TELETIMES MEDIA LLC

INTERNATIONAL teletimes

Issue 208
December
2022

The latest in Telecom, ICT and SatCom sectors of the Middle East, Asia and Africa

UAE Space Agency launches Space Data Center Project

Jordan 5G launch roadmap taking shape

e& launches FutureNow Sustainability Call

Sarah Bint Yousif Al Amiri
Minister of State and Chairperson of UAE Space Agency


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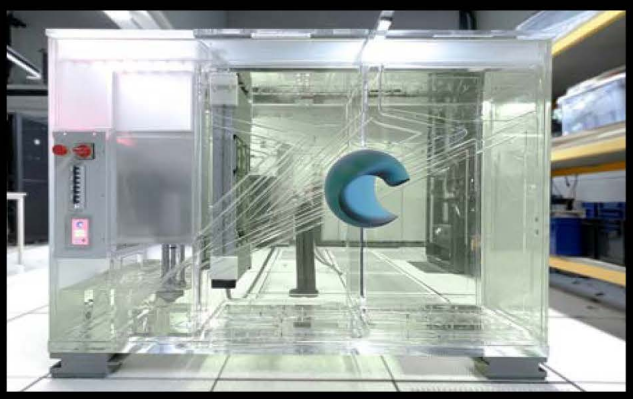

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TELETIMES MEDIA LLC

www.teletimesinternational.com info@teletimesinternational.com

Vol: 17 Issue: 12 December 2022 ABC Certified

Printer: Khursheed Printers (Pvt) Ltd.

17th YEAR OF PUBLICATION

Recipient of

"MEA Business Award 2021 for Best Telecom Publication"
"Best IT & Telecoms News Outlet Award 2020"
"International Arch of Europe Award for Quality"
"Teradata ICT Excellence Award for Media"

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TELETIMES MEDIA LLC.
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Dubai - UAE
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Media Partner to:

	US$	AED	SAR	PKR	€	GBP
Price per copy	8	25	25	500	7	5
One year	80	250	250	5000	70	50

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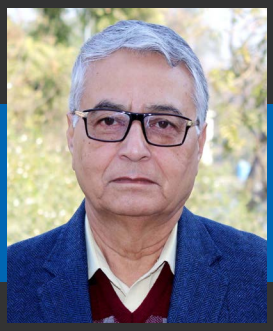

Dear Readers,

Welcome to 2022's latest and last edition of Teletimes International.

The end of a year always makes us all look back at what we've achieved throughout the year and coming out into a post-covid world this year, I think we all did much better than what could have been. The happiest moment for me during this year was looking at that clip of a Speedtest done during the world cup game between Argentina and Netherlands that displayed over 800 Mbps download speed amongst tens of thousands of people in a jam-packed stadium. 5G is here and is powering experiences all across the globe.

Powering these experiences and the 5G technology are the vendors behind the CSPs who must be recognized for their efforts. This edition includes three interviews with key executives from the two major vendors in this space powering the radio networks that deliver these high speeds and these amazing experiences. In these interviews, William Dong, President of Marketing Department, Huawei Cloud talks about Huawei's cloud approach and an "Everything as a Service" strategy, Shunli Wang, Vice President of Huawei Middle East talks about the deep seeded focus on innovation in Huawei's strategy and Ekow Nelson, Country General Manager UAE and VP at Ericsson, talks about Ericsson's focus on CSP success and it's Sustainability agenda.

You will also find some interesting editorial in this edition. Two articles I would definitely recommend are "The Future of Billing for the Telecom Industry" by Maxim Nartov - Chief Business Officer, Nexign and "Metaverse presents a Multi-Billion Dollar opportunity for Middle East Telcos" by Arthur D. Little, Middle East.

As always, you will also find the latest news and updates from across the industry in this edition of Teletimes. Your feedback is welcome on info@teletimesinternational.com

A Happy New Year in advance to all of you!

Khalid Athar
Chief Editor

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ITU's "Facts and Figures 2022" provides latest on global connectivity amid economic downturn

Internet more affordable and widespread, but world's poorest still shut off from Online opportunities

The cost of Internet services has inched downward across the globe in 2022, according to Facts and Figures, the annual worldwide overview on the state of digital connectivity from the International Telecommunication Union (ITU).

The Internet has become more affordable in all regions of the world and among all income groups, based on the assessment from ITU, the United Nations specialized agency for information and communication technologies (ICTs). Cost, however, remains a major obstacle to Internet access, especially in low-income economies. The current global economic situation – with high inflation, rising interest rates, and deep uncertainty – could add to the challenge of extending Internet reach in lower-income areas.

"The Internet may be more affordable overall, but for billions of people around the world, it is just as out of reach as ever," said ITU Secretary-General Houlin Zhao. "We need to keep Internet affordability moving in the right direction even as the global downturn cuts deeper into the economic prospects of many countries."

Houlin Zhao - *Secretary General, ITU*

ITU's Facts and Figures series features estimates for key connectivity indicators for the world, regions, and selected country groups. The assessment provides context on the evolving digital divide while also reviewing progress towards closing it.

Earlier this year, ITU reported that 2.7 billion people – roughly one-third of the global population – remain unconnected to the Internet. The figure was an improvement from 2021 but revealed a levelling off from the strong connectivity gains made during the onset and height of the COVID-19 pandemic.

"Access to the Internet is increasing, but not as quickly and evenly across the world

as it needs to," said Doreen Bogdan-Martin, Director of ITU's Telecommunication Development Bureau and ITU Secretary-General-elect. "Too many people still live in digital darkness. Our global challenge is to commit the resources that would allow everyone to benefit in a meaningful way from being connected."

Prices lower but still too high for too many

According to Facts and Figures 2022, the global median price of mobile-broadband services dropped from 1.9 per cent to 1.5 per cent of average gross national income (GNI) per capita. Mobile broadband allows users to access the Internet from a smartphone. The affordability of this service has become a benchmark for global Internet use, since it provides relatively inexpensive access compared to fixed Internet service.

Still, for the average consumer in most low-income economies, the cost of fixed or mobile broadband services remains too high.

A basic mobile data plan in these countries was found to cost on average 9 per cent of average income. This represents a slight decrease from 2021, but it remains many times greater than the cost of similar services in higher-income countries. The result is that those who can least afford broadband service – and that could benefit the most from it – are paying the highest amounts in relative terms.

Earlier this year, ITU and the Office of the UN Secretary-General's Envoy on Technology announced ambitious targets for universal and meaningful digital connectivity to be achieved by 2030. Affordability, defined as the availability of broadband access at a price that is less than 2 per cent of monthly GNI per capita, was identified as a priority to ensure that everyone can benefit fully from connectivity.

Among the economies for which data are available for both 2021 and 2022, more countries met the 2 per cent affordability target in 2022 across the different types

Doreen Bogdan Martin - Director of ITU's Telecommunication Development Bureau and ITU Secretary-General-elect

of services.

A gender gap within the digital divide

Although women account for close to half the world's population, 259 million fewer women have access to the Internet than men. Only 63 per cent of women are using the Internet in 2022 compared to 69 per cent of men, according to Facts and Figures 2022. The gender gap is even more concerning in lower-income nations in which 21 per cent of women are online compared to 32 per cent of men, a figure that has not improved since 2019.

Overall, the world has moved closer toward gender parity over the last three years. Gender parity is defined as when the female percentage of Internet users divided by the male percentage stands between 0.98 and 1.02. The gender parity score improved from 0.90 in 2019 to 0.92 in 2022.

Generally, regions with the highest Internet use also have the highest gender parity scores. Conversely, many of the world's least developed and vulnerable economies feature low Internet use, a low gender parity score, and limited progress toward gender parity over the last three years.

Mobile phone ownership continues to rise

For the first time, ITU's Facts and Figures features global and regional estimates for mobile phone ownership, revealing that almost three-quarters of the global population aged 10 and over own a mobile phone in 2022. Mobile phones are the most common gateway to Internet use, with the percentage of ownership serving as an indicator of Internet availability and access.

Ownership of mobile phones, however, remains higher than Internet use, especially in lower-income countries. Reliance on mobile-cellular service could be a further indication of the impact of costs, with overall prices for cellular-only service being less expensive than broadband.

Young Internet users cross a digital threshold

According to Facts and Figures 2022, youth aged 15-24 years are the driving force of connectivity, with 75 per cent of young people worldwide now able to use the Internet, up from 72 per cent in 2021. Use among the rest of the population is estimated at 65 per cent.

Universality, defined as more than 95 per cent Internet use, has already been reached among the youth 15-24 age group in high- and upper-middle-income economies. Low-income economies feature the biggest generation gap, with 39 per cent of young people using the Internet, compared to only 23 per cent of the rest of the population.

Among other findings in Facts and Figures 2022, mobile-broadband subscriptions continue to grow fast and are approaching mobile-cellular subscription rates, which are plateauing. Fixed broadband subscriptions also continue to grow steadily, but low digital skills remain an obstacle that keeps individuals from fully realizing the benefits of being online, as well as limiting their ability to avoid its dangers.

Detailed global, regional, and country-level analysis for five price plans tracked by ITU, as well as the full 2022 country-level dataset for ICT prices, will be released in 2023.

UAE Space Agency launches Space Data Center Project

H.E. Sarah Bint Yousif Al Amiri
UAE Minister of State for Public Education and Advanced Technology and Chairperson, UAE Space Agency

On the sideline of its participation with the UAE delegation at 2022 United Nations Climate Change Conference (COP27), hosted in Egypt between November 6-18, the UAE Space Agency (UAESA) launched the Space Data Center, a digital platform providing scientists, scholars, public and private entities, start-ups, and community members with access to space data to develop solutions for national and global challenges. The Space Data Center is part of the transformational projects launched by the UAE's government, aiming to realize the vision of His Highness Sheikh Mohammed bin Rashid Al Maktoum, Vice President and Prime Minister of the UAE, to focus on creating the world's best and most active economy.

The Space Data Center aims to provide an innovative ecosystem to utilize space data and technologies to address global sustainability challenges, promote space-related solutions to overcome national challenges, and boost the number of companies and patents in the space industry. The initiatives also help attract leading innovators, accelerate the development process of space products, and increase productivity in scientific research to provide people with a better life, by utilizing space-related applications and services.

In cooperation with Ministry of Climate Change and Environment (MOCCAE), the UAESA also announced that Farmin, the Emirati AI and remote sensing technologies start-up, won the Climate Change challenge. UAESA recently launched this challenge as part of the Space Analytics and Solutions (SAS) Program, along with other initiatives, including Food Security, Climate Change, Environmental and Vegetation Monitoring, infrastructure, and Energy.

"The UAE's participation at COP27 is a clear indication of its keenness to invest in the future, based on its deep-rooted belief in the significance of knowledge in the global fight against climate change. We are always working on launching new initiatives and projects and adopt the latest technologies to address climate-related challenges and promote sustainability to protect the environment and biodiversity on our planet," said Her Excellency Sarah Bint Yousif Al Amiri, Minister of State for Public Education and Advanced Technology, Chairperson of UAE Space Agency.

The winning application, created by Farmin, supports the efforts to fight climate change, and enhances the monitoring of GHG emissions in the Arabian Peninsula by utilizing AI and global, updated, and commonly available remote sensing data.

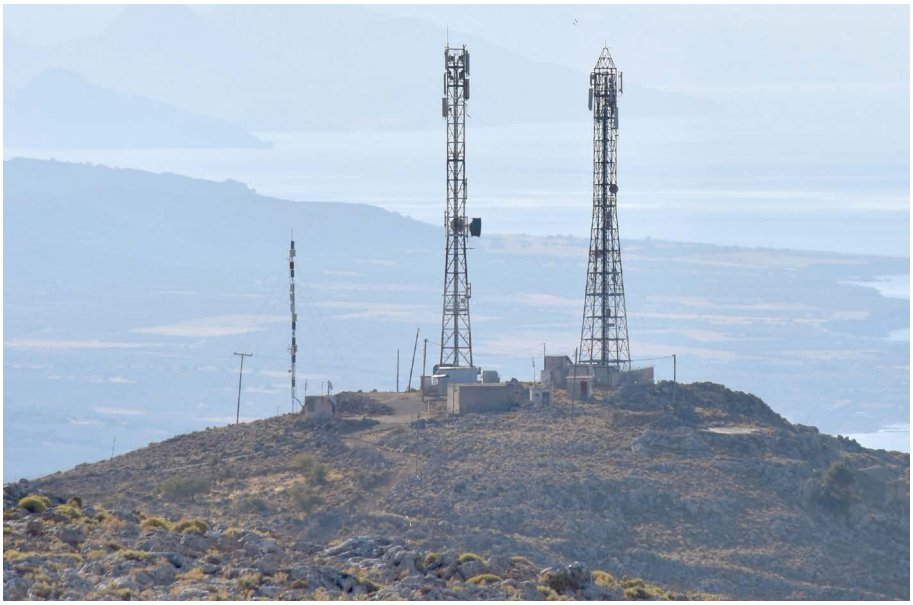
Salem Butti Salem Al Qubaisi, Director-General of the UAE Space Agency said: "During our participation in COP27, The UAESA will launch several projects and initiatives, aiming to realize our vision to support the global space industry and scientific activities. This goal is perfectly aligned with the aspirations of the UAE's wise leadership to become a leading hub for relevant projects and initiatives, including the Space Data Center, the first digital platform to provide scientists, scholars, public and private entities, start-ups, and members of the community with access to space data, as well as Farmin's winning climate change application. Our priority is to support start-ups, entrepreneurs, and scholars, which is perfectly aligned with our vision to develop space solutions and applications to promote the UAE as a regional hub for space innovation."

The UAE took several steps to fight climate change, reduce GHG emissions and burning of natural gas, while increasing the efficiency and investments in clean energy. These efforts are supported by mapping, and sustainably managing GHG emissions through an integrated system, with the help of remote sensing technologies.T

Khalid Athar

Jordan 5G launch roadmap taking shape

Jordan has taken the first steps towards formalizing 5G adoption. The initiative came after "Royal directives to create an investment environment capable of providing services and boost partnerships with the private sector. His Majesty King Abdullah was always keen to support the telecom sector and its benefits for future generations and its role as "a pillar to develop all other sectors.



Introducing 5G technology is a move that aims to empower Jordan to bring advanced serves to the market. Minister of Digital Economy and Entrepreneurship Ahmed Al-Hanandeh announced the deal with 3 telecom operators in Jordan was needed to bring the telecoms sector in Jordan up to standard to support the broader plans to modernize the economy and enable other sectors.

Paving the Way to 5G in Jordan

The TRC was keen on preparing the requirements and appropriate environment to accommodate 5G services in the local market in coordination with the service providers. TRC said that goal is to introduce the advanced 5G services in the near future and make it available at a reasonable cost and also bring investors from the private sector.

> *Introducing 5G technology is a move that aims to empower Jordan to bring advanced serves to the market.*

This year in August, TRC signed an agreement with two operators, Orange and Umniah, followed by an agreement with Zain in September in preparation for the introduction of 5G services in the kingdom. The agreement target is to boost investment and competition in the telecommunications sector in Jordan and support the development of telecom infrastructure at a time when data demand in particular is rising.

By the time of announcing the deals with the 3 operators, chairman of TRC Board of Commissioners Bassam Al-Sarhan said 5G would require more massive investments to infrastructure. Data demand in the kingdom has steadily risen over the years which has spurred the government to launch measures to encourage growth in telecoms.

At the end of 2021, Tareq Al-Bitar, Corporate Communications and Sustainability Director at Zain Jordan, raised in an interview with Jordan News concerns about the limitations of working within the sector to introduce the new 5G network. "The current regulations, restrictions and limitations imposed on the telecom sector, in addition to the prices of frequencies which may stand in the way of achieving this ambition. These current restrictions call for an action from the government to review the regulations governing the sector's work, to encourage operators to work on rolling out 5G services, and remove any restrictions that may prevent them from being able to invest in such advanced technology," he said.

Stimulus Package to Operators

However, as the capital investment in Jordan telecommunications industry seems to be down a stimulus package came with the agreements done with the 3 telecom operators. The package includes extending the duration of telecommunications

carriers' licences up to 10 years, reconciling pending issues, achieving technology neutrality and providing motivational discounts when buying cellular frequencies as well as providing licences for 5G. The government will receive a 10% share of the revenues that 5G provides for local operators.

Each licensor has to provide 5G services to no less than 50 per cent of the Kingdom's population (estimated at slightly over 11 million in 2021) within four years of the license date. Coverage must increase by five per cent annually until 75 per cent or more of the population is connected.

Since the use of high-frequency capacities characterizes 5G networks will increase the speed of downloading and uploading data to and from the internet in comparison to its 4G and 3G predecessors and making the 5G network most useful for content services, the Internet of Things, and artificial intelligence. Both business and consumers will have wide range of new digital solutions and services expected to boost efficiency and reduce costs within all sectors and industries.

