the graduation of the seventh and eighth batches of the Entrepreneurs Support Program at the King Abdulaziz Communications Complex in Riyadh.

Carrying the slogan "To go further" for this year, the support of entrepreneurs in the program had reached the roof of 500 million riyals. This endeavor aims to support and develop entrepreneurship in the Kingdom as well as contribute to supporting innovation and promoting the digital economy in the entire technical fields.

The GCEO of stc Group, Eng. Olayan Alwetaid, emphasized the role of the InspireU program in supporting entrepreneurs, creative youth, and their emerging projects in the field of digital transformation which is considered an essential part of stc's strategy in this field. He indicated that this year has seen a doubling in the number of projects incubated by the InspireU program while incubating two additional batches for the first time in the same year, adding that the program has been able, since its launch in 2015, to support 75 start-up projects in various fields, which contributed to scoring a volume of financial transactions worth more than SAR 10 billion. As a result, InspireU projects benefited more than 40 million users and provided more than 600,000 participatory jobs in the local market.

The InspireU program is one of the most important business incubators in the Kingdom which provides many services to emerging projects through an intensive, high-quality training program provided by experts and consultants from Silicon Valley in several fields, including meetings with many entrepreneurs and mentors. The program also provides office space for entrepreneurs to promote their projects with an opportunity to be present and participate in many events starting from workshops, national and international exhibitions, and helping projects to reach the best investors and investment funds in the market.

stc, through its work strategy within the social responsibility and sustainable development sector, focuses on activating the advantages offered by the InspireU program that aim at supporting entrepreneurships represented by small and medium enterprises, facilitating financing opportunities and providing administrative and technical support to develop the capabilities of these companies.

Zain KSA, Huawei partner to build the region's first intelligent IP transport

Zain KSA continues to advance its award-winning 5G network and associated services, in the pursuit of best-in-class customer experiences for individuals and businesses, by partnering with Huawei to build the region's first intelligent IP transport.

With the massive roll out of 5G in the Kingdom and adoption of cloud technologies across various Industry verticals, SLA requirements for connectivity have gone beyond traditional connectivity services, as users expect a full package of end-to-end digital services and applications incorporated into their daily activities and business functions to support them in keeping up with the rapid digital transformation reshaping industries.

With network slicing, Zain can guarantee any required traffic profile while SRv6, the next generation protocol with SDN technology, ensures optimal path across the IP transport network. The protocol facilitates quick deployment of end-to-end optimized traffic paths and also eliminates complex layers involved in traditional IP MPLS thereby enhancing the O&M efficiency.

Management of IPWDM transport has become more efficient with software defined networking (SDN) framework that combines advanced capabilities of analytics and intelligent optimization of IP Transport.

Owing to its significant strides within Saudi Arabia's ICT industry, Zain KSA has accomplished numerous accolades and recognitions, including ranking first in "Meqyas" Q3 2021 report, issued by the communications and information technology commission (CITC), with the fastest mobile 5G average download speed and the biggest 5G coverage in Riyadh. Ranking first in 10 out of 13 regions, Zain KSA also topped the list in terms of 5G deployment across the Kingdom. In the first half of 2021, Zain KSA won the Speedtest award for the Kingdom's "fastest fixed network" from Ookla for the third consecutive time, and was recognized as the provider of the best 5G network and data performance in Riyadh by this year's report from umlaut.

Ooredoo Group appoints new executive roles

Ooredoo announced the appointments of Ahmad Al-Neama as Group regional CEO, Bilal Kazmi as Group chief commercial officer (CCO), and Eyas Assaf as executive director, performance management.

Ahmad Al-Neama has been with Ooredoo for almost two decades, taking up senior roles, most recently as the CEO of Indosat Ooredoo where he excelled and scored many major achievements for the company. Ahmad's most notable accomplishments include spearheading Indosat Ooredoo's business turnaround and signing strategic partnerships with global technology leaders and international organizations. Most importantly, he was behind the company's sale and leaseback agreement for more than 4,200 telecommunications towers – one of the largest deals of its kind in Asia – and he has seen the launch and roll-out of 5G in Indonesia. Ahmad has also led the landmark deal with CK Hutchison that resulted in the merger of the two entities, creating Indonesia's second largest mobile telecoms company. He brings a wealth of experience gained over a variety of leadership roles within the company.

In his new role as Group regional CEO, Ahmad will be responsible for the P&L of six markets, including Indonesia, Algeria, Tunisia, Palestine, Myanmar and Maldives, setting priorities to drive sustainable growth across key operations.

Additionally, Bilal Kazmi would officially play the role of Group CCO, after acting as one since July 2021. He has over 25 years of international experience in leadership roles, including P&L accountability across the commercial value chain for a $1 billion turnover company. He has a strong track record of leading a wide range of commercial functions in the telco arena, such as sales & distribution, customer care, new product development, international business, and the implementation of complex telecoms projects like digital transformation and large-scale structural changes.

As Group CCO, Bilal will drive Ooredoo's commercial transformation to accelerate growth across key areas such as customer centricity, sales & distribution and digital leadership.

Rejoining the Ooredoo Group, Eyas Assaf has been appointed as executive director, performance management at OG Finance. Prior to this, he was Indosat Ooredoo's CFO, a key member of the management team responsible for delivering outstanding business performance as well as the merger with CK Hutchison.

Etisalat partners with Abu Dhabi Digital Authority for Cyber Eye initiative

Etisalat has collaborated with Abu Dhabi Digital Authority (ADDA) along with Trend Micro Incorporated to launch Cyber Eye – an initiative designed to strengthen the Abu Dhabi Government entities' cybersecurity capabilities.

Cyber Eye initiative is a central part of Abu Dhabi government's cybersecurity strategy. It will employ first of its kind technology and systems to identify cyber threats in real time and take effective and proactive actions to mitigate risks and increase protection, further strengthening the security of Abu Dhabi government entities' digital assets.

The Cyber Eye initiative also addresses the issue of infrastructure visibility and will promote standards and methods to enhance controls and capabilities for the purposes of optimizing resilience across government entities. Such methods will also allow technology teams to detect threats more quickly, including the most advanced attacks.

Governments across the region have faced significant rises in complexity in their IT stack during the COVID-19 crisis, including a higher risk from endpoint security brought about by remote working. A recent KPMG survey of UAE business stakeholders showed concern about the rise of cybercrime during the pandemic. Some 61% of respondents were concerned about phishing scams, 54% were worried about email spamming, and 42% dreaded a ransomware incident. Regional government authorities have often been prime targets of cybercriminals, prompting this collaboration between ADDA, Etisalat and Trend Micro on Cyber Eye. The initiative will take advantage of intelligence-driven methodologies to enhance the maturity and effectiveness of the government in cybersecurity.

du, SIRA strengthen collaboration for safety and security services

du has signed a MoU with the security industry regulatory agency (SIRA) to strengthen collaboration and enhance safety and security services in line with the UAE's strategic vision.