5G Bidding Process and Spectrum

The bidding process of 5G business between operators and 5G vendors is currently going on. Huawei, Ericsson, Nokia, CISCO and ZTE is competing in different categories of the 5G business such as microwave, core and wireless. Operators did not make any announcements about the bidding process and TRC did not announce the official launch date of the 5G in the kingdom yet. TRC was keen on preparing the regulatory studies necessary to operate the 5G services in the Kingdom and providing the required support to operators considering that launching the 5G services for commercial use requires time and consultation with the responsible companies.

Spectrum will play a key role in the type of 5G service that operators will be able to provide to their customers in Jordan. High-band spectrum clearly provides the anticipated leap in data speed, capacity, quality and low latency promised by 5G. As per TRC, the networks use frequency packets in several bands; the first is less than 1GHz. The second is between 3400–3800MHz, and the third is the 26GHz or higher bands. It was reported by Jordan media that licensees will receive the 5G frequencies within one month of signing the agreement. They must launch the 5G services commercially in a period of no more than 18 months from the license date. Each licensor will also be committed to cover Jordan's main regions and industrial and commercial areas within three years of the license date.

***Bassam Al-Sarhan** - Chairman, TRC Board of Commissioners*

***Tareq Al-Bitar** - Corporate Communications and Sustainability Director, Zain Jordan*

Providing fair competition environment to all vendors competing for 5G business with operators is an area with question marks. Whether geopolitical influence will be present in the bidding process of the Chinese vendors Huawei and ZTE as it is the case in the US, Australia, Canada and some European markets is still unclear. Operators seems to be keen to build on their strategic long-term network business relationship with the Chinese vendor Huawei who already largely exists in their networks. However, some says that the government may tend to offer more incentives to operators who does not use Huawei. The extra incentive might be represented in free frequencies of 20 Mega over 5 years & putting more pressure on the Chinese vendor bidding and the overall fairness of the process.

The competition is expected to be fierce between the global vendors bidding for operators 5G business. Huawei may have already raised the bar of the competition as it is already moving to 5.5G, the next evolution of 5G which the company introduced this month in details in the MENA ICT Forum and exhibition in Jordan, with not only the 5.5G advantages was highlighted, but also the integration capabilities with cloud and AI, the green sites and sustainability aspects of telecom networks and ICT in general. 10 Gbps downlink, 1 Gbps uplink, support for 100 billion connections, and native intelligence are the key features of 5.5G.

The implementation of 5 technology in Jordan is considered a positive move due to the benefits and advanced features of this technology. 5G will offer a wide range of facilitations to businesses and grant citizens innovative and diversified services. 5G will create new value for social development and industry upgrades, supporting the achievement of the digital transformation and socio-economic growth goals, in line with Jordan Economic Modernization Vision.

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Huawei signs global ITU pledge to help 120 million people in remote areas connect to the digital world

***Liang Hua** - Chairman, Huawei*

Huawei has signed a global commitment to join the International Telecommunication Union's Partner2Connect digital alliance, which will bring connectivity to about 120 million people in remote areas in more than 80 countries by 2025.

Liang Hua, Chairman of Huawei, announced the decision at the company's 2022 Sustainability Forum, Connectivity+: Innovate for Impact. The forum explored how ICT innovation could unleash the business and social value of connectivity and drive sustainability in the digital economy era.

Speakers at the event included senior leaders from the ITU and United Nations, telecom ministers and regulators in Cambodia, Nigeria, Bangladesh, and Pakistan, and business leaders, partners, experts, and customers from China, South Africa, Belgium, and Germany.

"It is clear connectivity alone is not enough. It must be affordable, the content must be relevant and in the local language, and users must have the skills to make best use of it," said ITU Deputy Secretary-General Malcolm Johnson. "Thank you to Huawei for their support of the Partner2Connect (P2C) Digital Coalition, and for their announced P2C pledges in the key areas of rural connectivity and digital skills."

Siddharth Chatterjee, United Nations Resident Coordinator in China, called for "multi-stakeholder partnerships" of policymakers, the private sector, academia, and civil society to close "the sobering reality" of a digital divide which excluded a third of the global population.

"Our dynamic world urgently needs improved digital cooperation to capitalize on the transformational potential of technology to create new jobs, boost financial inclusion, close the gender gap, spur a green recovery and redesign our world to be more prosperous and inclusive," he said. "Now is the time to act".

In his keynote address, Dr Liang stressed that access to a stable network was a basic requirement and right in the digital age. For many who remain unconnected, access to reliable connectivity would mark the first step towards transforming their lives.

"Connectivity will be more than just a tool for convenient communications," he said. "Together with digital technologies like cloud and AI, connectivity will help bring everyone into the digital world, and provide them with access to more information and skills, better services, and wider business

Malcolm Johnson *- Deputy Secretary General, ITU*

opportunities. This will, in turn, drive further social and economic development."

Cao Ming, President of Huawei Wireless Solution, said: "As an enterprise with the most complete ICT capabilities, Huawei integrates the full-technology innovation potential of equipment, sites, energy, transmission, and antennas to address the difficulties faced by traditional site deployment, such as high costs, restricted transportation, lack of power, and maintenance challenges. We have continuously upgraded the RuralStar and RuralLink solutions to extend quality coverage to remote areas, enabling more people, community hospitals, schools, local governments, and small- and medium-sized enterprises to enjoy the same high-speed broadband connectivity experiences as those in cities".

The RuralStar series solutions have provided connections for more than 60 million people in remote areas in more than 70 countries.

The construction of optical broadband networks offers another important route to realizing a universal service. Huawei has proposed an innovative AirPON solution for areas with low population density, including remote areas. This solution continuously reduces the footprint of equipment rooms, optical fiber installation costs, and network power consumption, while ensuring the rapid deployment of local communication networks.

"Our dynamic world urgently needs improved digital cooperation to capitalize on the transformational potential of technology to create new jobs, boost financial inclusion, close the gender gap, spur a green recovery and redesign our world to be more prosperous and inclusive"

Siddharth Chatterjee
Resident Coordinator, UN China

In Africa alone, Huawei has laid more than 250,000 kilometers of optical fibers, enabling 30 million households to access high-speed broadband. User experience has seen constant improvement. The average speed of home broadband already exceeds 30 Mbit/s, bringing smarter, faster, and smoother home network experience.

As ICT infrastructure continues to evolve,

Cao Ming *- President, Huawei Wireless Solution*

innovative technologies like cloud and AI are allowing those in rural and remote areas to enjoy the convenience of a digital world. Huawei Cloud has proposed the Everything as a Service strategy and made Huawei's more than 30 years of technical expertise and digital transformation experience available through cloud services. This means that access to Huawei's digital infrastructure capabilities on the cloud is now just as easy, affordable, and sustainable as water and electricity.

Digital transformation, digital talent, and new business models are all essential for balanced development in remote regions. Huawei previously announced that by 2025, with the improved ICT infrastructure, the company will work with partners to enable 500 million people to enjoy digital financial services and 500,000 people to enjoy inclusive education.

In Cambodia, the ITU's first P2C partner country, Huawei will work with government departments through the Ministry of Posts and Telecommunications and universities to provide 10,000 training opportunities for ICT professionals in the next five years.

Huawei is committed to inclusive development. Through its ongoing technological innovation, Huawei is contributing to a higher level of digitalization in remote regions, enabling everyone to enjoy the convenience of a digital life, and promoting the balanced development of the global digital economy.

Huawei Cloud is focusing on "Everything as a Service" – All Digital, All Cloud and AI-Driven

William Dong, President of Marketing Department, Huawei Cloud speaks with Teletimes in an exclusive interview

Khalid Athar

During Huawei Connect 2022 which was hosted in Dubai for the first time under the theme of "Unleash Digital with Cloud Native", Huawei Cloud has launched 10 new services. In his speech, William Dong, President of Huawei Cloud Marketing, pointed out that in the future, applications, data, AI models, and digital content will become the core assets of an enterprise. Enterprises will develop, run, and manage these resources in a converged pipeline, and cloud native will be the technology to help businesses navigate uncertainty. Dong also released the Cloud Native 2.0 Architecture White Paper at the event which can be viewed here: https://www.huaweicloud.com/intl/en-us/about/cloudnative2_0/whitepaper.html

Teletimes International had the chance to exclusively interview William Dong who shared with us some valuable insights in his field.

Khalid Athar: Please tell us a little about the Huawei Cloud approach?

William Dong: Huawei Cloud approach is all digital, all cloud, AI-driven, and providing everything as a service: Infrastructure as a service / Technology as a service / Expertise as a service. Through 'Everything As Service' model, Huawei is translating the company's 30 plus years of ICT know-how into a wide variety of cloud services, including Infrastructure as a Service, Technology as a Service, and Expertise as a Service.

The Huawei Cloud Everything-as-a-Service proposition envisions a future where all infrastructure and applications will be cloud-based. We encourage enterprises to embrace AI fully and let data play its part in supporting operational decision-making as part of Technology as a Service.

KA: What level of presence does Huawei Cloud have on a global level?

WD: Huawei Cloud has a very widespread presence around the globe. Huawei Cloud operates in more than 170 countries and regions, offering 250+ cloud services and 210+ solutions.

Now the fastest-growing cloud services provider in the world, Huawei Cloud has attracted more than 3 million developers, 28,000 consulting partners, 9,000 technical partners, and released 7,400+ KooGallery products five years since launch.

Our vision is committed to growing with enterprises and partners in the Middle

East, helping the region with its digital transformation through advanced technologies.

KA: What kind of products/services are you focusing on promoting at recent tradeshows such as GITEX?

WD: We are focusing heavily on innovative products and technologies that help us and our partners lead from the front of the technology sector. In the cloud space, we have a proper focus on AI and various products related to the metaverse. We have also brought the Meta Studio to the market whilst promoting our cloud native and AI products involving many more developers.

With Huawei Cloud serving as the foundation, Huawei will enable developers to grow and contribute to a thriving developer ecosystem through developer programs like the Huawei Cloud Developer Program.

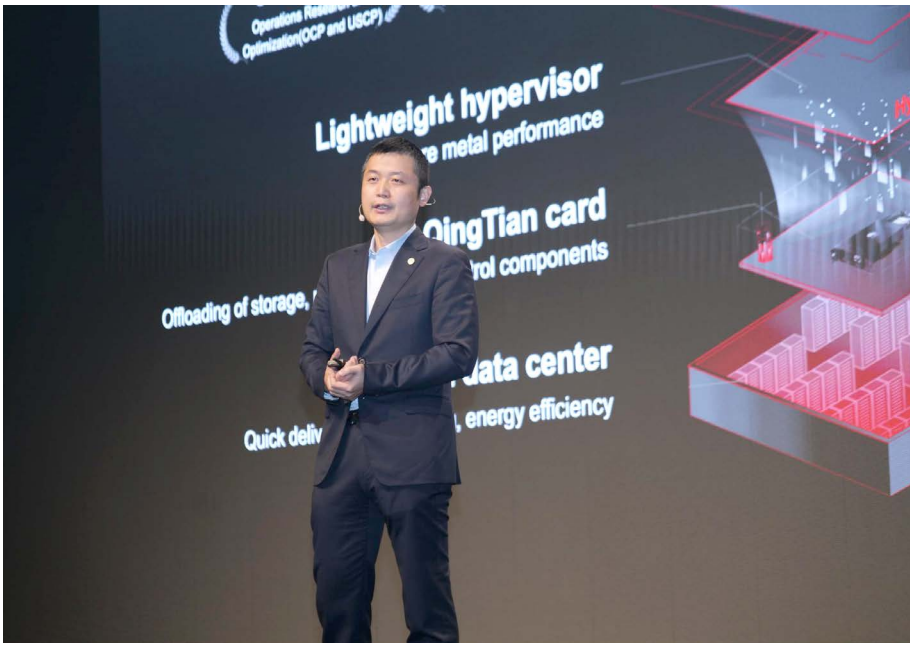
KA: How the year 2022 been so far?

WD: We have maintained rapid growth in the first half of 2022 during which Huawei Cloud released 15 innovative services, covering Infrastructure as a Service, Technology as a Service, and Expertise as a Service. The year 2022 is important due to the significant collaboration frameworks of up to USD17 million of direct investment, which are the GoCloud and GrowCloud.

KA: Can you tell us more about GoCloud and GrowCloud?

WD: The "Go Cloud, Go Global" plan is focused on Everything as a Service. Huawei Cloud will share its localized experience acquired in the services for more than 170 countries and regions, as well as insight into businesses and industries in major regions, and contribute its technologies and solutions to a global ecosystem. Such effort will help more enterprises use cloud better and go global more successfully.

The GoCloud framework is aimed at cultivating partners competency while helping partners to build robust solutions



and services utilizing Huawei Cloud which should translate into more value for customers comprised of Startup Programs, Developer Programs, SaaS Partner Programs, HMS Ecosystem Support Programs, and Marketplace Programs.

On the other hand, GrowCloud is aimed to help partners expand customer coverage and accelerate sales growth to the benefit of both parties. This will consist of Cloud Distributor Program and Cloud Solution Provider Program.

KA: Would you like to explain Huawei's approach around Everything as a Service model?

WD: For Infrastructure as a Service, we offer one global network, so you don't need to build your own data centers. This network gives you 50-millisecond access to our cloud services from anywhere on the globe. We will launch new Regions in Ireland and Indonesia. By the end of this year, we will have 29 Regions and 75 availability zones to cover more than 170 countries and regions.

For Technology as a Service, we provide four pipelines: DevCloud for software development, DataArts for data governance, ModelArts for AI development, and MetaStudio for digital content production. We build the latest digital concepts, such as DevOps, DataOps, MLOps, and MetaOps, into our pipelines and help industries embrace digital by leveraging future-proof technologies.

For Expertise as a Service, we open up our years of industry expertise on our cloud. We pack all this into MacroVerse aPaaS for easy access by enterprises, so as they go digital, cloud makes sure they learn from the best without starting from scratch

KA: How important is a "cloud-native" approach in today's world?

WD: Extremely important. A cloud-native is more technologically complex, but for cloud services, it is important and worth it.

First of all, cloud native is much more friendly to the cloud applications. It has an advanced approach to how it utilizes the same resources. The resources used are scalable and flexible. Nowadays, some apps would need to have an update every day and sometimes you might need proper connectivity immediately for other reasons. If the apps need to update or upgrade every day, cloud native approach can make that process very easy. This is where we step in or I'd rather say we stay ahead of the other solution providers.

Arthur D. Little

Metaverse presents a Multi-Billion Dollar opportunity for Middle East Telcos

Arthur D. Little (ADL) has published "The Metaverse: What's In It For Telcos?" exploring how telcos can capture value by leveraging the metaverse. Metaverse represents a major new market for telcos with early estimates of the overall size of the Metaverse opportunity to be around $13 trillion by 2030. For example, Ericsson estimates the opportunity presented by 5G fixed wireless access at $5 billion in 2022, growing to $21 billion in 2025 and $53 billion by 2030.

Three related forces drive the imperative for telcos to be proactive in their Metaverse strategies and tactics. First, the demand is likely to be too large to ignore. Second, the risk of failure or non-participation could be existential: hyperscalers such as Amazon Web Services (AWS) and Microsoft Azure will be close on the heels of those telco players that fail to guarantee the infrastructure the Metaverse necessitates. Third, consumer behavior, particularly from Gen Z, shows that demand for Metaverse products is already well into the mainstream. For example, according to a recent study by Obsess, 75% of Gen Z virtual shoppers have already purchased a digital product within a video game. To connect with this generation of consumers, telcos must invest in Metaverse offerings and capabilities.

Given these three factors, telcos should explore how they can benefit from the Metaverse's rise, both with infrastructure and through direct participation. By engaging effectively with this new market, benefits for telcos include growth from increased revenues and retention and new efficiency gains along multiple axes, including carbon usage and workforce outsourcing.

Thomas Kuruvilla, Managing Partner, Arthur D. Little, Middle East, said: "The expected acceleration in Metaverse prospects is driven by a real convergence of multiple factors: internet connectivity, technology related to sensors to collect data, digitalization and AI — and the value of a reliable communication

***Thomas Kuruvilla** - Managing Partner, Arthur D. Little, Middle East*

is obvious. As highlighted in the report, the Metaverse will add tremendous value to all and this should allow telcos to share a part of the benefit, as increased revenue which can be spend on network infrastructure and addressing the challenge of ultra-low-latency requirements. A good connectivity will enable Healthcare and Education providers to deliver services to disadvantaged and remote communities – and at an overall lower cost – democratizing access and care for citizens worldwide. Going forward, the percentage increase in adoption of digital services/ Metaverse will be higher with the lower income population ADL estimates the total addressable market will grow at a 33% CAGR from 2022–2025 (excluding infrastructure and enabling technologies)."

Dr. Albert Meige, Director of Blue Shift at Arthur D. Little, said: "The Metaverse provide a vision for the transition to a more connected, immersive and tech-driven world. It could also be a crucial accelerator in the search for tools that support the individual lifestyle of the next generation of consumers. It is increasingly clear that speeding up infrastructure enhancements to meet demand is not only essential but urgent, and the telecommunications sector is at the heart of this challenge. The aim of this Viewpoint is to spotlight key enablers and provide recommendations for telcos to unlock the potential of the Metaverse opportunity and help them enact a fast and equitable digital transition."