Under the agreement, both companies will support institutional integration and harness administrative, technical and practical expertise to develop a framework for sustainability, social and security development standards, evaluate and improve national and community action practices as well as provide differentiated services to all members of society.

On the occasion, Fahad Al Hassawi, CEO of du, said, "We are committed towards strengthening our cooperation with various government agencies to significantly bolster our support of the UAE government's strategic plan. We are pleased to sign this MoU with the security industry regulatory agency, to enhance services that meet the demand of enterprises, multi-national organisations, SMEs and individual customers within the region. Our teams will work together with SIRA teams to enhance communication and ensure that the goals of this partnership are realized. We eagerly look forward to seeing the positive results of this partnership in the near future."

Speaking about the MoU, HE Khalifa Ibrahim Al Saleis, CEO of SIRA, said, "This partnership aims to consolidate existing security functions with new capabilities into a joint, integrated entity as both parties share knowledge and expertise. Through our collaboration with du, we plan to improve services provided by both companies and solidify industry partnerships, which are extremely vital in growing the UAE's digital economy, accelerating innovation, and supporting an entrepreneurial ecosystem."

The MoU between du and SIRA teams aims to adopt an intelligence-driven, collaborative approach to develop activities, in addition to strengthening partnerships with various state entities and institutions to contribute to the development of services provided by both parties. The new partnership will also facilitate communication between security providers licensed by SIRA and du to deploy next-generation capabilities and solutions.

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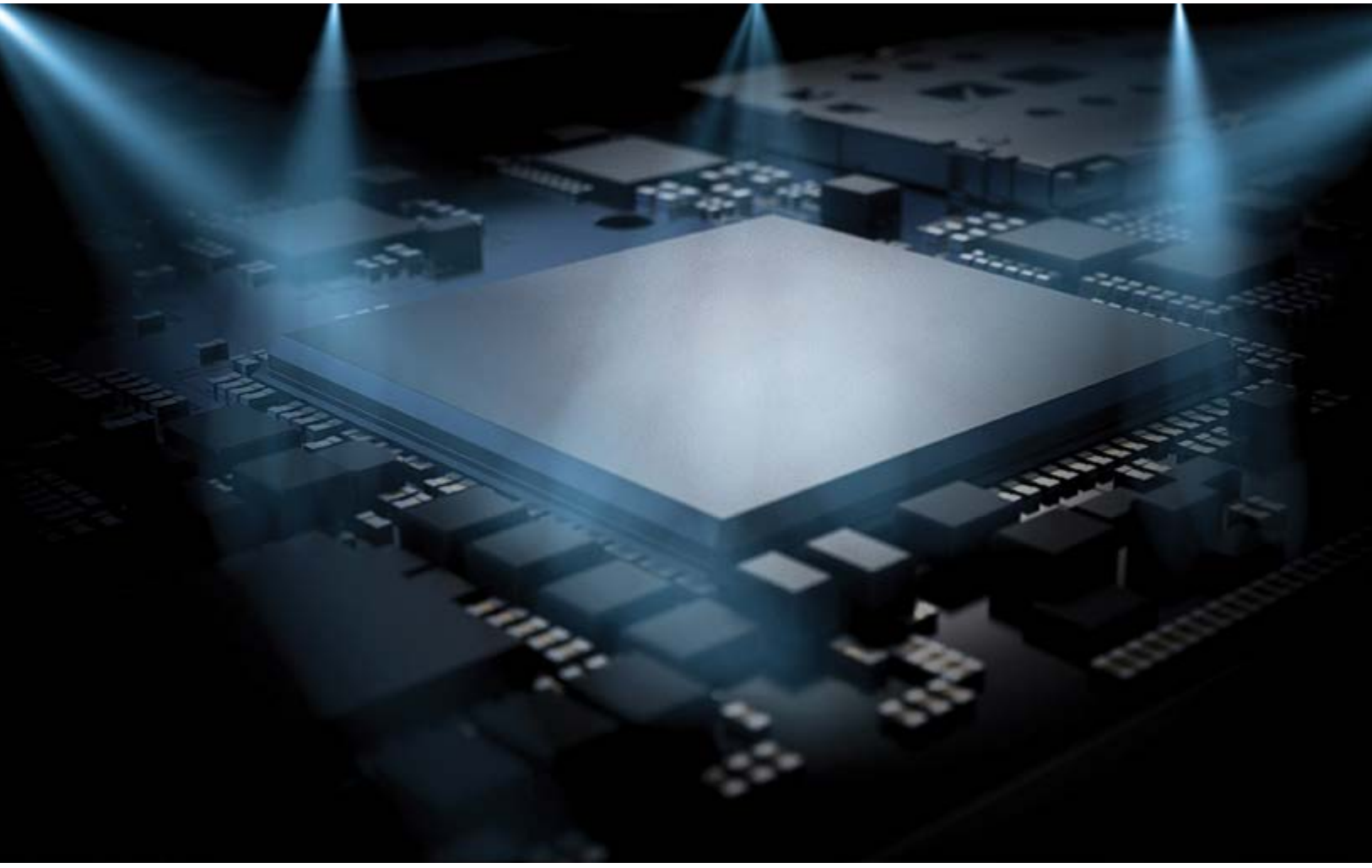


Smartphone chipset market under recovery

The cellular chipset market has evolved, with more 5G chipsets becoming more available. These 5G chipsets are an integral part of smartphones, tablets, C-V2X devices, and CPEs, among other 5G-enabled products.

As per GSA, the number of commercially-available 5G processors/platforms grew nine-fold in 2020 and that trend has continued with an 88% growth during 2021. Another study predicts that the 5G chipset market is set to be valued at $67.2 billion by 2027. Growing demand for high-speed internet and broad network coverage as well as increasing cellular IoT connections and mobile data traffic are major growth factors of this market.

Snapdragon, Exynos, Kirin, Dimensity are some of the modern chipsets you must have heard of. To emphasize, a smartphone chipset also known as system on chip (SoC) essentially combines all basic components of a computer system (CPU, GPU, memory controller, modem, etc) into one

integrated chip. SoC also provides a core set of functions ranging from cellular communication to WiFi and Bluetooth communications, general computing, power management, and peripheral interfaces.

In previous years, smartphone SoCs boasted integrated 4G modems, but with 5G already stepping into the game, integrated 5G modems and capabilities are now here too. Supporting both sub-6GHz and mmWave 5G capabilities now are flagship processors from leading manufacturers like Huawei, Qualcomm and Samsung.

2021's flagship 5G phones have integrated modems, lending to more power efficiency when hitting peak data speeds and in 2022, as the global chip shortage continues with expectations of a better situation, smartphone device processors may get more improvements.

AP/SoC manufacturers vs in-house customized chipmakers

Qualcomm and MediaTek have been the classic default choices powering smartphone devices. Almost every smartphone or tablet is powered by either a Qualcomm Snapdragon or MediaTek chipset, but phone manufacturers such as Huawei, Samsung, and Apple are stepping up their game by designing their own in-house customized chips to stay competitive, profitable, and sustainable in the market.

Despite the current diversification in the chipset production, the two leading AP/SoC manufacturers are still way ahead of the smartphone chipset market ranking. Based on a Q2 2020 to Q3 2021 report by Counterpoint Research, MediaTek is in the lead at 40%, Qualcomm at 27%, Apple at 15%, UNISOC at 10%, Samsung at 5%, and Huawei's HiSilicon at 2%.

5G chipset makers MediaTek and Qualcomm have announced technical milestones set to increase 5G spectrum utilization, as the two companies go head-to-head for leadership in the growing market for 5G modems. UNISOC, Samsung Electronics, and Huawei follow suit with their own 5G chipsets, while Apple points to 2023 as the earliest possible date for debuting its self-designed 5G modems.

Market overview

MediaTek takes on Qualcomm with a new flagship SoC for premium Android phones. MediaTek Dimensity 9000 is the first 5G SoC to be built on TSMC's 4nm process, which is also pioneering support for Bluetooth v5.3. Qualcomm also introduced a trio of 5G chips for inexpensive smartphones — Snapdragon 778G Plus, 695, and 480 Plus — that feature both ultra-fast 5G mmWave connectivity and sub-6GHz.

2022 is believed to be the last year when Qualcomm supplies all of the modems in iPhone models as it expects to supply just 20 percent of Apple's modem chips in 2023. This falls in line with the suggestive plans that Apple will self-supply up to 80% of the 5G modem chips of its devices during the said timeline, with the help of TSMC. On the other hand, a mid-range SoC for Android-based smartphones and tablets under UNISOC's revamped 5G chipset line Tanggula, UNISOC T770 is the world's first 6nm EUV 5G chip which incorporates a new-gen of AI dedicated acceleration engine.

Amid the global demand boom for chips, Samsung is poised for the best fourth quarter yet on strong semiconductor demand. The Exynos 5G modem supports major networks from sub-6GHz and mmWave spectrums to previous generations in a single chip. It is also paired with RF and supply modulator solutions — Exynos RF and Exynos SM — for reliable and power-efficient performance.

Affected by the US trade ban, Huawei was blocked access to its chip manufacturing partner TSMC, and it could only use its remaining stock of Kirin chips, opting for 4G Snapdragon chips for its smartphones. In 2022, Huawei will be bringing back its HiSilicon chips after its 2-year hiatus. To explain, Huawei's first flagship 5G SoC Kirin 990 5G uses the leading 7nm + EUV process. Previously announced as well is its 5G multi-mode chipset Balong 5000 and the Huawei 5G CPE Pro that provide the world's fastest wireless connections for mobile, home broadband, and on-the-go.

From a general perspective, the 5G chipset market is moderately fragmented, with involved companies in the current market scenario being highly competitive and mostly market incumbents. All of them have equally high R&D capabilities and strategies in place, allowing them to keep up and sustain the high consumer demand.

The global chip shortage situation will be better

Analysts predict that the global chip shortage affected by the pandemic, weather conditions, and the economic conflict between the US and China, is set to drag on until 2022. On a brighter side, the situation could improve from mid-year onwards as the global semiconductor industry is set for a big rebound, with sales expected to cross $600 billion driven by strong demand for consumer electronics.

Strategy Analytics said that application processor (AP) would focus more on 5G in 2022 to maximize their revenue and profit. 2022 would be a breakthrough year for budget smartphones where more chipset players would be seen entering the segment by introducing flagship features to deliver higher clock rate, downlink and uplink speeds, and AI performance. TR

“Analysts predict that the global chip shortage affected by the pandemic, weather conditions, and the economic conflict between the US and China, is set to drag on until 2022”

How APIs impact the telco game

Application programming interfaces (APIs) are widely used in IT and telecom as the need for a secure exposure platform arises to make the development easier, brings agility to the creation of services, and hides complexity. This makes APIs an obvious choice for providers to implement over-restrictive and expensive integration techniques.

Integration is one of the success factors in a company's digital transformation efforts, considering the time and cost required to add new systems and establishing configurations with other devices, systems, and vendors. In fact, the telecom API market is expected to reach over $500 billion by 2026 at a CAGR of over 17% between 2021-2026. As per Mordor Intelligence, rapid innovations in technology, along with the increasing penetration of telecom cloud-based services, would drive the growth of this market.

Traditional API techniques are now made better to further improve business and IT agility, responding to an ever-changing marketplace of opportunities. Open APIs are shifting companies, including telcos, to build more adaptable and robust solutions, reducing complexity, costs and timescales for integration projects.

API-enabled telco services

CSPs have begun exploring APIs, from deploying customer interfaces to communication services. Adopting this new holistic approach brings opportunities to focus on ecosystem enhancement, curated features, easy integration, and seamless end-to-end customer experience.

API implementations should address consumer and service provider needs, exposing core telecom services of CSPs in a very adaptable way that is easy to integrate. With regards to this, the solution should be designed for seamless scaling to ensure progressive growth.

The API-enabled telco services existing today cover voice, messaging, in-app payments, identity management, network monitoring, and customer information. First among various examples is Etisalat's smart CPaaS, a carrier-grade cloud-ready API platform for SMS, voice, video, and verification. This infrastructure is built for high-volume and low-latency experience, for both operators and enterprises, letting them integrate CPaaS applications to scale fast while maintaining better quality and control.

Furthermore, MEF's lifecycle service orchestration (LSO) is enabling end-to-end service orchestration to deliver digital and connectivity services between providers, enterprises, and the cloud. It operates enterprise APIs (customer-to-service-provider interactions), east-west APIs (inter-provider interactions), and north-south APIs (intra-provider interactions).

Nokia's telecom application server (TAS) also provides a superset of services for VoLTE, VoWiFi, and fixed access networks, with open APIs and an integrated Java execution. Thus, it provides a programmable services environment that can be used for voice, messaging, and video sessions for SIP subscribers, either LTE or other broadband access.