ADL Viewpoint explores the multifold benefits for telcos, from leveraging infrastructure to building new business models to capturing downstream value through active participation in the Metaverse as a "single point of service." The Viewpoint underlines that speed is important in capturing the Metaverse opportunity, and spotlights that the Metaverse necessitates structural changes to the telecom industry on an infrastructure level and offers valuable economic and strategic benefits for those telcos that actively participate in it.

Metaverse requires enabling technologies

Telcos will need to develop key enabling technologies from infrastructure to AI and analytics to fully participate in the Metaverse, including the following:

1.Local compute for a truly immersive experience

2.Ultra-low-latency communications for a lag-free experience

3.Enhanced cloud computing for interactions on a mass scale

4.Analytics & AI capabilities to facilitate telcos' activities

5.Privacy & trust infrastructure to tame the regulatory "Wild West"

ADL Viewpoint explores the multifold benefits for telcos, from leveraging infrastructure to building new business models to capturing downstream value through active participation in the Metaverse as a "single point of service." With excellent customer understanding and trust alongside a fundamental role in enabling the Metaverse (infrastructure), telcos are well positioned to move through the value chain to capture a greater slice of the pie. T

Huawei calls for network evolution at COP27 to enable green development

Network Carbon Intensity energy (NCIe) metric introduced to evaluate network energy efficiency

A Huawei executive said information and communications technologies, or ICT, will enable the digitalization of industry, spark innovation and make other industries green.

The remarks were made at a session organized by the Global Innovation Hub (UGIH) of the United Nations Framework Convention on Climate Change (UNFCCC) at the 27th Conference of the Parties, or COP27, in Sharm El-Sheikh of Egypt.

Referring to what is known as the "enabling effect", Philippe Wang, Huawei's Executive Vice President for the Northern Africa region, said ICT is "making other industries greener".

"5G, Artificial Intelligence, data analytics, cloud computing – all these things will improve industrial processes in a way that cuts energy use, and lowers carbon emissions," he said.

According to Philippe Wang, in the same way that ICT enables a smart streetlight to turn itself off when no one is around, 5G wireless base stations can automatically shut down when there is no data traffic, which saves energy.

***Philippe Wang** - Executive Vice President, Huawei Northern Africa region*

Base stations need a power source and have antennas. For its part, Huawei has been replacing diesel generators with solar panels, which offer a cleaner source of electric power, in Nigeria and Angola. At the same time, the company has launched a green 5G antenna that covers an area of up to 500 meters area using half the transmission power. That cuts energy consumption by 30 percent.

Also speaking at the session, Luis Neves, CEO, Global Enabling Sustainability Initiative (GeSI), stressed that digital should be at the core of the climate conversation.

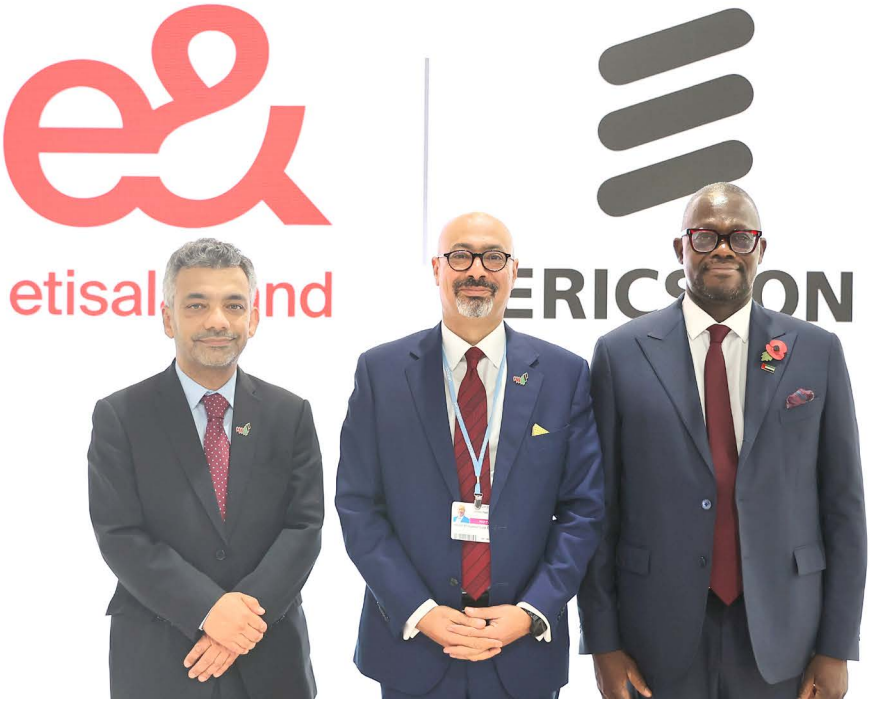
"If you bring a sustainability mindset together with digital, I think we can create a powerful machine to drive the sustainability agenda and accelerate the path for a world where 10 billion people can live a healthy life. And businesses should take both their carbon footprint and handprint into consideration," he said.

To this end, members of the ITU-T, including Huawei, have proposed a standard for measuring network energy use. Known as the Network Carbon Intensity energy metric, the standard was approved by ITU-T on October 19 as the Recommendation ITU-T L.1333.

According to Nompilo Morafo, MTN Group Chief Sustainability & Corporate Affairs Officer, "sustainable, measurable action" holds the key to meeting net zero goals. "In this journey, the use of digital technologies offers particular potential to increase the generation of green energy and power efficiency of all industries," she added.

The UNFCCC UGIH session, titled ICT for Green, addressed the ways in which transformative ICT technology could be utilized to enable the green development of a wide range of industries, facilitating the world's path to net-zero emissions.

e& and Ericsson partner to build more sustainable future networks



e& and Ericsson have signed a Memorandum of Understanding (MoU) on the sidelines of the 27th Conference of the Parties of the UNFCCC (COP27) in Egypt, to explore initiatives aimed at reducing energy consumption and building more efficient and sustainable future networks.

The three-year partnership aims to support the Net Zero strategy of e& and Ericsson while exploring opportunities to reduce carbon emissions and energy consumption. The companies will also collaborate in hosting a series of knowledge-sharing sessions, covering Ericsson's global expertise in energy-efficient strategies, such as its 'Breaking the Energy Curve' initiative.

e& will continue to work towards reducing the carbon footprint through the utilization of Ericsson's industry-leading and sustainable products and services. Ericsson's global product 'Take-Back Program' will explored further for potential collaboration that could support e& drive responsible disposal and recycling of e-waste across the Group's network.

The partnership is part of e&'s ambition to accelerate the transition to Net Zero and underlines the importance of improving network energy performance to meet Net Zero targets.

Sabri Ali Albreiki, Chief Technology Officer, e& international, says: "Through our partnership with Ericsson, we aim to accelerate the decarbonization of our network infrastructure business by exploring the deployment of their latest generation of energy efficient radio equipment and software features. We will also work together to use the Ericsson Product Take-Back program to dispose of and recycle obsolete network equipment to high environmental standards. This agreement is part of e&'s broader commitment to reduce waste and achieve a sustainable low-carbon society."

Ekow Nelson, Vice President and Head of Global Customer Unit for e& at Ericsson Middle East and Africa, says: "Working with e&, we will explore various sustainability initiatives that will help them break the energy curve and develop greener network infrastructure in their countries of operation. Through our Global Product Take-Back and innovatively sustainable 5G solutions such as our intelligent RAN energy-saving software features, we are confident e& will be able to reduce its environmental footprint and manage the expected growth in data traffic using as little energy as possible."

Cementing e&'s commitment to the environment, society and governance (ESG), the Group has become the first UAE private sector member of the UAE Independent Climate Change Accelerators as part of the group's participation at COP27. Being present among other sustainable-focused thought-leaders further reinforces e&'s strategic position as a driving force that inspires other corporates and organizations to play a significant role in supporting UAE's net zero commitment by 2050.T

Our innovation is focused on the success of our customers

Shunli Wang, Vice President of Huawei Middle East talks about the deep seeded focus on innovation in Huawei's strategy during an exclusive interview with Teletimes International
by **Gulraiz Khalid**

Gulraiz Khalid: Huawei is recognized as a valued partner by some of the world's leading telecom operators today, especially in the Middle East. What are the key factors behind your success?

Shunli Wang: I would actually like to use this opportunity to appreciate our customers who allow us to be part of their journey. I remember that the first company here in the Middle East that opened its doors to Huawei in the 21st century was Etisalat. And that opened the entire region to us. Since then, in almost every feedback we have received, our customers have been satisfied and happy with our products, our services and our innovation.

We have always approached the relationship with our customers as a partnership. Simultaneously, we have also focused significantly on innovation. Through our partnership we have been able to help our customers grow because all of our innovation is used to deliver solutions for the customers at the end of the day. This combination of our expertise and our determination to focus our efforts around customer success is the key factor behind our rapid growth.

> *The combination of our expertise and our determination to focus our efforts around customer success is the key factor behind our rapid growth*

GK: Huawei is in fact now well known for its innovation and R&D leadership. Would you like to share your approach towards innovation in this highly competitive and saturated market?

SW: We consistently promote the idea of an open approach to innovation, focusing on constructive dialogue, cross-industry cooperation, and exchanging expertise with different countries in the Middle East and worldwide.

At Huawei, we feel it's essential to engage the entire digital ecosystem through openness and collaboration to harness unified international standards that mitigate challenges in the cyber ecosystem. We want to create digital technology that makes lives better, makes businesses more intelligent, and makes society more inclusive. This will ultimately bring us closer to a fully connected, intelligent world. To create

the most value in a society empowered by connectivity, we must ultimately focus on open innovation and inclusive development.

At the same time, innovation must also focus on sustainability and a better environment. Huawei's focus on renewable energy is on converging and innovating technologies that accelerate the digitalization of energy and enable various industries to upgrade. We have recently introduced multiple solutions and technological updates that can address climate change and drive clean energy development.

When we look at our own focus for the coming years from a core technology perspective: we are committed to supporting our customers' shift into a digital and intelligent world. The next decade will see the 5.5G vision become a reality, enabling a 10 Gbps experience and a hundred billion connections. Huawei will continue to innovate and improve so that our customers are always ahead in this journey.

GK: Would you like to share some details about the actual R&D efforts that go behind this innovation?

SW: Huawei's R&D spending reached a high point in 2021. The company invested about USD 22.38 billion, representing 22.4% of its total revenue and bringing its total R&D expenditure over the past ten years to over USD 132.5 billion. Huawei invested in 2021 in new business units like digital power and cloud that grew rapidly. Huawei Digital Power looks at five areas of business globally: Smart PV, data center facilities, mPower for electric vehicles, site power, and integrated energy solutions.

Huawei Cloud is also forging a new partner system and helps partners improve their capabilities to achieve shared success. In 2022, Huawei Cloud Middle East is working on two collaboration frameworks of up to USD17 million of direct investment, which are the GoCloud and GrowCloud.

Another interesting fact for you to know is that in 2021, Huawei had approximately 107,000 R&D employees, representing approximately 54.8% of our total workforce. The result of this solid workforce is that by the end of 2021, Huawei held more than 110,000 active patents across over 45,000 patent families. It has more granted patents than any other Chinese company, has filed the most patent applications with the EU Patent Office, and ranked fifth in terms of new patents granted in the United States. For five straight years, Huawei has ranked No. 1 worldwide in terms of Patent Cooperation Treaty applications. Besides that we also ranked No. 1 at both the China National Intellectual Property Administration and the European Patent Office, and No. 5 at the United States Patent and Trademark Office in terms of the number of patents granted in 2021.

> *Huawei's focus on renewable energy is on converging and innovating technologies that accelerate the digitalization of energy and enable various industries to upgrade*

GK: With such a huge presence in one of the most critical industries, what role does Huawei play in terms of utilizing and improving local ICT talent?

SW: Our approach is to collaborate with a huge number of educational authorities, universities, government, partners, and other ecosystem players in the region to develop talents in order to build an open and favorable ICT talent ecosystem that thrives on shared success.

We not only provide some of the best opportunities to local talent but also focus on the development of talent through academies and various other programs. For example, in the Middle East, Huawei has set up 167 Huawei ICT Academies

One of our major programs that helps us in contributing to the talent ecosystem is our 'Seeds for the Future' program. Since its first launch in 2008, the program has been implemented in 137 countries and regions, reaching 12,413 young students from over 500 universities, and gaining endorsement from 189 heads of state and high-level government officials globally.

I would also like to share that Huawei has worked with 440 colleges and universities in the region and cooperated with more than 20 ministries and commissions, with more than 35,000 people being trained and over 9,000 being certified by Huawei in areas like 5G, cloud, etc.

GK: Moving forward, what will be your focus in the near future?

SW: Our focus in the coming years will remain around technologies that will bring success to our partners and improve the experience of their customers. We will continue to focus on 5G but more importantly, we will look towards 5.5G beyond that. 5.5G will power a new kind of customer experience where the connection speed is 10 times more up to 10GBPS.

5.5G is also good for the operators in terms of the number of connections as 100 billion connections can be reached. This will power many innovative and helpful use cases for operators. In areas where we already have 5G such as Saudi Arabia and Kuwait, we are already exploring the path to 5.5G. Besides this, Cloud and AI will remain a critical component of our strategy and focus in the coming years.

Minister of Human Resources and Social Development crowns stc Group with 4 awards

Eng. Faisal Al-Ateeq
CEO, channels by stc

Eng. Abdullah Bin Abdulrahman Al-Kanhal
Group Chief Strategy Officer, stc Group

Eng. Moataz Al-Darrab
Chief Strategy Officer, solutions by stc

stc Group and its subsidiaries, channels by stc and solutions by stc attained 4 awards within the nationalization and work environment categories, during the 2nd edition of the labor awards, after competing with 10,000 private organizations.

His Excellency the Minister of Human Resources and Social Development, Eng. Ahmed bin Sulaiman Al-Rajhi, handed over the prizes to the award winners. Eng. Abdullah Bin Abdulrahman Al-Kanhal, Group Chief Strategy Officer received the award representing stc Group, while Eng. Faisal Al-Ateeq, CEO of channels by stc received the award and Eng. Moataz Al-Darrab, Chief Strategy Officer of solutions by stc received the award.

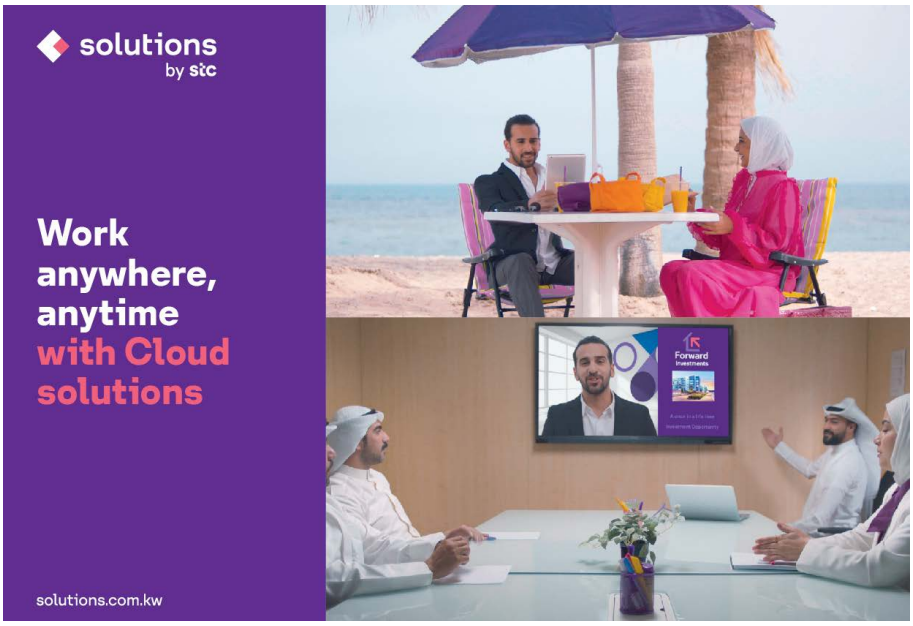
Stc Group, the digital enabler in the region won the working environment award for people with disabilities within the large and vast enterprises division. Furthermore stc won the Saudization award for nationalizing the communications and information technology sector. Also, channels by stc won the nationalization award in the wholesale and retail trade sector, while solutions by stc won the distinguished working environment award, within the large and oversize enterprises' division.

stc Group achieved these awards due to its outstanding nationalization efforts. The group could attain higher percentages that reached to 92% with its localization program, in addition to many initiatives the group worked on, aiming to improve and develop the work environment, to become more flexible and attractive for local talents. Moreover, stc constantly extends concerns to balance work and life elements for all its employees. Besides, stc, regularly pursues its employees' needs across all level and categories, under all circumstances. This reflects the success of stc's strategy as a pioneering digital and national group that contributes to achieving the Vision's 2030 goals.

It is worth mentioning that the labor award is an initiative along the many initiatives that the Ministry of Human Resources and Social Development has done to appreciate the efforts of distinguished establishments and private sector organizations in raising nationalization rates, complying to the standards of an innovative and attractive working environment, and investing in the development of their human resources, in line with the Kingdom's vision 2030.

solutions by stc offers a range of Cloud application packages to support SMEs

solutions by stc has announced its latest Cloud productivity application packages that are especially designed to cater to small-to-medium sized enterprises (SMEs) in Kuwait. The packages are cost-effective, provide seamless connectivity and boost productivity levels, further building on the Company's long-standing commitment to support SMEs, especially those impacted by the repercussions of the pandemic.



The wide range of Cloud solutions introduced under solutions by stc's latest campaign aim to aid B2B customers' transition into the digital world by enabling their digital transformation strategies. As a one-stop solutions provider, solutions by stc possesses the portfolio strength and technical prowess to support SMEs in uplifting their current business models or supporting new business in launching their ventures with the right set of solutions to back their operations and business needs. Through its reinforced campaign, solutions by stc will be offering three plans through Microsoft 365 and Google workspace solutions in addition to domains for businesses, smart office devices, DaaS, PBX, connectivity solutions, as well as other solutions.

solutions by stc indicated in a statement that the Microsoft 365 Cloud solutions will be offered through two plans, Microsoft 365 Business and Office 365 Enterprise. Microsoft 365 Business is a purely cloud-based solution that provides access to email, files and Office programs including Word, PowerPoint, Excel and other Microsoft applications. Office 365 Enterprise offers a suite of applications including Office 365, Enterprise Mobility and Security, and Windows Enterprise. The applications and features of both plans can be accessed online from any location and at the convenience of the user. The plans also offer 1TB storage with options to expand the storage capacity, advanced built-in features, and free technical support on-cloud availability.

The Google Cloud solution on the other hand offers an array of services targeting various segments such as SMEs, education, financial services, and other sectors. The Google Cloud platform includes a suite of cloud computing services that work seamlessly with Google devices and run on the same infrastructure used by Google internally to manage their end-user products. Google Workspace is another tool that provides a range of options for SMEs that are in need of remote access to applications that will maintain their workflow wherever they may be. Google Cloud also offers productivity applications like Gmail, Google Forms, Google Drive, Google Docs, Meet & Chat, and other essential applications. To enhance and unify the experience, customers can take advantage of Google's integrated product line which features Jamboard, Chromecast, Meet hardware and Chromebooks.

The Cloud solutions offered by solutions by stc will aid businesses in saving valuable time and effort through cost-effective and flexible payment plans to acquire the solutions in the most affordable way possible. The Company dedicated a team of experts to support and advise customers on the most suitable packages that fit their needs, while providing a range of after sale services to ensure ongoing maintenance and continuity of the integrated systems.

Offering different Cloud solutions builds on solution by stc's previous announcements where it introduced CCTV, Cloud PBX, Tajer, as well as other solutions that were designed to suit the needs of the SME segment in Kuwait. The Company is committed to fulfill and support the needs of local startups and SMEs by offering flexible, scalable, guaranteed and reliable solutions and services that showcase the strength of stc's 5G network and ICT integrated solutions that cater specifically to their business needs, in their path to recovery following the pandemic. solutions by stc will continue supporting the SME market through various relief packages and cost-effective solutions that aim to empower the sector, in line with Kuwait's 2035 Vision.T

stc & Oracle announce business partnership

stc Group and Oracle Corporation, multinational cloud and technology company have launched a partnership agreement enabling the two organizations to better serve both local and regional markets and support national digitalization objectives as part of KSA's vision 2030.

This announcement came after a visit by Oracle's CEO Safra A. Catz to stc's headquarters where the two parties commemorated 18 years of partnership and discussed further collaboration between the two organizations.

"This agreement confirms the commitment from both stc and Oracle to bring to the market the needed cloud based technological infrastructure and applications to support regional digital economy ambitions" said stc Group CEO Eng. Olayan Alwetaid.

"Oracle's industry leading cloud offerings and stc's regional capability are a powerful combination that can help our customers drive innovation and achieve business growth"said Safra Catz, CEO, Oracle.

As part of this agreement, stc will leverage Oracle's highly performant secure cloud platform to migrate stc's business-support database workloads as part of stc's multi-cloud adoption roadmap. This will allow stc to simplify and modernize stc's cloud technology landscape.

stc sponsor Newcastle FC

stc Group has announced the sponsorship agreement with Newcastle FC as the digital sponsor during the club's tournament in Riyadh.

stc will sponsor the club during its visit to Saudi Arabia by launching a digital campaign that include tickets' distribution for Newcastle and Al Hilal game in Riyadh, in addition to various prizes.

This tournament comes in parallel with a series of different sports events in the Kingdom, that stc Group supports and sponsors numbers of it, as part of the group's strategy to approach number of international markets as well as to attract global investors and partners to the Kingdom.

Cybersecurity experts warn 'everything is vulnerable' to hackers... including your 'camels' during day two of Black Hat MEA

As the world becomes increasingly reliant on Internet of Things (IoT) and digital services, so too must steps be taken to minimize the vulnerabilities that allow hackers to take advantage, visitors to day two of Black Hat MEA were told.

The world is rapidly shifting towards a digital future as everything from banking to health services, agriculture and vehicles become more reliant on the Cloud and other IoT services. This brings a variety of benefits including convenience, flexibility and ease of use. However, this also provides cybercriminals with far more vulnerabilities they can exploit to steal sensitive data, commit fraud and more.

The second day of Black Hat MEA took the attendance since the start of the event to 20,000 and saw experts highlight threats while providing solutions that can be implemented to protect organizations and individuals from harm.

Defending against cyber threats

Dr. Alissa 'Dr Jay' Abdullah, Deputy Chief Security Officer at Mastercard highlighted the key areas of risk during a session related to mitigating cyber risks, focusing on technology, tactics and talent. She mentioned, "Evolution is key, and we need to keep up with the pace of technology and evolve our infrastructure." She also noted key tactics used by adversaries such as MFA (Multi-factor authentication) fatigue and the mimicking of user voice patterns, while highlighting the importance of upscaling talent, to build a more robust organization.

Caleb Sima, Chief Security Officer, Robinhood, hosted a session titled 'Assume Breach', with a key focus on a company's crown jewels and how to protect them from hacking threats. "Crown jewels are anything that an attacker can take with

them, including customer or employee data, tokens and keys or even systems to modify financial transactions without repercussions." He highlighted that much like our physical health; safety hygiene is key for any company.

During a panel discussion focused on the global laws related to the regulation, collection, use, retention, and disposal of personal information, Zaki Abbas, Chief Information Security Officer, Brookfield Asset Management said: "While it's not exciting, data regulations play an important part and helps security programs mature. 70 percent of the world has some sort of data security regulation or legislation implemented." Vikas Yadav, Chief Security Officer, Nyka, continued: "On a global scale a unified framework for compliance and fundamentals of privacy is the key to data protection. However, it should be implemented with customer trust at the heart of it all." The panel also included Flavio Aggio, and Jon Staniforth, the Chief Information Security Officers of World Health Organization (WHO) and Royal Mail respectively and was moderated by Jaya Baloo, Chief Information Security Officer, Avast.

Hacking 'camels'

Taking a unique spin on things, Chris Roberts, Chief Information Security Officer, Boom Supersonic, showcased how connected livestock management and tracking platforms can be hijacked, referring to a previous experiment he had conducted. The session showed how data can be manipulated on platforms that use GPS trackers to show a completely different location, which in this case 'relocated' the camels from Riyadh's deserts to snow-capped regions in Mongolia. "Our digital and physical worlds are colliding, and what you see isn't always what you get. It is important to have a physical presence and not always depend on the digital," said Roberts.

Eye-catching demonstrations

During the event, hacking experts showcased vulnerabilities in today's connected environment where we are surrounded by connected devices including electric cars such as a Tesla. The demonstration showed that is possible to exploit system vulnerabilities where the car's functions could be controlled remotely including lights, doors and even the on-board infotainment systems.

The three-day conference concluded on 17 November at the Riyadh Front Exhibition Center and features more than 250 exhibitors and over 200 speakers this year. It features international tech giants such as Cisco, IBM, Spire, Infoblox and others have a significant presence showcasing new technology and services.

The event was organized as part of a strategic partnership between Informa Markets, the largest events company in the world, and the Saudi Federation for Cybersecurity, Programming and Drones (SAFCSP) to highlight the Kingdom's investments and growth in cybersecurity and the digital space.T

e& commits to a net zero operation by 2030 to accelerate its climate action efforts and support the UAE's net zero strategy

e& has declared its net zero targets by 2030, during the Group's participation at the 27th Conference of the Parties of the UNFCCC (COP27), currently taking place in Egypt, aimed at reducing carbon emissions across its operations and accelerating its efforts to contribute to global climate action.

The global technology and investment conglomerate has pledged its commitment to achieving net zero within its Group's operations in the UAE for Scope 1 and 2 emissions by 2030, focusing on key initiatives to reduce its carbon footprint through improving energy efficiency and sourcing renewable energy among other initiatives.

Her Excellency Mariam bint Mohammed Almheiri, Minister of Climate Change and Environment said: "The UAE is taking massive action alongside its partners to address the global challenges related to climate change, leading the energy transition by reducing the carbon impact of hydrocarbon emissions. Currently, the UAE is ranked number one for the highest Fiber-to-the-Home (FTTH) penetration, maintaining its leadership position since 2016. e& constantly manages its environmental impact and strives to protect natural resources by strategically investing in sustainable and innovative solutions. Over the past decade, e& has strategically invested in fibre optic infrastructure, which has technical and environmental advantages over traditional networks. The Group's current operations focus on best practices of reducing energy consumption, minimizing waste and developing sustainable architecture to achieve a positive environmental impact.

Hatem Dowidar, Group CEO, e&, said: "Sustainability is at the heart of everything we do. Our sustainability plans and ambitions are aligned to support the UAE's Net Zero 2050 Strategic Initiative and the United Nations Sustainable Development Goals (UN SDGs), as well as our commitment to the GSMA's initiative to take the entire mobile industry to net zero carbon emissions by 2050.

"The importance of addressing the critical challenges related to climate change has become a priority for e&. We are working closely with our partners and stakeholders to create solutions that turn ideas into action. Through our commitment to enabling a low-carbon society, we will ramp up our efforts to address pressing issues such as climate action, environmental conservation, as well as the provision of safe, efficient and environmentally friendly products and services that help mitigate climate change."

To reach net zero, e& is committed to accelerating the de-carbonisation of activities while focusing on mobile network modernisation with the deployment of the latest generation of energy-efficient radio equipment (both hardware and software), increased use of renewable energy sources and carbon offsetting initiatives that are vital to achieve targets.

Dowidar added: "e& has successfully built an ecosystem in which we operate, communicate and deliver our services to stakeholders and customers, which has helped us to be a key player in exploring clean and green solutions, and has enabled us to keep the ESG agenda at the heart of our business model."T

e& launches FutureNow Sustainability Call

Aims to contribute to e&'s commitment to net zero targets by 2030

e& has announced the launch of its collaborative initiative; the FutureNow Sustainability Call. As part of the Group's overarching FutureNow campaign from e& enterprise, the global technology conglomerate is inviting technology and digital solution scale-ups to develop , sustainable solutions towards reducing energy consumption across the UAE's e& mobile network sites.

This new sustainability challenge is a call to the public that builds on e&'s declaration of net zero targets by 2030 at the 27th UNFCCC Conference of the Parties (COP27) in Egypt, aiming to reduce carbon emissions across operations and accelerate efforts to contribute to global climate action by focusing on key initiatives to reduce its carbon footprint by prioritizing energy efficiency and renewable energy supply.

Through the FutureNow Sustainability Call, e& strives to harness the ambition of scale-ups globally and tap into the technological solution talent in the market to develop cutting-edge sustainable solutions and reduce reliance on the country's electricity grid at mobile sites.

To be eligible to take on the challenge, submitting scale-ups must send their

***Salvador Anglada** - CEO, e& enterprise*

proposals including solutions geared towards green energy monitoring and management and consider contributing to emission reduction by applying innovative technology concepts at more than 11,500 mobile network sites in the UAE.

The resulting pitch solution should be suitable for implementation in e& OPCOs, across several countries and mobile networks. Scale-ups interested in participating must submit their applications by the 31st January, 2023 via FutureNow. e&, if selected, they will join a 9 to 12-week program, collaborating with experts from e&, becoming a partner and launching the sustainable innovation solution to the market.

Salvador Anglada, CEO of e& enterprise, stated, "As we transition towards a more sustainable future, to fulfill our commitment to net zero emissions, in line with the United Nation's Sustainable Development Goals (SDGs), we take an accelerated approach to Digital Transformation and Innovation. However, we remain mindful of climate change challenges and understand the role we must play in our mission to create a more sustainable economy and greener future of the UAE. At e&, sustainability is our top priority and through the FutureNow Sustainability Call, we invite green energy focused scale-ups to collaborate with us, create innovative solutions together and become an integral part of shaping a sustainable future for the UAE."

We believe that by leading by example and getting the community involved, especially on this grand scale, we it can inspire other corporates and consumers to think about how they can make positive changes in their everyday lives towards their future and the future generations.

"The FutureNow Sustainability Call is part of the Group's larger open innovation program from e& enterprise. This challenge is one of the other sustainability initiatives already launched by e& Group. Clear sustainability principles guide e& Group as we progress towards a greener future. e&'s efforts to reduce power consumption are well underway with the removal of diesel engines, the installation of Hybrid and Solar Power Systems, sleep mode status during traffic-free periods and the installation of HE rectifiers, Rapid Deployable Solar and Super Capacitor Storage System at Hybrid Sites".

> *"At e&, sustainability is our top priority and through the FutureNow Sustainability Call, we invite green energy focused scale-ups to collaborate with us, create innovative solutions together and become an integral part of shaping a sustainable future for the UAE"*

China Mobile and Huawei win GLOTEL Automation Initiative of the Year Award for Innovation and Practice in Autonomous Core Networks

At the Global Telecom Awards (GLOTEL Awards) ceremony held in London, United Kingdom on 1 December 2022, China Mobile, China Mobile Zhejiang and Huawei won the "Automation Initiative of the Year" award for their innovation and practice in autonomous core networks. This is a remarkable achievement for China Mobile Zhejiang being the first operator in China to receive this award, as GLOTEL Awards, instituted by the ICT research group Informa, recognize innovation and excellence in companies involved in advancing and transforming the telecoms industry. China Mobile's cloud-based core network O&M transformation and Huawei's autonomous driving network (ADN) solution for core networks have received good reviews from across the industry and significantly contributed to automated and intelligent O&M for core networks.

China Mobile Zhejiang features China Mobile's regional cloud-based core networks with wide coverage, large network management capacity, and complex network architecture. It faced great challenges in O&M of its regional cloud-based core networks. It became difficult to ensure the running of a secure network just by increasing manpower or by using expert experience.

Guided by China Mobile's autonomous network policies, China Mobile Zhejiang and Huawei's cloud core network ADN team jointly carried out a series of innovative practices for autonomous core networks. These practices built an intelligent end-to-end fault defense system for core networks, covering fault prediction, detection, demarcation, and recovery, and realized three key O&M transformations for the regional cloud-based core networks.

Risk prevention and fault detection: The O&M mode changed from passive response to proactive risk prevention. Capabilities such as intelligent KPI anomaly detection and multi-dimensional incident aggregation were developed to realize sub-health detection and prevent issues from escalating.

Fault diagnosis: Manual analysis transformed into automatic machine diagnosis. By using intelligent clustering and reasoning algorithms, HTTP link and KPI deterioration faults are accurately demarcated within 10 minutes, greatly improving troubleshooting efficiency, user experience, and network stability.

Fault recovery: Manual switchover based on expert experience replaced by real-time visualized intelligent DR based on automatic simulation. Based on the HEBO algorithm used by intelligent DR evaluation, optimal flow control policies for the entire network are generated quickly, ensuring 100% success of DR fault recovery. In addition, a large screen clearly displays the DR service processes, facilitating control over the switchover. Currently, four cross-region DR switchover drills involving millions of users have been successfully conducted.

China Mobile Zhejiang's O&M transformation project for regional cloud-based core networks sets a good example for joint industry innovation, provides valuable technical and practical experience for the industry, and will effectively drive the transformation towards digital and intelligent O&M of global telecom networks. In the future, China Mobile Zhejiang and Huawei will carry out extensive and in-depth cooperation, continue to build top autonomous core networks, and work with global operators and industry organizations to evolve towards higher-level autonomous core networks.T

Future of Billing for the Telecom Industry

Today many telecom operators strive to go beyond connectivity and create business value by developing new services and ecosystems. They are expanding their product portfolios and exploring new revenue sources, including cloud, security, finance, and digital entertainment products. In 2022, GSMA reported that MENA operators were providing a growing number of revenue diversification examples, such as Turkcell, STC, e&, and Orange. Maxim Nartov, Chief Business Officer of Nexign, a global provider of BSS and digitalization solutions, explains the impact of the telco industry's changes on billing capabilities and the role of BSS solutions in achieving new business goals.