In the same context, PCCW Global's Console Connect is an API-enabled, globally accessible, and uncontended MPLS network for secure, automated, and dedicated connections. This trusted Tier 1 global network not only lets customers connect to business-critical applications with just a click but also set up, terminate, change or upgrade connectivity from anywhere.

Another one on the list is Red Hat's API-centric agile integration solution for OSS and BSS processes and systems. It combines multi-vendor products with customer-owned systems via its OpenShift Container Platform and API management solutions to modernize and scale on-demand applications as well as provide API-centric third-party system integration.

Similarly, B-Yond's platform is an API-first, cloud-native microservices architecture taking the power of artificial intelligence for IT operations (AIOps) to keep pace with network data at the production level and informed decision-making through a continuous integration/continuous deployment (CI/CD) approach that minimizes change impact on networks.

With the explosion of IoT, telco APIs are going to grow and provide a massive revenue stream to operators and service providers wishing to monetize network transformation, particularly into 5G.

Open APIs in the 5G world

Telcos have been using APIs as key technology enablers in building new applications, efficiently and conveniently. Serving like digital matchmakers, APIs help supply an unprecedented array of goods and services for customers.

Very evident today is telcos being at the threshold of 5G technology, creating additional requirements for network exposure. Hence, telco API exposure must support access to microservices architecture-based network functions, as well as different customized sets of APIs from the 5G core.

With its openness and programmability, a 5G core network can act as a key service enabler. The new application ecosystem will convey customized programmable assets as a platform for collaboration and innovation among CSPs, and let developers use the open assets to accelerate the development of new apps and services.

CSPs have an important role in the 5G world, where open APIs can be utilized. Thus, new open API-based services can build a successful model to develop consumer services, find the differentiators, and maximize opportunities for monetization.

Open APIs are a driver of the digital platform economy and one of the key strategic assets on the path to digital transformation. In parallel, telecom operators can leave behind the traditional business model and value chain in order to adopt the B2B2X model and deliver digital services to any user.

One use case for this is 5G positioning technologies which provide better support for many industries in terms of enterprise management, security monitoring, emergency rescue, trip monitoring, and the like. These are key driving forces behind 5G innovation, spanning the UE, 5G RAN, and 5G core. Huawei and China Mobile (Shanghai) dedicated a whitepaper to define 5G network positioning APIs of different types and functions, which enable industry customers to access location services and improve collaboration. With these APIs, facilitating geofence, map management, location alarm, and track query, among others, can be done by operators' 5G positioning platforms.

In 5G, CSPs and enterprises can easily expose and activate new capabilities through APIs. This boosts the programmability and adaptability of connectivity services. Ericsson explained that network exposure provides the capability to convert technical features and standardized network APIs in response to addressing a developer community with limited to no telecom experience. On the same line, simplifying 5G programmability involves combining easy-to-use service APIs that hide network complexity. TR

> Traditional API techniques are now made better to further improve business and IT agility, responding to an ever-changing marketplace of opportunities

Huawei moves up to 5th position in obtaining US patents

Staying true to its long history in innovation and intellectual property (IP) management, Huawei has moved up on the list of companies getting the most US patents, according to the study by Fairview Research's IFI Claims Patent Services.

The study has revealed that Huawei received 2,770 US patents in 2021 and ranked No. 5 behind regular top patent-getter International Business Machines Corp.

This development is particularly significant at a time when Huawei's networking equipment faces ban in the American market on charges of being a security threat by US authorities. This charge has been strongly denied by Huawei. Additionally, Huawei has reportedly made huge investments in semiconductor specialists to shore up its defences in the face of ongoing US restrictions.

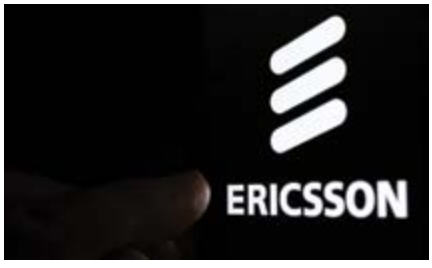
Huawei jumped from ninth place in part because of declines by other companies as the US Patent and Trademark Office issued 7% fewer patents last year. Samsung Electronics Co., Canon Inc. and Taiwan Semiconductor Manufacturing Co. rounded out the top five patent recipients.

Recently, Huawei also ranked second in the 2021 EU Industrial R&D Investment Scoreboard, up from third place in the previous year's edition. The 2021 EU Industrial R&D Investment Scoreboard is a European Commission publication that ranks the research investment levels of 2,500 companies around the world that comprise 90% of the world's business-funded R&D. The report is prepared by the EU Joint Research Centre (JRC).

In a new year message shared with the public, Huawei's rotating chairman Mr. Guo Ping confirmed that the company had enhanced the quality and efficiency of its operations in 2021, and expects to round off the year with a total revenue of 634 billion yuan.

"As long as we press ahead, we will reach our destination. With unwavering effort, we will build a promising future. In the end we will not only survive, but do so sustainably," stressed Mr Ping.

Ericsson enters new round of 5G patent lawsuit with Apple



The leading telecom vendor Ericsson and top device manufacturer Apple are onto another legal battle related to 5G patents.

The clash between the two biggest 5G industry players was restarted as Ericsson reportedly filed another set of patent infringement lawsuits against Apple over the royalty payment for use of 5G wireless patents in iPhones. An Ericsson spokesman stated that Apple is now using its technology without a license.

Looking back, both companies already had a history of legal disputes as negotiations failed over the renewal of its lapsed seven-year global patent license agreement sealed in 2015. Even before the said agreement's expiry, the companies had been lobbing lawsuits against each other. In October 2021, Ericsson sued Apple with accusations of bad faith in negotiations, which Apple responded with a lawsuit in December 2021 claiming Ericsson's strong-arm tactics in negotiations.

It is worthy to note that patent lawsuits are not uncommon among tech companies as every dollar saved could amount to significant amounts. In the case of Ericsson, the company charges between $2.5 to $5 for every 5G handset. Holding over 57,000 patents, royalties from which account for around a third of Ericsson's operating profit.

Following this, Ericsson also filed US trade complaints that seek to block imports of Apple devices, as these allegedly infringe some of its patents. This latest move shows licensing talks between the two parties are not going smoothly.

Apple's previous deal with Ericsson covered 2G, 3G, and 4G, but the companies have so far been unable to reach a new agreement that also covers 5G. Ericsson's previous two licenses with Apple were cross-license agreements signed in two intervals, the first one in 2008 and the second one in 2015.

In parallel, Ericsson previously stated that it reached out to Apple in late 2020 to begin negotiations regarding a new cross-license, given the lengthy process that preceded the execution of the 2015 license.

The two companies are yet to settle the current dispute.