Business support systems (BSS), which include billing, charging, and customer management, are vitally important for telecom operators. They ensure continuous operation and reliability of telecom services and help improve business efficiency. However, every 5-7 years, communications service providers (CSPs) need to upgrade their BSS systems due to business evolution and product portfolio changes caused by market demands.

The transformation of the operator's product portfolio happens for two primary reasons. First, despite the enormous growth in mobile data usage, the CSP's core services experience revenue stagnation. According to GlobalData, the 2021 mobile average revenue per user (ARPU) in the Middle East was $296 per month, which marked an increase of only 2.5% compared to the previous year. Operators attempt to find additional revenue streams by investing in new services and technologies, such as 5G, cloud, and IoT, as they provide immense opportunities for the industry.

***Maxim Nartov** - Chief Business Officer, Nexign*

Second, the growing digitalization and the development of services based on digital platforms lead to an increased demand for higher bandwidth and faster connections. As a result, CSPs work on enhancing the network's capacity and switch to the next generation of communications technology. For example, the previous major network upgrade occurred during the transition to 4G and the related shift from voice and SMS towards LTE data and data only. Now the driver of such changes is 5G. Although the current 5G use rate in the MENA region is just 1%, GSMA experts predict its increase to 17% by 2025.

All these changes have a direct impact

on BSS. Modern systems should have the capability to be transformed quickly to meet the new business needs of telecom operators intending to ensure their correct operation and boost the operational efficiency of business processes.

Expanding Product Portfolio and Finding New Revenue Streams

The issue of modernizing BSS systems in terms of new revenue streams is critical. Digital transformation and operator's growing ecosystems require readiness for new charging and billing instruments and innovative customer service approaches. The concept of BSS systems is being reconsidered, and all billing operations are being transferred onto more adaptive platforms to achieve operational efficiency in the increasingly complex environment. Modern BSS are geared towards a broad product portfolio by going far beyond traditional telecom services. For example, telecom providers can offer a subscription to cloud storage, streaming, and other video services, as well as more interesting combinations, including banking services and billing-on-behalf, when the operator helps subscribers pay for third-party services. CSPs are adding more and more external partner products to their portfolios to keep subscribers interested, which emphasizes the need to increase BSS flexibility further.

Consolidation of Billing Systems and Convergence

Focusing on the client as the "owner" of revenues and long-term investment in ecosystems is changing the attitude to the customer service as well. One of the primary conditions for improving the efficiency of customer engagement and increasing the flexibility and variety of services is the ability to manage accounts and services from a single platform. Otherwise, instead of a "converged" subscriber, operators deal with several independent subscriber accounts. This approach significantly complicates the billing process and leads to reduced loyalty, as the operator loses focus and a 360-degree view of the customer, thus failing to convert potential cross-sell and upsell opportunities. Moreover, the ever-growing number and complexity of tariffs put a huge strain on IT systems. In this regard, consolidating dozens of siloed systems is one of the essential, although costly, steps to provide a unified customer experience.

Telecom providers can achieve maximum efficiency by implementing a single converged platform to manage the entire revenue generation process. Addressing this ongoing demand, Nexign has recently introduced Nexign Revenue Management to help operators focus on consolidated revenues and capitalize on emerging services and new monetization models. The new solution covers the entire revenue management process — from charging and policy management to billing and collection— and is ready to work with any telecom services, digital subscriptions, or third-party products and bundles. Moreover, convergent charging, extensive policy management, network exposure, and network analytics support advanced 4G and 5G network monetization cases.

Nexign Revenue Management enables CSPs to harmonize all revenue streams on a single platform while optimizing operational efficiency. It natively supports the convergence of B2B and B2C business lines, prepaid and postpaid payment models, fixed-line, broadband, and mobile networks, and easily integrates with any digital layer and other systems in the operator's BSS landscape. Besides, the solution recently received the prestigious MEA Business Technology Achievement Awards 2022 in the Ground-breaking Products/Services category.

Reducing TCO

The pressure of huge investments made by telcos amidst ongoing digitalization has intensified over the past years. The need for reduced TCO (total cost of ownership) is rapidly becoming crucial in the operator's agenda. Achieving this goal usually implies digital transformation and the shift towards technologies with lower vendor dependency and open-source solutions. Besides, operators strive to simplify, consolidate, and automate their business processes and optimize the use of resources.

Speed of Change

Another interesting issue rooted in the concept of ecosystems is the speed of the telco change. Five years ago, competition in the telecom market depended on the operators' pricing policy, but today it revolves around a combination of many factors. For example, CSPs try to attract customers by offering them interesting packages with diverse services. Modern BSS systems should support the rapid launch of such ideas, help control their efficiency, and alter them depending on market needs.

The modern digital economy resembles an actively boiling cauldron where new ideas, concepts, and proposals are born. Some of them do not catch on, while others have an effect in the moment, and CSPs need to adapt innovations quickly to remain competitive in the market. The fact that communications service providers are shifting towards the IT industry and starting to develop their own products and services reflects this story.

Conclusion

The concept of BSS systems is undergoing significant changes. Modern BSS should monitor and optimize operational and business processes — from basic service charging to billing, new products, and customer service. It should also be flexible to adapt to the demands of the telecom market quickly.

In the race towards 5G, the pace of change required from businesses is accelerating rapidly. As a result, telecom operators continue to rethink and expand their role in value chains, try innovative business models, and explore novel business areas to open new revenue opportunities and offer advanced services to their digital-first clients. Of course, all of these changes impact BSS systems and require focusing on improving operational efficiency and maintaining a high rate of innovation.

etisalat by e& and Huawei jointly complete the industry leading 1.2T/channel trial in DWDM network

Etisalat by e& announced that it has collaborated with Huawei to complete the trial of 1.2Tbps/channel in United Arab Emirates (UAE). This achievement is a major industry milestone in driving down the cost per bit of telecommunications networks. The trial showcased the ability of fiber networks reaching the overall capacity of single fiber transmission up to 96Tbps.

The 1.2Tbps/channel technology will address etisalat by e&'s growing demand of capacity with the current new shift towards online digital behaviors, cloud-based business services, enhanced Home broadband and 5G services. Dense wavelength division multiplexing (DWDM) is an optical fiber multiplexing technology that is used to increase the bandwidth of existing fiber networks.

etisalat by e& is again leading the optical industry with latest innovative solution and early technology adoption. This accomplishment is particularly significant in emphasizing the promise to deliver the best–in-class and the most advanced robust network in UAE. Based on the 1.2Tbps/channel adoption, etisalat by e& optical network will be able to take a leap closer to attain an innovative agile transmission network model that can rapidly adapt to external changes and respond to customer business requirements.

This trial leverages Huawei's latest 1.2Tbps/channel optical module by using the unique second-generation channel-matched shaping (CMS) technology, including a series of advanced transmission algorithms such as Nyquist-shaping, Transmit pre-compensation and SOP (state of polarization) tracking. The result of the trial demonstrated the excellent transmission performance, while achieving the optimal spectrum efficiency. Combined with Super C-band and Super L-band solution, it will provide the industry's largest single-fiber capacity of 96Tbps.

Marwan Bin Shakar, Senior Vice President, Access Network Development at etisalat by e&, said: "The successful trial of 1.2Tbps/channel with Huawei is a result of our continuous efforts to deliver enhanced customer experiences by pushing the boundaries of what is possible as a digital telco. This has resulted in etisalat by e& taking the lead in building one of the most advanced networks globally and using industry leading technology to deliver superior network services to our customers across UAE. With 1.2Tbps/channel solution, we are able to deliver more data by every wavelength, and build an optimal cost-per-bit optical network for best-in-class customer experience. This trial will further strengthen our efforts in maximizing value for customers and bring positive change to their lives in the age of digitalization."

Victor Zhou, President of Huawei's Transmission Network Domain, said: "We are glad to work with etisalat by e& to complete this 1.2Tbps/channel trial. We will continue to collaborate with etisalat by e& to achieve more innovations by Huawei ultra-high-speed OTN solution, and build a high-quality, reliable, and scalable transmission network, helping Etisalat by e& to achieve business success."

Etisalat Group has changed its brand identity to e&, effective on February 2022. Its strategy aims to accelerate growth through the creation of a resilient business model represented by Group's main business pillars.

***Marwan Bin Shakar** - Senior VP, Access Network Development, etisalat by e&*

The telecoms business currently continues to be led by etisalat by e& in the Group's home market and e& international markets, upholding the Group's rich telecoms heritage, bolstering the strong telecoms network and maximizing value for the Group's various customer segments.

Ramping up the digital services for individuals to elevate their digital-driven lifestyle, e& life brings next-generation technologies through smart platforms in entertainment, retail and financial technology. e& enterprise focuses on maximizing value through its end-to-end solutions in cybersecurity, cloud, Internet of Things (IoT) and Artificial Intelligence (AI), as well as deploying mega projects, in order to enable the digital transformation of governments, large-scale enterprises and corporates. e& capital allows the Group to focus its efforts on driving new investments while maximizing shareholder value and strengthening the Group's global presence.T

e& enterprise forms a joint venture with Bespin Global to offer cloud managed and professional services in the METAP region

Salvador Anglada, CEO of e& enterprise and John Hanjoo Lee, CEO and Co-founder of Bespin Global form joint venture

e& enterprise, part of e&, has announced the signing of a binding agreement to form a joint venture with Bespin Global, a leading public cloud managed services provider. The joint venture will be branded "Bespin Global MEA, an e& enterprise company", focusing on offering public cloud managed and professional services to serve the customers in the Middle East, Turkey, Africa and Pakistan (METAP).

As a part of the agreement, e& enterprise will also invest in Bespin Global's holding company. Bespin Global is one of the fastest growing cloud managed service providers serving over 1,700 customers from its locations in South Korea, China, Japan, Singapore, Vietnam, Indonesia, and the US. Bespin Global has been recognised as 'Visionary' in the Gartner MQ for the Public Cloud IT Transformation Services category, and has over 1,000 cloud experts across AWS, Microsoft Azure, Google Cloud and other cloud platforms.

The total investment and future commitments announced are worth over $100 million.

Salvador Anglada, CEO of e& enterprise, said: "e& enterprise always works closely with customers to maximise their digital potential by designing, delivering and operating impactful, intelligent and secure end-to-end digital solutions. The joint venture with Bespin Global and the investment in the holding company are part of our ongoing efforts to extend our cloud offerings and establish our commitment as a trusted partner to governments and enterprises in the UAE."

John Hanjoo Lee, CEO and Co-founder of Bespin Global, said: "Bespin Global is very excited to partner with e& enterprise in the METAP markets as our enterprise customers accelerate their digital transformation. The joint venture between Bespin Global and e& enterprise will leverage capabilities that will help build the future of cloud business. In addition, we welcome e& as an investor in Bespin Global and appreciate their confidence in our strategy and operations. We look forward to accelerating our growth plan and profitably expanding our operations globally".

Cloud growth will increase with the rising adoption of technologies such as IoT, edge computing, 5G, and real-time analytics enabled by AI and Machine Learning (ML). With this joint venture, e& enterprise can leverage Bespin Global MEA's capabilities to serve multiple parts of the cloud value chain.

Saudi Ministry of Communications and Information Technology inks MoU with Huawei to boost digital economy

The Saudi Ministry of Communications and Information Technology (MCIT) and Huawei signed a Memorandum of Understanding (MoU) to enhance cooperation in the field of communications and information technology. The MoU was signed in Riyadh on the sidelines of the historic visit of His Excellency President of China Xi Jinping to the Kingdom of Saudi Arabia, by Eng. Bassam Al-Bassam, Deputy Minister for Telecom and Infrastructure Saudi Arabia, and Eric Yang, CEO of Huawei Saudi Arabia. The event was attended by HE Eng. Khalid AlFalih, Minister of Investment, HE. Eng. Haytham Alohli, Vice Minister, Minister of Communications and Information Technology; Steven Yi, the President of Huawei Middle East and Central Asia region, and several officials from both parties.

Under the terms of the agreement, the Ministry and Huawei will collaborate to realize a '10Gbps Society', seeking to build a superfast broadband infrastructure to support the digital transformation goals of Saudi Vision 2030. These improvements will also enhance the competitiveness of Saudi ICT infrastructure globally. Towards this end, Huawei will leverage its global expertise and success stories to support the MCIT in finalizing the business case and designing the required regulations to accelerate the 10Gbps society goal. An initial 10GB district pilot will be launched in 2023.

Small businesses are the backbone of the Saudi economy, while its bourgeoning startup ecosystem is inspiring unprecedented innovation and disruption across various domains. To support this evolution, Huawei will work with the Ministry to support digital entrepreneurs working on smart cities, IoT, AI, gaming, fintech, e-commerce, and blockchain projects. The two entities will also jointly promote the HUAWEI CLOUD startups program, a support program for empowering SMEs to develop their cloud capabilities.

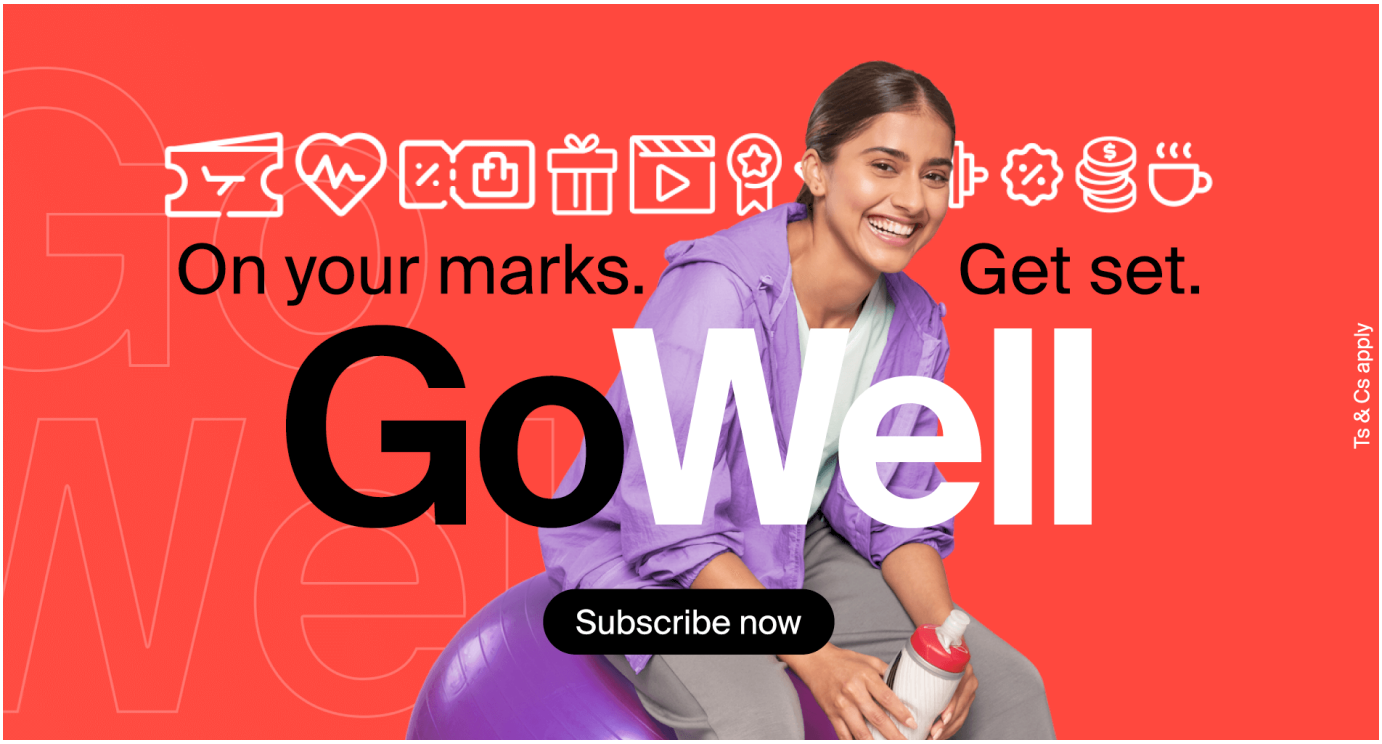
Additionally, the Ministry pledged to provide Huawei with support to build a cloud computing region in the Kingdom as cloud adoption accelerates in Saudi Arabia. Huawei will, on its part, work to strengthen partnerships with local data center service providers.

Saudi Arabia recognizes ICT talent development as a key pillar of its Vision 2030. The MoU establishes a joint framework to launch a Huawei scholarship training program to train university students, including visits to Huawei headquarters to experience the company's technology first-hand. This initiative extends existing Huawei skills development programs in Saudi Arabia, including the ICT Academy and Seeds for the Future.