Ericsson upgrades Zain Kuwait's BSS for 5G innovations

Ericsson's full suite of end-to-end BSS solutions will help Zain Kuwait realize its digital transformation goals and drive 5G innovations in the region.

Fadi Pharaon, president of Ericsson Middle East and Africa, said, "Our full suite of Ericsson BSS solutions will not only help Zain Kuwait boost business efficiency but also help them discover and implement new 5G business models. As 5G adoption increases in Kuwait, the upgrade of our BSS solutions will provide the building blocks that will support Zain Kuwait to provide services for industry 4.0, enabling use cases such as smart manufacturing, Internet of Things, and others."

Ericsson's BSS portfolio, which includes solutions such as Ericsson Charging, Ericsson Catalog Manager, Ericsson Order Care, Ericsson Dynamic Activation, and Ericsson Mediation will enable Zain Kuwait to efficiently capitalize on 5G opportunities and also help Zain Kuwait to handle data growth and adapt faster to business needs.

Eaman Al Roudhan, Zain Kuwait's chief executive officer, said, "Through our strategic partnership with Ericsson on their BSS solutions we are building a digital infrastructure backbone that will soon help us deliver high-performance and reliable 5G services to residents and enterprises across the country. Moreover, with 5G driving digitalization around the world, we look forward to leverage connectivity to play a vital role in the digital transformation journey of Kuwait."

Qualcomm builds momentum to define future of automotive

Qualcomm Technologies, Inc. currently serves as the technology provider of choice for the global automotive industry, working alongside global automakers such as BMW Group, General Motors, Hyundai Motor Group, and Renault, who are currently utilizing a broad portfolio of automotive solutions within the company's Snapdragon® Digital Chassis™.

The Snapdragon Digital Chassis is uniquely positioned to accelerate the pace of innovation in the automotive industry. It supports automakers in meeting evolving consumer and enterprise demand for a seamlessly connected, intelligent experience that is safer, smarter, and more immersive. At the same time, it is creating new opportunities for deeper customer engagement and services-based business models on the foundation of a highly scalable hardware-software co-designed architecture.

"Qualcomm Technologies understands automakers' needs for uniqueness and differentiation as well as the tremendous opportunity to redefine the automotive and transportation business model. Through the Snapdragon Digital Chassis, we offer an array of open platforms to rapidly enable connected and intelligent experiences with enhanced safety features," said Nakul Duggal, senior vice president and GM, automotive, Qualcomm Technologies, Inc.

"The Snapdragon Digital Chassis allows platforms to stay continually up-to-date with new capabilities after vehicle purchase, while allowing the automaker to create new features and services for enhanced customer engagement and services-based business models. We look forward to working with the automotive industry as well as our many partners to provide truly transformative innovations that are scalable, extensible and software-defined," added Duggal.

The Snapdragon Digital Chassis is comprised of a set of open and scalable cloud-connected platforms that utilize a unified architecture to support enhanced safety and immersive digital experiences that are updateable throughout the lifetime of next-generation vehicles. This includes the Snapdragon Ride™ Platform, Snapdragon® Cockpit Platform, Snapdragon® Auto Connectivity Platform, and Snapdragon® Car-to-Cloud Services.

The success of the Snapdragon Digital Chassis has been fueled by the growing demand for the breadth of its solutions portfolio and open platform which simplifies broad collaborations with leading automotive companies.

Snapdragon Ride™ Vision System
Alongside this, the company announced the latest addition to the Snapdragon Ride™ Platform portfolio – the Snapdragon Ride™ Vision System – a new open, scalable, and modular computer vision software stack built on a 4nm process technology system-on-chip (SoC) designed for an optimized implementation of front and surround cameras for advanced driver assistance systems (ADAS) and automated driving (AD).

Two new data centers would support UAE's digital ecosystem

Dubai Internet City, the region's largest hub for technology companies and talent, has announced a deal with Khazna Data Centers, one of the largest wholesale data center providers in MENA, to establish two state-of-the-art data centers.

The government's ambition of transforming the UAE into a smart country necessitates the deployment of secure cloud infrastructure and data storage across all industries, from government and residential services to healthcare and manufacturing. Combined with many businesses adopting hybrid work models on the heels of the global pandemic, the volume of digital data has increased significantly in recent years.

Wholesale storage providers such as Khazna will play a critical role in catering to the recording, movement, and security of increasingly large amounts of information. As digital adoption sweeps through the greater MENA region, the opening of data privacy and storage centers can enhance business activity.

Ammar Al Malik, managing director of Dubai Internet City said, "The UAE has been named among the top ten most competitive economies in the world for a second consecutive year, according to the IMD World Competitiveness Ranking 2021, and I believe that building data centers and enhancing the overall technological infrastructure play a key role in providing an investment-friendly environment."

"Dubai Internet City has been a cornerstone of the UAE's ICT strategy for more than two decades, and this agreement marks the next chapter in our commitment to supporting widespread digital transformation to increase our economic competitiveness globally well into the future," added Al Malik.

The two new data centers will be strategically located in Dubai and will feature the unique design of Khazna's data center pods that allow for the rapid scaling of operations when required. Businesses involved in 5G, smart city projects, and cloud computing can also leverage Khazna's technology.

Hassan Al Naqbi, CEO of Khazna Data Centres, said, "The partnership between Khazna and Dubai Internet City will further support the UAE's digital ecosystem, with technology businesses such as cloud computing operators able to achieve the level of connectivity they need to more effectively deliver services to partners, customers, and employees."

"Our aim is to continue partnering alongside industry leaders and decision-makers, offering a dedicated data center space that supports long-term growth strategies for businesses across various industries. From organizations and government entities to hyperscalers, we help our customers meet the demands found in today's competitive and transforming environment through our unique product portfolio and turnkey solutions, supreme energy efficiency, and flexible pricing," explained Al Naqbi.

New $100 million Ethiopian data center set to open

Safaricom Telecommunications Ethiopia, previously known as the Global Partnership for Ethiopia who received the sole license to operate telecom services in Ethiopia, has invested $100 million in their first data center in the country's capital.

Offering insights about the company's first data center, Pedro Rabacal, chief technology officer at Safaricom Ethiopia said that the facility is a pioneer to other data centers that would be established in the country. Having a long journey, the infrastructure is said to be built from Hong Kong, China and shipped to Djibouti before being cleared and transported to Addis Ababa where it would be operated.

About $300 million worth of investment will be allotted into the country in 2022, with more data centers to be rolled out as the company's network grows. Rabacal explained, "As we get more customers, we need more data centers to be able to carry all of the voice, all of the internet. All have to come through a data center such as this one."