As Saudi Arabia accelerates the shift toward a digital government, the Ministry and Huawei will also collaborate to build a nationwide Unified Government Network Infrastructure standard to serve all government entities.

Steven Yi, the President of Huawei Middle East and Central Asia Region, who had witnessed the ceremony said, "This partnership aligns with Saudi Vision 2030 and the Ministry's continuous efforts to advance digital transformation, enhance ICT skills, and foster a culture of innovation. As a long-term partner of Saudi Arabia's service providers and enterprises, this MoU reflects our continued commitment to supporting the Kingdom's efforts to become a global leader in ICT, leveraging our global expertise and technologies."

etisalat by e& launches first rewards-based, consumer fitness and wellness platform 'GoWell'



etisalat by e& has announced its foray into the consumer digital health space with the launch of 'GoWell,' a fitness and wellness platform. 'GoWell' is designed to empower subscribers to achieve their health and wellness goals while receiving a series of rewards and cashback incentives.

As people turn to digital solutions to help them manage their health and fitness goals on the go, the launch of 'GoWell' for all, including health enthusiasts and change seekers, will allow them to use technology to improve their health outcomes. The launch is also part of etisalat by e&'s plans to have a 360-degree approach for the eHealth domain starting with fitness and wellness, followed by teleconsultations to be included in the next phase of the platform.

GoWell helps customer assess health through personalized goals by tracking progress syncing all other health devices and apps as well as get rewarded for it.

Khaled El Khouly, Chief Consumer Officer, etisalat by e& said: "Backing our transformation to a digital telco is our commitment to continue delivering enhanced customer experiences by pushing the boundaries of what's possible in every sector. The healthcare industry, particularly, has witnessed unprecedented digital transformation post-pandemic, driven by the need for innovation so as to accelerate value-based care models and focus on more value creation.

"As a telco, our connectivity services and network solutions have powered up hospitals and the healthcare system in the country, delivering a major positive impact on the lives of patients and caregivers. GoWell is part of our long-term plan to serve our customers as they look to embrace a complete holistic approach when it comes to taking care of their health and wellbeing. By bringing about a positive change in consumers' lives in this digitalization era, GoWell will help them build healthy habits by establishing and executing a list of easy daily activities that they can access through the app's tracking platform while being rewarded at the same time."

GoWell is designed in partnership with Vitality Global, leaders in wellness and behavioral change with a global technology platform , and Accenture, one of the leading firms in services, business and experience design capabilities.

Every achievement on the platform is rewarded with a wide variety of lifestyle awards as well as a unique opportunity for cashback on smart watches. Customers have a chance to earn and redeem instant rewards when achieving their weekly active goals from partners. Monthly paybacks on fitness wearable devices is another great value add when users activate the device payback feature. In addition, one can enjoy up to AED 700 cashback on the purchase price of a fitness device from Etisalat.T

Our focus will continue to remain on making our partners successful

By: Gulraiz Khalid

Ekow Nelson, Country General Manager UAE and VP at Ericsson speaks to Teletimes in an exclusive interview

Gulraiz Khalid: Some of our readers would be very interested in understanding the impact on Ericsson as traditional telcos evolve into ICT corporations with multiple lines of businesses.

Ekow Nelson: Our focus is very clear. We are here to serve our partners which are the CSPs and in the case of e&, some of our technologies and solutions may be used to support other businesses that e& is now involved in with its growth.

> *We have a Net Zero target by 2040, we will achieve 50% of that target by 2030*

We provide various infrastructure services that support some of the other elements of the growing organization and in the future we will continue to provide products and services that support them wherever they want to go.

I believe that the growth of our customers is good for us. There are more areas where we can cooperate and there are a lot of synergies that exist creating an opportunity for complementary services. Everything said our focus remains and will continue to remain on making them successful.

GK: Would you like to shed some light on the relationship with e&?

EN: We work very closely with e& across

a number of areas. We provide products and services that support their business but we also consider them to be strategic partners where we collaborate to innovate and also to focus on goals that lie beyond the network capacity and speed. For example, Ericsson and etisalat by e& have been actively exploring sustainable network solutions and have also hosted a sustainability-themed event at the Swedish Pavilion at Expo 2020.

On the network side, we are a significant provider of the Radio Access Network for e& in the UAE - we cover a large part of Dubai, all of Al-Ain, and we are also supporting them with BSS. They are an important strategic partner, and one who we can work to introduce new things to the market. For example, we just did the first 1.25 GB uplink demonstration with them.

GK: Sustainability is becoming more and more important for all of us as each day passes. Would you like to shed some light on Ericsson's efforts in this regard?

EN: Sustainability lies at the heart of our strategy, and being at the forefront of network innovations, we are actively supporting the broader telecom industry in reducing energy consumption and minimizing the carbon footprint.

We have a Net Zero target by 2040, which is a decade ahead in contrast to the 2050 target set by many others. We will achieve 50% of that target by 2030. And this stands for our entire supply chain - from where we buy, the way we buy, the way we recycle and the way we produce more importantly.

> *The initial deployment phase saw a substantial reduction in energy consumption of up to 52 per cent with Ericsson's dual-band Radio 6626 compared to prior deployed radios*

GK: What about energy efficiency on the product side?

EN: From a product perspective, all of our products are being designed to be energy efficient. A lot of our 5G systems have already got systems that allow high energy savings, for example a feature that will reduce the radio network energy consumption when it is not in use at night. We've redesigned a lot of products to deliver the same service whilst using less energy. We recently did a pilot with e& using a set of products and we found significant energy savings using the new set of products which were delivering the same service. The initial deployment phase saw a substantial reduction in energy consumption of up to 52 per cent with Ericsson's dual-band Radio 6626 compared to prior deployed radios. The reduction in energy consumption is equivalent to 7.6 tonnes of carbon dioxide (CO_2) emissions per site per year for the sites configured with four LTE carriers.

GK: Where is Ericsson heading? What impactful use cases can you share from your portfolio of technologies?

EN: We are striving to stay at the forefront of technological excellence. We are continuously improving and innovating to make sure that our technology is best applied to create value and improve experiences. 5G is a great example which is playing a key role across multiple verticals.

When we talk about impact, there are so many use cases that come to mind ranging from warehouse automation to VR to autonomous driving to sea ports and the list goes on. One project that I would like to highlight is the 5G smart factory in the US which is very impactful. The Ericsson USA 5G smart factory is a full scale operation realizing the potential of 5G with Industry 4.0 to enable intelligent automation across the US.

Basically, we are demonstrating how the next generation of factories are going to look like. The factory is completely wireless with complete integration between all of the equipment in the factory and it's a factory that is producing our own radio products.

Editor's note: Ericsson's USA 5G Smart Factory in Lewisville, Texas, has been recognized by the World Economic Forum as a global front runner in the Fourth Industrial Revolution (4IR). The Forum has awarded the site with its prestigious "*Global Lighthouse" designation in recognition of Ericsson's deployment of next-generation technology at the site and its subsequent impact.T

> *The Ericsson USA 5G smart factory is a full scale operation realizing the potential of 5G with Industry 4.0 to enable intelligent automation across the US*

Datacenter – A Real-Estate Play

From EDGE to hyperscale Immersion4 Datacenter design

Datacenter – Definition

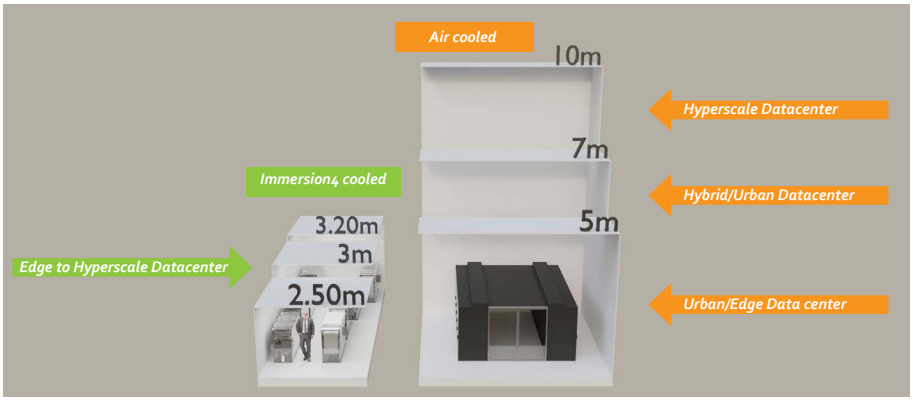
A data center is a very simple structure from a physical perspective, nothing more than four walls and a roof with electrical power, internet connectivity and secure access. A simple real estate play. With some customization and value addition, this simple structure is all it takes for a datacenter. Immersion4 brings that value to any real-estate program no matter its location, easing integration, data collection and processing closer to the sources of production.

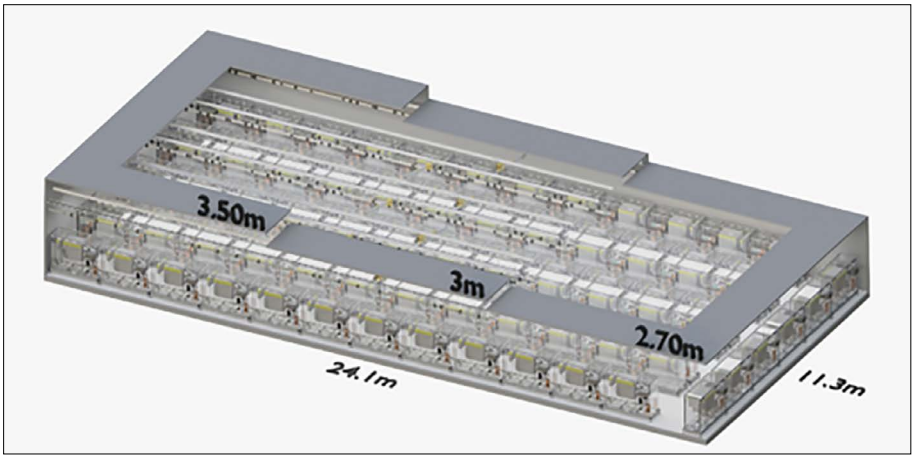
Energy production, GRID distribution & local renewable energies

Air cooling prevents any datacenter from being efficient. The eco-conservation principle cannot apply, in fact, nowadays, most of the electricity being used is applied to the air-cooling infrastructure instead of the IT Load. As well as power plants, GRIDs are at stake and need to the upgraded. Immersion4 Eco-conservation-based systems allow local renewable energy to be used as a viable power source.

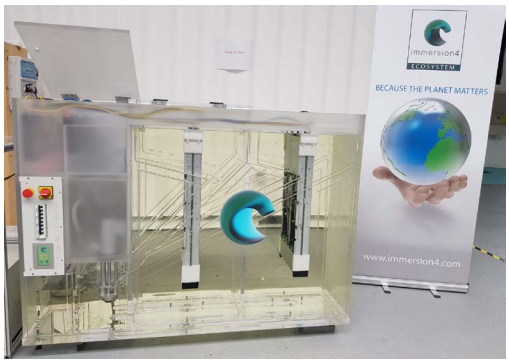
Laws & regulations – Any underground infrastructure could become a Datacenter

Switzerland has already passed a law forbidding buildings to emit GHG and Co2 that comes into effect in 2030. We are just one step behind enabling any new real-estate program no matter its location to have its basement and /or underground portion to be "Datacenter Immersion ready". Today, all large buildings and homes in Switzerland have a nuclear shelter which is used for domestic purposes during normal periods but, if needed, they could be used for protection. The same principle could be applied as any building could become a datacenter as long as it has sufficient power and internet access. This technology could bring a huge value addition to the building.





Liquid connection to the datacenter sealed water loop



DTM 20U DC Series (Front view)

Overview – Any building in any data room as a Datacenter

Since 2018, Immersion4 DTMTM technology allows any building to become a datacenter. Only a room with power, connectivity and secure physical access is required.

Market trends & URBAN Datacenter challenges – Problems solved using Immersion4 DTMTM systems

The current exponential growth in data creation and consumption makes it necessary that data is collected and processed closer to where it's

Figure showing a 270m2 Datacenter equipped with DTMTM 20U DC Series

produced. However, using traditional air-cooled datacenter technology in urban environments is a challenge for multiple reasons. Immersion4 targets all of these issues directly to provide a solution.

•**Real-Estate** – The technology behind Datacenter integration should work in any building no matter its location

•**Air pollution & nuisances** - Pollution and nuisances of any kind such as noise, outdoor equipment, GHG, Co2 and microparticle emissions are avoided

•**Environmental pollution –** No harm of any kind to humans and biodiversity even in the case of spiling

•**Time to operation / market –** Fast Deployment time and constraint

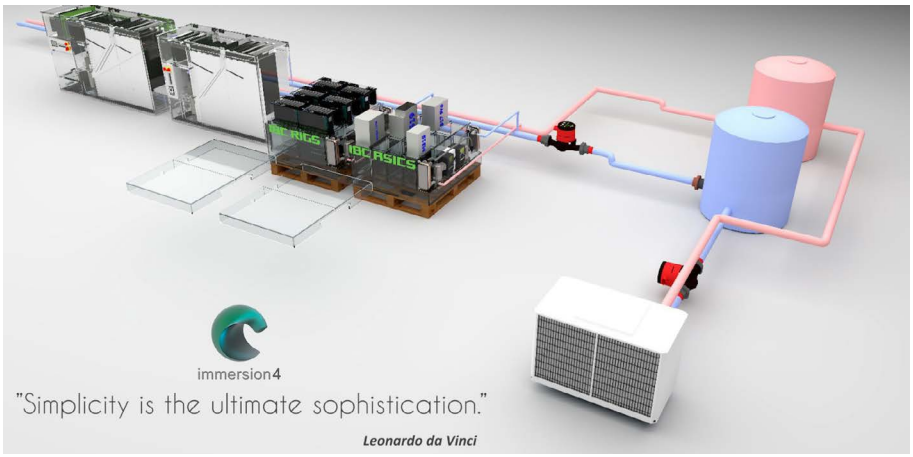
•**Connectivity** - Energy & Internet accessibility is required. While this is available in most populated areas; building specific infrastructures in remote areas for data centre purposes face this challenge more commonly. Immersion4 solution can enable any building anywhere so we can focus on locations with better connectivity ecosystem.

•**Energy consumption –**The solution can power through renewable energy to have a low impact on the electrical grid

•**Surface attack reduction** - Security – Minimal visual, thermal, electrical, electromagnetic signatures

•**IT Load resilience & optimization –** No corrosion, oxidation, humidity, whiskers, dust, mechanical vibration, or temperature swing should be expected

• **Business readiness & CAPEX awareness –** Based on the "Pay as you Grow" business model. No initial CAPEX is needed.



• **Fire safety –** DTMTM system and ICETM Coolant fully comply with existing fire safety requirement and doesn't need the USE of NOVEC products

• **IT Load dissipation heat reuse –** Feasible in the most efficient manner through "Liquid to LiquidTM" exchange

• **E-waste reduction –** Next generation of PCB's will become fully recyclable as conventional coating and brominated chemical lawyers will not be needed anymore

Immersion4 technology offering – DTMTM systems AIO & DC Series

Starting from a "Datacenter in the Box" through the EDGE to Hyperscale, Immersion4 has created two series of products called: AIO "All In One" and DC "Datacenter". They simplified the datacenter creation / migration within any building even within the most constrained environments such as urban or underground locations. Simply put, they could be integrated into any environment independent of the customer application.

Modular On Demand Datacenter - Universal cooling infrastructure for any IT Load.

Creating a "hotel" for data has never been so easy. Using a "Pay as you grow" business model, Immersion4 DTMTM & IBCMinersTM system allows for the first time to create modular, on-demand datacenters welcoming any IT Load from AI to Blockchain. T

Ensign InfoSecurity partners Offensive Security to boost Cybersecurity Training and Industry Ecosystem in Singapore

Ensign InfoSecurity Asia's largest pure-play end-to-end cybersecurity services provider and Offensive Security (OffSec), the leading provider of hands-on cybersecurity training and certification, has announced that Ensign is OffSec's first-ever Platinum Learning Partner in the Asia Pacific region. Ensign will be working with OffSec to offer hands-on, instructor-led cybersecurity training courses to industry-wide trainees to raise cybersecurity competency in the face of a dynamic and ever-evolving cyber threat.

Ensign will kick off by providing live instructor-led bootcamps for the Penetration Testing with Kali Linux (PEN-200) in early 2023 before offering other OffSec courses as part of this partnership.

Penetration tests employ a set of automated and manual interventions to identify vulnerabilities in any applications and systems. Such tests are necessary in an increasingly digitalised world to identify gaps so that remediation can be applied before an actual malicious actor can exploit them. The skills and knowledge required to perform such tests require penetration testers to be well versed in a variety of domains and draw widely from industry experience to ensure that vulnerabilities are discovered in a timely and comprehensive manner. Penetration testers will need skills and knowledge from various domains such as networks and cloud, and understand attacker's TTPs (Tactics, Techniques and Procedures).

There are also plans to offer more advanced workshops with global experts and industry-relevant training. These will serve to boost the cybersecurity industry ecosystem by providing more platforms for professional exchange and cross learning.

Chua Zong Fu
Head of Consulting, Ensign InfoSecurity

David Zhao
Head of APAC, Offensive Security

"We are excited to be working with globally renowned cybersecurity training provider Offensive Security to heighten the level of cybersecurity expertise and provide a boost to the industry ecosystem here in Singapore," said Chua Zong Fu, Head of Consulting at Ensign InfoSecurity. "Amid a complex cyber threat environment with increasingly sophisticated threat actors, penetration testing has become a necessity for organisations to perform before they connect to the Internet. The local ecosystem does not have enough skilled workforce to meet the market's demand. With this program, we hope to be able to share our experience and provide locally accessible trainers to meet the cybersecurity needs in the region."

"We are thrilled to be partnering with Ensign InfoSecurity to provide high-quality live courses to trainees in Singapore," said David Zhao, Head of APAC, Offensive Security. "We are confident that Ensign's deep level of cybersecurity expertise and regional network across Singapore and the wider Asia Pacific region makes it a well-placed partner to offer these training services. We look forward to extending our partnership to offer more courses in time to come."

Ericsson, Nokia and Huawei among Top 20 companies helping Telcos achieve their Sustainability Goals

The Sustainability Assessment: Telco Technology Suppliers by global technology intelligence firm ABI Research provides an unrivaled tool to identify partners best placed to help telcos drive sustainability initiatives as well as identify the best practice operations of suppliers that can be replicated.

This unbiased examination of 81 telecommunications suppliers supporting telecommunication operator sustainability initiatives assesses vendors on sustainability criteria across nine categories, including 5G Radio Access Network (RAN) equipment, massive Multiple-Input Multiple-Output (mMIMO) antennae, Open RAN hardware and software, on-site renewable energy solutions, free cooling systems, liquid cooling systems, Artificial Intelligence (AI)-driven software, antenna solutions, and 5G cloud-native platforms. Sustainability initiatives were considered across two major dimensions; present-day implementation (the ability to scale impact), including the global rollout of 5G and market share of equipment, and forward-looking impact, evaluating the innovation of the technologies for reducing carbon emissions

***Kim Johnson** - Sustainable Technologies Principal Analyst, ABI Research*

and waste, such as using next-generation silicon and integrating AI and Machine Learning (ML) to reduce the overall energy consumption of the equipment.

The results of the assessment highlight leaders in four different supplier groups:

Traditional Network Equipment Vendors

Non-traditional Network Equipment Vendors

Chipset and Component Vendors

Software Vendors

Across all the telco equipment categories, the leaders that demonstrated the most capabilities in their products and services for improving telecommunication operator's sustainability are Ericsson, Nokia, Huawei, ZTE, Samsung, Intel, Qualcomm, NEC, Mavenir, Cisco, Fujitsu, Rakuten Symphony, CommScope, Dell, AMD, IBM (Red Hat), VMware, Airspan, Parallel Wireless, and Schneider Electric.

According to Kim Johnson, Sustainable Technologies Principal Analyst at ABI Research, "ABI Research offers this comprehensive research as a tool to help select sustainable partners in the telecom industry and to identify industry best practices. With the evolution of network virtualization and cloudification, the total number of telco equipment vendors is growing. With this increase of potential partners, vendors must work together to optimize various layers and components of the networks, address soaring levels of 5G energy consumption, and respond to climate change industry-wide."

ABI Research's overall assessment identified the providers with the greatest ability to scale sustainable impact across the industry. Based on this analysis, ABI Research concludes that, for now, the traditional network equipment vendors are likely to be the best positioned to help telcos improve their overall sustainability strategies and

achieve climate targets. "However, the other supplier groups are increasingly contributing to the sustainability of telco networks every day and should not be underestimated, given the complexities of the sustainability challenge and the innovation needed to advance to net zero carbon emissions," Johnson notes. The next most important grouping in the assessment is non-traditional network equipment vendors, while the third tier for reducing industry-wide carbon emissions and waste are the chipset and component vendors and software providers. One company that supersedes this classification is Intel, as an integrated device manufacturing (IDM) leader and technology provider that maintains legacy partnerships with traditional vendors and overlaps in multiple network areas.

Johnson highlights, "The companies that were identified as the most impactful industry-wide incorporate many sustainability initiatives. They employ eco-design principles, using less aluminum and other materials while making equipment lightweight, modular, and compact for simplified installation and tower sharing. The leaders are designing and making energy efficient radios and equipment with specialized silicon and integrated, intelligent, and programmable hardware and software."

The traditional leaders, Ericsson and Nokia, also have 5G smart factories recognized as "Global Lighthouse" manufacturing facilities and Fourth Industrial Revolution (4IR) pioneers by McKinsey and the World Economic Forum. The Ericsson USA 5G smart factory runs on 100% renewable energy with integrated environmental systems that reduce energy consumption by 24% and water use by 75%. Nokia's 5G "factory of the future" in Oulu, Finland, leverages Nokia's private wireless networks for secure and reliable connectivity for factory assets, IoT analytics, and a real-time digital twin of factory operations data.

"In addition to supporting sustainable manufacturing and operational practices, all the companies in the Sustainability Assessment are focused on breaking the 5G energy curve. These companies are leading the way for advancing network technologies and performance while reducing energy consumption and global carbon emissions," Johnson concludes..

Nokia and du enable Zero-Touch Access with SDAN

Nokia has announced that it is deploying Software Defined Access Networks (SDAN) for du, from Emirates Integrated Telecommunications Company (EITC), to enable zero-touch network operations. The three-year project is built on the two companies' long-term relationship that brings world-class technologies to the UAE.

As one of the first operators in the Middle East to deploy zero-touch networking, du is accelerating innovation and deployment of new and innovative services on du's existing fiber broadband network. Using Nokia's innovative Altiplano cloud platform, the evolution towards a virtualized network environment provides du with the network intelligence, automation and control the company needs to support emerging new use cases such as 5G backhaul, augmented reality, virtual reality, cloud gaming and network slicing for enterprise.

Saleem AlBlooshi, Chief Technology Officer at du, said: "Adding SDANs to our infrastructure is an essential step in keeping up with the demands of our business as we move towards faster speeds and

Rima Manna, *VP ME Business, Nokia MEA*

Saleem AlBlooshi *- CTO, du*

a more virtualized environment. A key component of du's network strategy is the inclusion of SDAN in order to ensure that the company will be able to drive future value by integrating smart apps, artificial intelligence, and a higher level of automation. This will ensure that the user experience is as seamless as possible. As a result of these developments, we will be able to provide an enhanced customer experience which accelerates the company's ability to meet the growing demand by utilizing fully automated operations and zero-touch services."

Rima Manna, Vice President of Middle East Business at Nokia MEA, said: "We're excited to successfully extend our long-term partnership with du on SDAN technology. Nokia's end-to-end SDAN solution is changing the game for how service providers operate their networks. Delivered from a single cloud-optimized platform, we provide du the tools to efficiently unlock new business opportunities and use cases."

Telefónica moves towards its 2040 net zero target through energy efficiency in its network

Telefónica has published the first life cycle environmental impact and benefit analysis of its connectivity solutions, based on the application of the European Taxonomy of Sustainable Activities, with the aim of reinforcing its 2040 decarbonization commitments and supporting future decision-making processes to further reduce its GHG emissions.

In recent years, environmental protection has become an urgent priority. The COP27, the Conference of the Parties to the United Nations Framework Convention on Climate Change, is currently being held in Egypt and is warning of the need to speed up the pace of reducing emissions of polluting gases and the use of fossil fuels, calling for an effort to migrate to renewable energies in order to reach the target of zero net emissions by 2050, to which Telefónica has committed itself a decade in advance.

Among the conclusions of the Life Cycle Analysis of Telefónica España's Connectivity Solutions - prepared in compliance with the technical criteria of the aforementioned taxonomy and validated by AENOR - is that the environmental impact per PB of fibre to the home (FTTH) is 18 times lower than that of copper, i.e. 94%, thanks, among other things, to the company's previous efforts in terms of energy efficiency, design and implementation of new technologies and investments in renewable energy. These results support Telefónica's plans to accelerate the rollout of FTTH connections and continue with the closure and decommissioning of all copper installations in 2025.

In terms of mobile networks, the environmental impact per PB of the 4G/5G network has been shown to be 7 times lower than 2G/3G associated with lower and more efficient energy consumption during data transport and processing in the network system.

It is also important to note that the environmental impact of fibre and 4G/5G is reduced by more than 70% during operational activities due to Telefónica's use of renewable energy.

***Maya Ormazabal** - Director of Environment and Human Rights, Telefónica*

"We are aware of the urgency of reducing CO_2 emissions and have therefore reinforced our targets to help limit the global temperature increase to 1.5°C," says Maya Ormazabal, Telefónica's Director of Environment and Human Rights. "Our targets go beyond the Paris Agreement and we are committed to reaching net zero emissions by 2040 across the value chain as well as neutralizing emissions from our main operations by 2025," she adds.

Telefónica's strategy therefore integrates energy and climate change management and forms part of the company's Responsible Business Plan, which is aligned with the business and the demands of stakeholders.

For Telefónica, it is a priority to maintain stable electricity consumption despite the sharp increase in the digitalization of society and therefore in the data traffic that flows through its networks. In fact, this situation has tested the robustness and stability of Telefónica's network, which has withstood an increase in data traffic of 45% in 2020 and 31% in 2021, without saturation and with an availability of over 99.9%.

Chile joins the ranks of 100% renewable energy

100% of the electricity used by Telefónica comes from renewable sources in the Group's main markets (Europe and Brazil), as well as in Peru and now Chile. Progress has also been made in partial purchases of certificates for operations in Argentina and Ecuador. With these milestones, 50% of the energy for Latin America and 84% for the Telefónica Group will come from renewable sources by 2022.

Its Renewable Energy Plan includes solutions such as self-generation, purchase of renewable electricity with guaranteed origin and long-term Power Purchase Agreements (PPAs) and prioritizes non-conventional renewable electricity sources.

Therefore, the company is implementing photovoltaic panels in its facilities, which reduces its external demand and allows it to generate renewable energy for the consumption of the facility itself and is even incorporating hybrid solutions (panels+batteries+generator), which makes it possible to reduce fuel consumption.

Telefónica's objective is to go beyond 100% renewable in its main markets, i.e. to contribute to increasing the renewable mix with self-generation or by facilitating the construction of new parks with our medium and long-term consumption commitments (under PPA models).

On the other hand, Telefónica has already implemented an internal carbon price, which helps to make better investment and equipment purchasing decisions. For example, for the acquisition of energy-intensive equipment, it applies the Total Cost of Ownership (TCO), in which it values not only the acquisition price but also the energy consumed during its useful life and the associated CO2 emissions, thus opting for more efficient equipment.

Omantel launches Middle East's first 400GbE DCI Service with Ciena

Omantel has announced the launch of a 400GbE DCI service utilizing Ciena's Data Center Interconnect solution. The service is designed to meet the rapidly rising connectivity demands of Omantel's wholesale, cloud and content provider customers while delivering a superior customer experience through optimized performance.

Omantel's 400GbE DCI service runs on Ciena's 6500 Packet-Optical Platform powered by WaveLogic 5 Extreme coherent optics and is managed by the Manage, Control and Plan (MCP) domain controller. The Ciena solution gives Omantel the ability to deploy 100G and, for the first time, 400GbE DCI connectivity over wavelengths up to 800Gb/s to accommodate increasing network traffic.

"Our vision is for Oman to be the leading gateway to the region and beyond. We are bringing this mission to life, and a recent example is our new 400GbE data center interconnect service that we developed with Ciena. At Omantel, considering the

***Sohail Qadir** - VP Wholesale, Omantel*

numerous benefits on technical, commercial and social levels, we acted upon a clear strategy for data centers by partnering with Equinix, the world's digital infrastructure company, to launch MC1, the premier carrier-neutral data center in MENA. We are now taking the next step by introducing an innovative new DCI service, the first of its kind in the region," said Sohail Qadir, Vice President of Wholesale at Omantel.

He added, "Crucially, we were able to launch the service sustainably—without deploying additional platforms—doubling wavelength transmission capacity from 400G to 800G and improving overall fiber capacity leveraging our existing footprint. What this means for our customers is faster delivery of on-demand cloud applications and content with the highest quality."

Virginie Hollebecque, Vice President and Leader of EMEA, Ciena, said: "With a flexible, scalable network foundation from Ciena, Omantel is able to get ahead of the growing demands on today's networks and provide its customers with unrivaled connectivity by way of its DCI service."

Omantel and Ciena continue to work together on various levels to introduce advanced products based on the latest technologies in the industry. The collaboration has resulted in innovative products that reflect the leading role of both companies in the wholesale domain. T

Telecom service providers cooperate with CRA to facilitate telecom services for World Cup fans Digitally

The telecom service providers Ooredoo Qatar Q.P.S.C. and Vodafone Qatar P.Q.S.C. have cooperated with the Communications Regulatory Authority (CRA) to amend the registration process for getting a prepaid mobile SIM card, with the aim of facilitating telecom services for the FIFA World Cup Qatar 2022™ fans while maintaining regulatory requirements.

The updated process enables fans to apply for a SIM card online through the digital channels of the telecom Service Providers; Ooredoo Qatar Q.P.S.C. and Vodafone Qatar P.Q.S.C. and verify their identity digitally by using the "Hayya" card as an identification document of the applicant. That enables applicants, based on their preference, to instantly get an embedded-SIM (e-SIM) card without the need to visit the retail outlets of the telecom Service Providers or get a physical SIM card from their retail outlets in the State of Qatar.

According to the process, each fan can obtain two cards. Also, minor fans under the age of 18 can obtain two cards with the consent of their parents. Fans can activate e-SIM and physical SIM cards when arriving in the State of Qatar. Service Providers will disconnect the cards automatically once the fans' "Hayya" cards expires. Still, fans can request to terminate the service before that based on their desire.

"CRA is keen to effectively regulate the Information and Communications Technology (ICT) sector in a way that contributes to its development and benefits all stakeholders, whether Service Providers or telecom consumers, especially concerning the FIFA World Cup Qatar 2022™. CRA has been keen to ensure that the telecom Service Providers provide high-quality services that effectively meet the needs of consumers," said Amel Salem Al-Hanawi, Director of Consumer Affairs Department, CRA. T

Successful launch of EUTELSAT 10B and HOTBIRD 13G satellites

Eutelsat Communications has announced that the EUTELSAT 10B satellite was successfully launched into Geostationary Transfer Orbit by American space launch provider SpaceX using a Falcon 9 expendable rocket that lifted off from Cape Canaveral, Florida, USA on November 22nd. The separation of the all-electric satellite occurred after a 37-minute flight and the spacecraft systems checkout was then successfully completed over a period of approximately 3 hours.

Built by Thales Alenia Space, EUTELSAT 10B is an all-electric satellite based on the Spacebus NEO platform. The satellite embarks a powerful 5th generation digital transparent processor, offering capacity allocation flexibility and an optimal spectrum use.

Pascal Homsy, Eutelsat Chief Technical Officer, added: "This is the fourth launch for Eutelsat in just under three consecutive months, quite a remarkable and unequalled technical achievement; congratulations to all! EUTELSAT 10B's Ku-band payload complements the Ka-band of the EUTELSAT KONNECT VHTS satellite, launched in September 2022, reflecting our ability to serve our customers in both Ka- and Ku-bands with the best-in-class space assets."

***Eva Berneke** - CEO, Eutelsat*

***Pascal Homsy** - CTO, Eutelsat*

HOTBIRD 13G satellite

Eutelsat also announced that EUTELSAT HOTBIRD 13G satellite was successfully launched into Geostationary Transfer Orbit by American space launch provider SpaceX using a Falcon 9 rocket that lifted off from Cape Canaveral, Florida, USA. The separation of the all-electric satellite occurred after a 35-minute flight and the spacecraft systems initialization was successfully completed over a period of 3 hours.

EUTELSAT HOTBIRD 13G is the second of two satellites built by manufacturer Airbus Defence and Space to be placed at Eutelsat's flagship 13-degree East neighborhood position, replacing three older satellites. It is also based on the Eurostar Neo telecommunications satellite platform, developed under an ESA Partnership Project with Airbus designed to foster innovation and competitiveness in the European space industry. Once into orbit and positioned, the satellite EUTELSAT HOTBIRD 13G will, with its twin EUTELSAT HOTBIRD 13F launched on October 15th, reinforce and enhance the broadcast of more than a thousand television channels into homes across Europe, Northern Africa and the Middle East. Moreover, the two satellites will offer advanced features in terms of uplink signal protection and resilience.