The deployment comes as Safaricom looks to launch commercial services in Ethiopia and become the country's second telecoms operator. After successfully completing the data center in Addis Ababa, Safaricom will expand to Adama and Dire Dawa.

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Technology forecasts to watch out for in 2022

The pace of innovation in technology is accelerating at a break-neck speed. Such developments have the power to bring significant business benefits for the organization as well as end-users.

Just recently, the Dubai Electricity and Water Authority (DEWA) successfully launched the world's first nanosatellite to improve the maintenance and planning of electricity and water networks in Dubai, highlighting the trend of using the latest world-class technologies for organizational leadership as well as customer experience. The DEWA-SAT 1 launched on a SpaceX Falcon 9 rocket in Florida, uses LoRa IoT communication technology - a new wireless protocol designed for long-range communications that use less energy, to expand the coverage of the existing terrestrial communication network. Using satellite communications, IoT, and AI will improve the efficiency and effectiveness of DEWA's operations and support digitising energy networks, water distribution and transmission networks. It also enables the integration of IoT data using DEWA's private cloud.

We cannot help but marvel at these technological advancements and their potential to boost productivity and efficiency. However, different elements make all of these technologies function as one. Here are some of the latest tech trends that ICT players should consider exploring in 2022 and beyond.

Hyper-converged data center networks (DCNs)

The pandemic disrupted the industry operations that led many big enterprises to adopt a more nimble, flexible IT approach. Moreover, experts suggest that smaller enterprises will ultimately migrate to the public cloud as their preferred IT strategy. They also believe that edge activity could lead to infrastructure spending, resulting in future data center growth.

Both telecoms operators and cloud service providers have a good reason to expand their reach to the network edge. Bigger enterprises are also likely to deploy edge solutions over their private networks. Keeping up with the pace of innovation, technological advances in the data center Ethernet networking have made it possible and preferable for enterprises to run a lossless, low-latency, highly scalable, and intelligently automated hyper-converged data center network that consolidates functionality and improves overall performance across general-purpose compute environments, storage area networks, and high-performance environments. In addition, such a network offers automated extensibility and elastic scalability in hybrid cloud and multi-cloud environments where Ethernet integration with cloud and orchestration systems is essential. With the increased demand for faster

computing and efficient storage from companies, hyper-converged data centers will remain at the heart of the fast-expanding market for data localisation.

5G wave

With transformative technologies increasingly necessitating full-fledged and robust network capacity, reliable wireless services growth is inevitable. Carriers and mobile operators will benefit in more ways than one from the low-latency, powerful 5G network designed to improve efficiency and empower user experiences. Underpinning the 5G demand among consumers, in China, 5G smartphones accounted for 76% of mobile handset shipments in 2021, compared with 53% in 2020, according to state-run think tank data. Further, Amazon Web Services (AWS) has launched 'AWS Private 5G' - a new managed service designed to make 5G deploy as easy as possible for private networks. AWS Private 5G users can deploy their own 4G/LTE or 5G instantly, scale up and down all the linked devices and fit into the on-demand Cloud computing pricing model. In no time, players in the 5G space will come up with such innovative services that are bound to make things possible beyond one's imagination.

Untethered AR and VR technologies will use 5G to access nearby cloud and edge computing that can transform gaming, training and create new working models, improving the overall customer experience journeys. Imagine virtually walking into stores and being guided through AR glasses to pick up products from the shelves whilst stationed at home. In another instance, imagine connected ambulances that can supply data in real-time to the hospital before the patient's arrival, resulting in well-informed emergency room treatments, etc. Advancements in 5G will drive market behaviours into the foreseeable future.

Cloud security threats

Migration of business operations to the cloud has become a hot topic in the industry to the point of even sounding cliché. However, Gartner predicts that global cloud services spending will reach over US$482 billion in 2022, a 54% increase from 2020's US$313 billion. Along with this growth in cloud adoption, the activities of the nefarious players are bound to shoot up. They will use a variety of attack tactics, comprising of old and new hacks to disrupt operations and fulfill their unlawful desires via unguarded accesses. Enterprises continue to use software-as-a-service (SaaS) applications and solutions and its adoption is set to expand in the coming year.

Gartner forecasts that SaaS users will spend about US$172 billion in 2022, the highest spending among all public cloud services. Since malicious actors are still able to break into cloud service access using the tactics, techniques, and procedures (TTPs) still, the attacks are bound to persist through 2022. Gartner in its 2021 Strategic Roadmap for SASE Convergence report suggests security and risk management leaders develop migration plans from the legacy perimeter and hardware-based offerings to a SASE model that brings together SD-WAN and comprehensive cloud-delivered security services including zero-trust network access (ZTNA), firewall as a service, secure web gateway (SWG), and cloud access security broker (CASB) into a unified architectural framework.

Container technology

Cloud computing as a digital transformation initiative will be crucial throughout 2022 along with demands for skillsets in configuration, security, deployment, and troubleshooting for cloud services, according to industry observers. The 2021 Open Source Jobs Report states that a majority of hiring managers are looking for cloud and container technology skills. Containers are a common option for deploying and managing software in the cloud. Containerized applications are easier to migrate to the cloud. They are efficient in leveraging the extensive automation capabilities of the cloud as they can easily be deployed, cloned, or modified using APIs provided by the container engine or orchestrator. In addition to capabilities across the major public cloud infrastructure platforms, skills around Kubernetes and cloud DevOps services will also see market demand.

Hyperautomation

The automation of business tasks, services, and network operations has proven its efficiency for organizational agility and profitability. Automation must be a part of operators' strategic initiative to maximize the speed and agility of 5G deployment and operations. As an augmentation, hyper-automation is an extension of the automation drive. Gartner defines hyper-automation as a combination of tools, including robotic process automation (RPA), intelligent business management software (iBPMS) and AI, with a goal of increasingly AI-driven decision making to quickly identify, evaluate, and automate as many business and IT processes as possible. Hyperautomation enables scalability, remote operation, and business model disruption.

AI Engineering

Artificial intelligence is the most transformative opportunity in business and IT today. However, organizations, including telcos are still struggling to fully leverage the potential of this new technology. If on the one hand the prospect of implementing AI to operations is exciting, mitigating failures has become a real challenge. AI engineering is the answer to it. AI engineering is a discipline of operationalizing AI models using better-integrated data pipelines, more automated model development with strong governance built into it, and also automating the deployment of these models into production environments. AI can help telcos effectively personalize customer relationships through one-to-one contacts, configure fixed-line and mobile-network bundles that combine VPN, teleconferencing, and productivity apps, etc. Since cutting-edge tools like AI/ML, and automation become must-have features for growing businesses, AI engineering will provide a solid structure to proactively design AI systems to function in environments where complexity, ambiguity and dynamism are part and parcel of daily operations. TR

Closing the gap in IoT devices and cyber threats

In today's cloud-connected world, user and enterprise security is demanding new ways of developing and modeling IT infrastructure as connectivity moves closer to the edge.

End-point edge devices enabled by IoT technology have become the latest weak links for unauthorized access to company networks and red flags are being raised far too often.

Recent stats show that 86% of Middle East IT leaders (global average: 81%) have agreed that the shift to remote working during the pandemic has led to an increased risk and vulnerability from unsecured IoT devices on their organisations' business networks.

While 93% of Middle East IT decision-makers (global average: 85%) have enough visibility into IoT devices of their remote workers that connect to the corporate network, reports shows that 91% of Middle East IT Leaders believe their organisation's approach to IoT security requires improvement.

Although 100% of the respondents surveyed in the Middle East have a specific IoT security strategy in place, many personal IoT devices are increasingly being connected to corporate networks by remote workers, opening new opportunities for hackers to break into organisations to launch ransomware attacks, steal data and launch crypto-jacking operations.

Conversely, governments across the region are witnessing a buildup of

complexity in their IT infrastructure during the COVID-19 crisis, including a higher risk from endpoint security brought about by remote working. A recent KPMG survey of UAE business stakeholders reported some 61% of respondents being concerned about phishing scams, 54% about email spamming, and 42% wary about ransomware incidents. Regional government authorities have often been prime targets of cybercriminals.

Cybersecurity leader Symantec researchers have pointed out that attackers rely on a mixture of legitimate remote administration and security assessment tools, and publicly available malware. After breaking into a network, the attackers stole credentials and moved laterally across the network.

In some cases, compromised organizations may have been used as a bridge to target additional victims, while others may have been compromised solely to perform supply-chain type attacks on yet other organizations, according to the researchers.

Hence, technology that effortlessly fits in with existing deployments to give customers more visibility across their network, accurate threat detection, and actionable data-driven information for interoperability in operational technology (OT), information technology (IT), and IoT environments is of utmost importance. Delivery of fast, reliable, and secure connectivity to the hybrid work era and beyond seems to be a constant challenge for network engineers and operators.

Intelligence-driven methods

To counter-attack this growing cyber menace, Etisalat has collaborated with Abu Dhabi Digital Authority (ADDA) along with Trend Micro Incorporated to launch Cyber Eye – an initiative designed to strengthen the Abu Dhabi Government entities' cybersecurity capabilities.

As part of Abu Dhabi government's cybersecurity strategy, Cyber Eye will employ first-in-class technology and systems to identify cyber threats in real-time and take effective and proactive actions to mitigate risks and increase protection, further strengthening the security of Abu Dhabi government entities digital assets. Etisalat is currently leveraging its wide range of digital technologies and services and powering a great digital-first experience to encourage digital adoption by its customers.

Considering the rise in ransomware attacks that have the potential to cripple organizations in their operations, especially with the trend in remote work culture, adoption of solid cybersecurity management to protect core IT services, with special emphasis on end-point devices connected to the networks should be implemented at an organizational level.

Expert suggestions

Starting with the router: All IoT devices connect to the internet through routers. Changing the default settings to something relatively difficult or unique is important. The network should then be encrypted by simply updating router settings to either WPA3 Personal or WPA2 Personal.

Making data inaccessible: Backup data, system images, and configurations must be tested regularly. Backups are best kept offline and not connected to the business network because ransomware can encrypt network data, disabling restoration of systems.

Patch management program: Timely maintenance of the security of operating systems, applications, and firmware is key. The use of a centralized patch management system with a risk-based assessment strategy is highly recommended.

Segmentation of networks: Corporate business functions and manufacturing/ production operations should be kept separate, limiting internet access to operational networks and identifying connections between the two networks. Develop workarounds or manual controls to ensure industrial control systems (ICS) networks can be isolated and continue operating if the corporate network is compromised.

Strengthening DNS security: Most ransomware and malware use DNS for cyberattacks. DNS may be used during the reconnaissance phase when it is a targeted attack. Using threat intelligence and analytics on internal DNS can detect and block improper activity early before ransomware spreads or downloads the encryption software.

Internal security checks: Using a third-party pen tester to test the security of internal systems and their capacity to defend against a sophisticated attack is always a sane strategy. Even the use of digital twins to simulate potential attack threats can go a long way in protecting the overlooked attack surfaces.

In light of the pace at which digital transformation is encompassing every sector and industry, the flexibility and agility provided by edge technology are relevant and timely. However, it is the prerogative of organizations as well as individuals to build a strong security posture, through the orchestration and the use of security intelligence and adoption of the cybersecurity best practices that involve the whole organization. TR

3GPP commences 6 GHz IMT licensed spectrum standardization

The 3GPP RAN Plenary has rolled out the standardization work of U6G (upper 6G, 6425–7125 MHz) as a new IMT licensed frequency band, and planned to complete in 2022. This marks a milestone in the industrialization of 6GHz.

Mobile broadband has been strategically deployed in many countries, and IMT sustainability is the key to digital transformation at a national level. Global mobile communications industry organization GSMA calls to release 2GHz and above medium frequency in 2025-2030 to meet the requirement of International Telecommunication Union (ITU).

6 GHz is one of the optimal bands in medium frequency to provide seamless wide-area coverage and high-capacity connections. It is essential to sustain a healthy IMT development. Licensing 6 GHz to IMT services will facilitate management and help the industry fulfill higher requirements. Mobile networks will create more economic and social value than any other wireless technology, therefore, it justifies the mobile industry's bid for more spectrum reserve. Global collaboration is imperative to developing a 6 GHz IMT ecosystem and making it commercially available by 2023.

As a global mobile industry standards organization, 3GPP has initiated the standardization of U6G, which will be completed in 2022. It is a critical step towards the global launch and will provide future industry chain a standard basis for the research and development of 6 GHz products.

MTN Zambia partners with Huawei to launch the country's first 5G network

MTN Zambia, together with Huawei, launched the country's first 5G network, making the operator Zambia's first 5G service provider, thus paving the way for the new ear of mobile network in the country. This step promises significant technological improvements that will enhance faster connectivity speed, ultra – low latency and greater bandwidth.

5G cellular networks are at least 10 times faster than 4G which creates never-before-seen opportunities for people and businesses in Zambia. 5G technology can connect virtually everyone and everything, including machines, objects, and devices.

According to MTN Zambia, they "are moving into an era of ubiquitous connectivity and as MTN Zambia we will be rolling out 5G pilot demonstration sites in Lusaka and Copperbelt Provinces and we are eager to set up specific and relevant use cases together with our Zambian customers and partners to expand social and commercial horizons, alongside the rest of the world. We recognise the continuous support from ZICTA and our partner Huawei in successfully launching the 5G platform."