Eva Berneke, Eutelsat Chief Executive Officer said: "EUTELSAT HOTBIRD 13G is now on its way to join EUTELSAT HOTBIRD 13F at our flagship 13-degree East position. We also look forward to completing the GNSS network for our European Union long term customer and partner, the EUSPA. My congratulations to the Eutelsat, Airbus and SpaceX teams for another successful launch into geostationary orbit."

GA-ASI, SES and HUGHES team up to demonstrate NEXTGEN SATCOM or MQ-9B SkyGuardian®

Higher Data Rates increase Security and Robustness for RPA

General Atomics Aeronautical Systems, Inc. (GA-ASI), SES and Hughes Network Systems (HUGHES) worked together to successfully demonstrate multi-orbit satellite communications (SATCOM) using a GA-ASI-supplied MQ-9B SkyGuardian® Remotely Piloted Aircraft (RPA). The demonstration took place on Oct. 20, 2022, at GA-ASI's Desert Horizon flight operations facility in El Mirage, Calif. The higher data rate SATCOM transmission featured SES's multi-orbit satellite communications service leveraging high-throughput, low-latency Medium Earth Orbit (MEO), and Geostationary (GEO) fleet, and was powered by a Hughes HM series software-defined modem and Hughes Resource Management System.

"This demonstration proves the importance of next generation SATCOM for operators of our aircraft," said GA-ASI Senior Vice President for MQ-9 Systems, Fred Darlington. "As we expand into new and more intricate payloads for our RPA, we'll require higher data rates that provide the bandwidth, security and robustness to operate our sensors."

The demonstration used SES's O3b MEO system that provides fiber-like carrier-grade performance, scalability, and resilience that set the path to widely leveraging open architectures and achieving network sovereignty. SES's multi-orbit fleet that delivers global coverage, high-throughput, low-latency and increased levels of security, was leveraged to show how unmanned aircraft, such as the GA-ASI MQ-9 series, can maintain high-workload, mission-critical connectivity and resiliency, even in contested environments. During the demonstration, the connectivity service seamlessly roamed between O3b MEO and AMC-15 GEO satellites. Later this

***Will Tong** - VP of Strategic Government Initiatives and Head of Aero ISR market ,SES*

Rick Lober - Vice President and General Manager, Hughes Defense

year, SES will be launching its second-generation MEO system, O3b mPOWER, to further support governments through unprecedented performance, waveform-agnostic service and enabling network sovereignty.

"We are very proud of our partnership developed over the years between SES, GA-ASI and their government customers. Innovation is key in supporting transformational changes in the ISR services, and this demonstration is one more example of how the industry can work together to bring something special to market," said Will Tong, Vice President of Strategic Government Initiatives and head of the Aero ISR market at SES. "Together with GA-ASI, we were able to prove out new levels of secure, flexible and high-performance multi-orbit services for ISR, with 10x performance on a significantly smaller form factor, with increased resiliency and security for the end users."

Integrated onto the MQ-9B, the milspec Hughes HM System modem (HM400) powered the MEO and GEO SATCOM with Low-Probability of Intercept/Low Probability of Detection (LPI/LPD) modes for the resiliency necessary in congested and contested environments. Together with the Hughes Resource Management System, the HM400 automatically optimized and switched satellite signals smoothly and within seconds, demonstrating a near real-time capability that enhances the military's Primary Alternative Contingency Emergency (PACE) planning.

"Working together with General Atomics for many years, we are pleased to support the MQ-9B program with the commercially based Hughes HM400 modem integrated as the standard for real-time communications for beyond line of sight mission opportunities," said Rick Lober, Vice President and General Manager, Hughes Defense. "Combined with the Hughes Resource Management System, the frequency-agnostic, open architecture HM System helps GA-ASI meet their military customer's requirements for uninterrupted, high data rate, multi-orbit SATCOM, ensuring secure information accessibility for the right people at the right time."T

EchoStar and Maxar amend agreement for Hughes JUPITER 3 satellite production

EchoStar Corporation has announced an amended agreement with Maxar Technologies for production of the EchoStar XXIV satellite, also known as JUPITER™ 3. The satellite, designed for EchoStar's Hughes Network Systems division, is under production at Maxar's facility in Palo Alto, CA. The amended agreement compensates EchoStar for past production delays by providing relief on future payments and expands EchoStar's recourse in the event of any further delays. The satellite is currently planned to launch in the first half of 2023.

"Launching and bringing the Hughes JUPITER 3 satellite into service is our highest priority to meet our customers' needs for connectivity," said Hamid Akhavan, CEO, EchoStar. "This agreement ensures that Maxar shares that priority with us and reinforces our joint commitment to complete production of the satellite to world-class standards, as expeditiously as possible."

"We look forward to continuing our strong collaboration with EchoStar to complete construction of the JUPITER 3 satellite in line with the current schedule," said Daniel Jablonsky, President and CEO, Maxar. "This agreement underscores Maxar's state-of-the-art manufacturing capabilities as we enter into the final phases of construction of this ground-breaking spacecraft."

Once in service, JUPITER 3 will deliver over 500 Gbps of high-throughput satellite capacity, doubling the size of the Hughes JUPITER fleet over North and South America. The satellite will bring ample capacity to grow the company's flagship satellite internet service, HughesNet®, and help meet consumer, aeronautical and enterprise demand for more bandwidth and higher speeds.

The satellite is now undergoing final integration in preparation for dynamics testing. Remaining work on the satellite consists of the launch dynamics test, final spacecraft performance tests and shipment to the launch base.

***Hamid Akhavan** - CEO, EchoStar*

***Daniel Jablonsky** - President & CEO, Maxar*

Satcoms Innovation Group announces plans for 2023 workshop

The Satcoms Innovation Group (SIG) has announced details for its upcoming 2023 Workshop and SIG Awards, which will be hosted in Washinton D.C in partnership with Intelsat. The workshop brings together people working at the operational level of satellite communications to discuss current and future challenges.

The workshop agenda will bring together industry professionals to discuss topical themes such as flat panel antennas, LEO constellations, Interference, Cloud enabled satellite and 5G. It will deliver a range of presentations and enable discussions detailing the latest innovations, the challenges and the opportunities facing the satellite industry.

The SIG awards celebrate the impressive contributions that companies, individuals, and educational institutions have made to help the satellite communications industry over the last year. Last year's winners were Micro-Ant, Spaceport Cornwall, Kacific Broadbad Satellites Ltd, GuarantCo Ltd and Joakim Espeland, CEO of QuadSAT.

Helen Weedon, Managing Director, SIG, commented: "Enabling operators and industry experts to come together and openly discuss the Operational challenges they face is crucial to the future of satellite innovation. SIG workshops give members the opportunity to ask important questions, share concerns and explore possible solutions for the sector."

Angela Wheeler, Director, Network operation, Intelsat added: "We are delighted to be hosting the next SIG Workshop at our headquarters in Washington D.C. The Satcom Innovation Group plays an important part in our rapidly evolving industry and it is incredibly important to facilitate discussions among members and experts. Intelsat is pleased to be supporting the upcoming workshop". The 2023 SIG Workshop will be held as a hybrid event. In-person in Washington D.C, and virtually between 16th - 17th of March 2023.

Signing of the final agreement relating to the combination between Eutelsat and OneWeb

Following the issuance by the employee representative bodies of their opinion on the proposed combination between Eutelsat Communications and OneWeb announced on 26 July 2022, the Board of Directors of Eutelsat Communications has approved the transaction.

Consequently, Eutelsat and the main shareholders of OneWeb (Bharti, the UK Government, Softbank and Hanwha) signed the final combination agreement on November 14th.

Completion of the transaction remains subject to the customary conditions precedent, in particular the approval by the relevant regulatory authorities. Given the currently expected timetable for review by these authorities, the Extraordinary General Meeting of Eutelsat shareholders called to approve the transaction is now expected to be held in the second or third quarter of 2023. This possible change from the initially announced timetable should have no significant impact on the combined entity's financial outlook released in connection with the proposed combination.

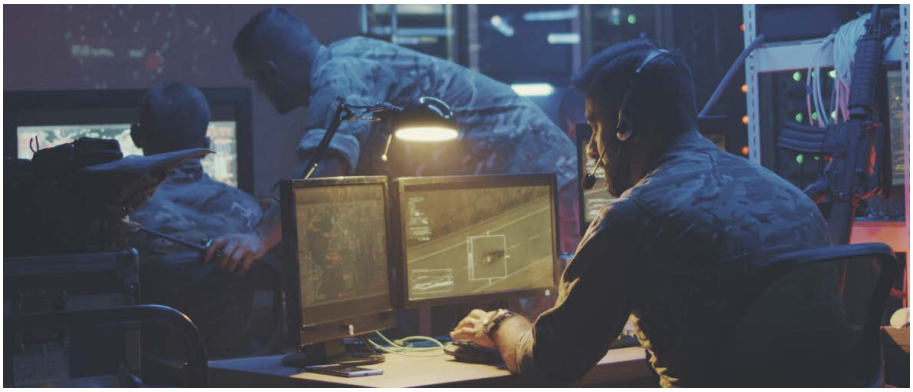
Upon completion of the transaction, the Board of Directors would be composed of 15 directors, including the Chairman and a Co-Chairman (Vice-Président): the current Chairman of Eutelsat (independent) who will be the Chairman of the future Board of Directors, the current Chief Executive Officer of Eutelsat, who will remain as such, two directors proposed by Bharti, including Sunil Bharti Mittal as Co-Chairman, one director proposed by Bpifrance Participations, one director proposed by the UK Government, one independent director representing Fonds Stratégique de Participations, one independent director proposed by Hanwha, three independent directors proposed by OneWeb and four independent directors proposed by the Board of Directors of Eutelsat, three of whom are to be selected from among the current directors of Eutelsat. This would bring the number of independent directors on the Board to 67%.

INTEGRASYS and UltiSat team-up to provide improved Visualization Management

UltiSat and INTEGRASYS have signed a collaborative agreement to provide improved visibility, management, and resiliency for deployed communications systems for the US Defense Department and NATO.

The approach combines the capabilities of both companies to provide the user with a centralized dashboard of communications and networking tools to maximize situational awareness and real-time decision-making for deployed systems in tactical and battlefield operations.

UltiSat brings over 25 years of experience developing complex satellite and wireless communications systems for defense, civil government, humanitarian aid, and critical infrastructure markets. With a core strength in engineering development, systems integration, and field support for satellite communications systems, UltiSat provides a wide range of customized solutions from small man-packable communications kits to mobile command vehicles to large-scale permanent earth stations.



INTEGRASYS brings over 32 years of experience specializing in the engineering and manufacturing of radio frequency and satellite spectrum monitoring systems and software for the telecommunications and broadcast media markets. Their solutions are tailored to enable advanced management and control and improve protection for field communications in contested regions at potential risk of interference from electronic warfare tactics.

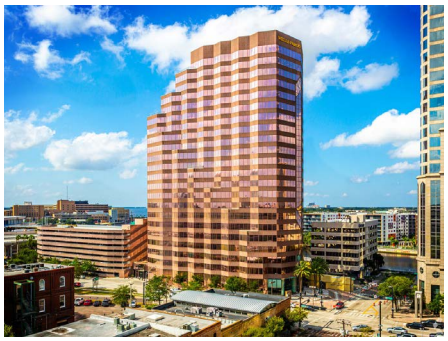
"We are pleased to take the opportunity to work hand-in-hand with UltiSat as a leading company in the integration of systems and technologies with great impact in the defense market. The partnership is part of our strategy to integrate our full product portfolio through key players within the SatCom industry", said Alvaro Sanchez Integrasys CEO.

"UltiSat is excited to add the INTEGRASYS portfolio of capabilities to augment and enhance our range of advanced satellite communications systems," said David Myers President & CEO of UltiSat. "INTEGRASYS has a great reputation for ingenuity in satellite spectrum management, we look forward to working together." T

INTEGRASYS opens more facilities in the USA

INTEGRASYS Group continues with its worldwide expansion with a particular focus on the United States, as the main target market for the software company. After its first facility in Washington back in 2016, the company decides to extend its business in the country with two more facilities in Tampa (Florida), and Atlanta (Georgia).

The main aim of INTEGRASYS is to increase the reach of its potential customers, as well as strengthen the relationship with its partners. The company believes in having distributed footprints where customers are helped in strengthening relationships, to ensure that the customer can transmit



Tampa Office

their needs comfortably. The new offices are sales and support facilities, highly focused on customer requirements, and creating new solutions for our customer's needs within the US market. The two offices are in the main business areas within the cities, as are the rest of INTEGRASYS offices. The new Florida facility will be a strategic point for supporting MoDs, and Intelligence Agencies, and the Georgia office will be focused on the private sector, such as Satellite Operators, and Service Providers, as well as managing the LATAM Market, from the southeast coast.

INTEGRASYS is committed to serving the markets locally, and America has great potential for innovative solutions in these less certain times of political tensions and wars. T

Hub71 and Yahsat to advance innovative technologies supporting satellite operations from Abu Dhabi

Hub71, Abu Dhabi's global tech ecosystem, and Al Yah Satellite Communications Company PJSC "Yahsat", the UAE's flagship satellite solutions provider listed on the Abu Dhabi Securities Exchange (ADX), has announced a collaboration to accelerate startup technology adoption in satellite communications.

Through this partnership, Yahsat will work with founders in the Hub71 community to advance technological innovations that support the development of the UAE's mobile satellite capabilities. The first contract resulting from the new partnership is an agreement between Yahsat and Hub71-based startup, Mental VR, a Virtual Reality (VR) software development company. Mental VR will provide its state-of-the-art VR technology and deliver dynamic and seamless training programs for Yahsat personnel in remote locations.

The wider partnership between Yahsat and Hub71 will help identify technology startups that have the potential to advance the UAE's space industry and strengthen satellite communication technologies. Hub71 and Yahsat are both supported by Mubadala Investment Company and will work collaboratively towards building national capabilities and contributing to the UAE's economic growth for the next 50 years. As part of the partnership agreement, Yahsat has appointed Hub71 as its Innovation Partner.

Hub71 startups will get to work alongside global experts from Yahsat and receive strategic mentorship to gain insights into satellite technologies and the space industry. Startups will also be able to explore commercial opportunities as part of Yahsat's satellite and technology program.

Badr Al-Olama, Acting Chief Executive Officer of Hub71, said: "Our partnership with Yahsat reinforces our commitment to support tech initiatives that create impact for Abu Dhabi. Through this partnership, we will promote economic opportunities and strengthen the UAE's growing position as a leading global hub for technological excellence."

Ali Al Hashemi, Chief Executive Officer of Yahsat, added: "Yahsat is proud to have been a pioneer in the satellite services industry within the UAE, championing the establishment of the nation as a global hub for space tech. Our partnership with Hub71 is aligned with our commitment to build local capabilities and enhance the national space economy through collaborations with the startup ecosystem. As two UAE entities with a foundational base in Abu Dhabi, we look forward to working together to create greater opportunities for the development and enhancement of the satellite services industry."

Since its inception, Hub71 has rapidly expanded its ecosystem, which is now home to almost 200 startups working across 20 sectors. The global tech ecosystem has created a thriving business environment for founders with dedicated programs that promote increased commercial and fundraising opportunities. Hub71 startups have raised AED 3.2 billion from renowned investors globally and generated AED 2.7 billion revenues since 2019.

GLOBAL ICT, TELECOM & SATCOM EVENTS 2023

11 January 2023
SAMENA RISE IN RIYADH
Riyadh, KSA

14-16 March 2023
معرض و مؤتمر الخليج العالمي للأمن المعلومات
GISEC GLOBAL
Dubai, UAE

07-09 June 2023
CommunicAsia
Singapore

06-09 February 2023
LEAP
Riyadh, KSA

16-18 May 2023
CABSAT
Dubai, UAE

28-30 June 2023
GSMA MWC Shanghai • 上海
Shanghai, China

23-25 February 2023
ITCN ASIA
GATEWAY TO DIGITAL PAKISTAN
INTERNATIONAL EXHIBITION & CONFERENCES
Islamabad, Pakistan

23-24 May 2023
5G MENA
Dubai, UAE

15-18 September 2023
Amsterdam, Netherlands

27-02 February -March 2023
GSMA MWC™ Barcelona
Barcelona, Spain

30-31 May 2023
TELECOMSWORLD Middle East
Middle East | North Africa | Central Asia | South Asia
Dubai, UAE

16-20 October 2023
GITEX GLOBAL
Dubai, UAE

07-09 March 2023
capacity
Dubai, UAE

06-08 June 2023
MEET ICT BAHRAIN 2023
BiTEX 2023 BAHRAIN INTERNATIONAL TECHNOLOGY EXHIBITION
Manama, Bahrain

14-16 November 2023
Africa Com
Anchor Event of AFRICA TECH FESTIVAL
Cape Town, SA

13-16 March 2023
SATELLITE 2023
Washington, DC

06 June 2023
avia
ASIA VIDEO INDUSTRY ASSOCIATION
Singapore

06-08 December 2023
baku tel
Baku, Azerbaijan

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