MTN Zambia CEO, Bart Hofker thanked the Government for making 5G pilot a priority and making it as part of its 100 days promise. He also applauded Huawei for offering its technical support and always being on board to ensure that the project comes to fruition.

ZTE and China Unicom jointly complete PoC of computing power network service scheduling

ZTE and China Unicom have jointly completed Proof of Concept (PoC) of computing power network service scheduling.

This PoC, based on the SDN+SRv6 Policy framework, achieves flexible scheduling of value-added services across multiple resource pools, and completes integrated scheduling of computing power network. Thus, it provides a basis for further exploration into the application of computing power network and lays foundation for future commercial deployments of computing power network.

The computing power network is a new focus of the development of the digital economy and intelligent society. By introducing new frameworks and technologies, it implements integrated scheduling of computing, storage and network resources, and optimizes resource utilization and user experiences. Therefore, accelerating the development of the computing power networks has become one of the most important strategies of operators.

ZTE and China Unicom have been jointly promoting cooperation on computing power network, actively exploring cutting-edge technologies and innovations, and continuously investigating deployment scenarios of computing power network, to achieve a win-win of computing power network.

In this PoC, the network value-added service scheduling, based on the computing power status perception, was set as the basic scenario. Virtual value-added services were deployed in multiple resource pools, and streaming media AI reasoning services were used based on the computing power network service orchestration system developed by China Unicom Research Institute.

Intelsat now has four software-defined satellites in production

Intelsat, operator of the world's largest integrated satellite and terrestrial network, and Thales Alenia Space have signed an agreement to build two software-defined satellites designed to advance Intelsat's global fabric of software-defined GEO connectivity as part of its 5G software-defined network.

Intelsat 41 (IS-41) and Intelsat 44 (IS-44), the two next-generation software-defined satellites scheduled to be in service in 2025, are an essential advancement in Intelsat's 5G software-defined network designed to enable greater agility, flexibility, and orchestration across the edge, satellite, and core. They will join the two previously announced Airbus-constructed software-defined satellites, Intelsat 42 (IS-42) and Intelsat 43 (IS-43).

"Intelsat's standards-based, open-architecture network design facilitates the incorporation of the best technology at any given time, further bolstering network resiliency," said Stephen Spengler, CEO of Intelsat. "With the addition of Intelsat 41 and Intelsat 44, in partnership with Thales Alenia Space, Intelsat will blanket the earth with software-defined satellites, progressing the world's first global 5G software-defined network, designed to unify the global telecoms ecosystem."

Intelsat 41 and Intelsat 44 will be based on the Thales Alenia Space's innovative Space Inspire product line allowing seamless telecommunications mission and services reconfiguration, instant in-orbit adjustment to broadband connectivity demand, and superior video broadcasting performance while maximizing the effective use of the satellite resources.

M1 partners with AWS to improve customer experiences

M1 Limited (M1), one of Singapore's leading Mobile Network Operators (MNO), announced its collaboration with Amazon Web Services (AWS), to launch Maxine, a VoiceBot for M1's hotlines.

Maxine is built on Amazon Connect, AWS's omnichannel cloud-based contact center service that helps improve contact center agent productivity and end-user customer experiences. Powered by AWS Artificial Intelligence (AI) technologies such as automatic speech recognition and natural language understanding, Maxine is able to engage in more lifelike conversations with customers. Combined with M1's Session Initiation Protocol (SIP) trunk services for high quality digital voice communication, Maxine will help improve end-user customer experiences by engaging them in open-ended conversations instead of menu-driven interfaces.

Since Maxine's rollout in the last quarter of 2021, M1 is seeing an improved performance to the existing call system with the VoiceBot performing sophisticated functions such as authentication of callers with a One-Time Pin (OTP), or sharing the customer's position in the call queue and estimated waiting time. In comparison with December 2020, M1's Net Promoter Score (NPS) for December 2021 has seen a marked 40% increase, largely attributed to Maxine's ability to capture callers' intentions which then improves call agent productivity by freeing them up to focus on more complex cases.

The deployment of Maxine is part of M1's continuous transformation journey to be a digital platform. As a cloud native solution, M1 is able to regularly develop and deploy new and incremental features and capabilities that enhance Maxine's services.

The easy to use and quick to deploy solution enables M1 to scale up and down in a short period of time. It also provides call center agents the flexibility they need to work remotely, without compromising the customer experience.

SES Government Solutions to deliver X-band capacity in EMEA

SES Government Solutions, a wholly-owned subsidiary of SES, launches tactiXs, a mission-specific managed service platform, in partnership with Network Innovations and GovSat.

The full end-to-end managed service provides practical, cost-effective solutions to mission parameters by allowing the customer to purchase a volume-based Mbps service, as opposed to MHz bandwidth agreements, whilst ensuring the security and performance of the connectivity service. Leveraging the GovSat-1 satellite, tactiXs delivers secure, non-preemptible X-band capacity to customers on an on-demand basis across any domain or austere environment in Europe, Africa, and the Middle East.

Utilizing high-powered, steerable spot beams that can be quickly repositioned to provide robust coverage makes this solution well suited for any US military or government-based mission as well, whether it be comms-on-the-move or comms-on-the-pause.

tactiXs can support a myriad of use cases required by military users, including covert missions and various types of special ops. The GovSat-1 satellite connectivity is ideally paired with the capabilities of the tactiXs platform and has all the key attributes of MILSATCOM such as anti-jam, encrypted telemetry & control, and secure beam steering & control. It can also augment the wideband global SATCOM system (WGS) with secure X- and Mil Ka-band capabilities.

MWC 2022 Barcelona

MWC Barcelona is the world's most influential event for the connectivity industry. It's where world-leading companies and trailblazers share the latest thought leadership about the progression and future of connectivity.

Place: Fira Gran Via, Barcelona, Spain

28 - 03 FEBRUARY - MARCH

ICT Maghreb

ICT MAGHREB 2022 is a professional exhibition on information and communication technologies reserved for IT decision makers. More than 40 keynote experts, talks, conferences debates and workshops are organized over three days attracting a keen interest of the public.

Place: Palais de la culture Moufdi Zakaria, Algiers, Algeria

14 - 16 MARCH

GISEC

A most established networking and business epicenter for the cyber and IT security industry, GISEC 2022 builds on its decades of relationships with the global InfoSec community, corporate leaders, end-users from government and major buyers of cybersecurity solutions.

Place: Dubai World Trade Center

21 - 23 MARCH

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: Virtual and physical

07 - 08 DECEMBER

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