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The Economic Programme is vital for the economy to recover as fast as possible

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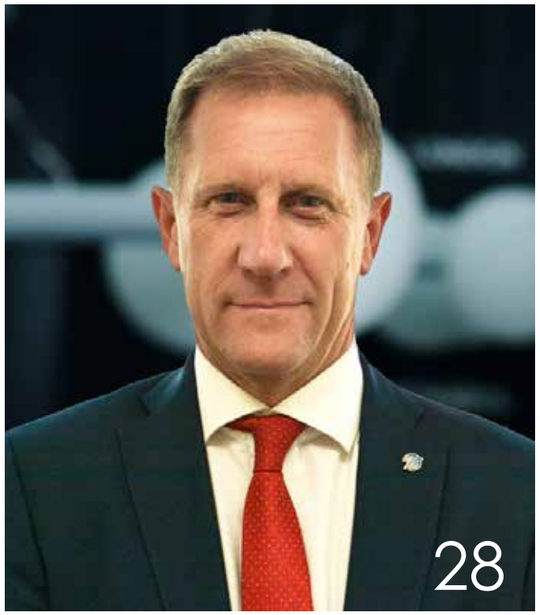

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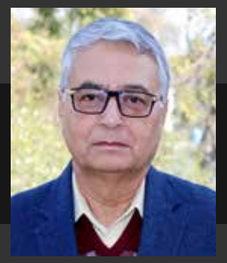

Dear Reader,

Welcome to the latest edition of Teletimes International and a very warm Eid Mubarak to all our readers and partners! May this holy month bring peace and blessings upon everyone and help us all successfully recover.

This edition of Teletimes features an exclusive interview with Mohammed Abdulla Shael AlSaadi, CEO - Corporate Strategic Affairs Sector at Dubai Economy who talks about the various govt. supported digital initiatives in place that will help the economy recover e.g. Unified Payment Network, Digital IDs and digitization across healthcare.

The edition also includes two exclusive interviews with key satellite players; David Gelerman, the President and CEO of SpaceBridge and Mark Guthrie, the Chief Commercial Officer of Azercosmos.

As the month of May approached, we were all excited for CABSAT 2021; but unfortunately the event has been postponed till October 2021 as we are still recovering from the third wave. Teletimes will be participating in the event as a supporting partner in October.

As always, you will find the latest news and updates from all the major ICT industry players. Your feedback is welcome on info@teletimesinternational.com

Enjoy reading and stay safe!

Khalid Athar
Chief Editor

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SAMENA Council's LS 2021 demonstrates global commitment and decision-making power to create new possibilities for businesses, governments, and the citizens

Teletimes Report

SAMENA Telecommunications, with patronage of the Telecommunications & Digital Government Regulatory Authority (TDRA) of the UAE, strategic partnership of stc Group and Zain Group, and with Huawei as the host for the eighth consecutive year, held one of the world's premier ICT Industry leadership congregations, the Leaders' Summit 2021, on April 8th. Two of UAE's honorable ministers as well as the head of the International Telecommunication Union, along with several excellencies and top decision-makers from around Europe, Central Asia, and the SA-ME-NA region, addressed the virtual congregation of the Leaders' Summit, organized under the theme "Championing Digital Economic Growth from Policy to Reality". The Leaders' Summit 2021 congregated Public and Private sector Leaders with diverse industry backgrounds from across the world.

As an annually anticipated leadership event, Leaders' Summit encompassed ICT as well as cross-industry stakeholder participation, experience exchange, and intellectual discourse among key decision-makers and innovators. Encapsulating a multi-dimensional agenda, ranging from policy statements, discussions on a complex subject matter, to live insights from renowned personalities in the world, Leaders' Summit 2021 welcomed Chairmen and CEOs from the ICT Private Sector, and top decision-makers from various Regulatory Authorities, and Thought Leaders from across developed and developing economies, and Leaders who are demonstrating progressiveness in policy and regulatory reforms, digital transformation, and in driving cross-industry synergies. To this effect, the Summit included participation of global leaders and entities focused on institutionalizing and fostering cross-sector collaboration with Finance, Education, and Healthcare sectors under the "EDISON Alliance" initiative, launched by the World Economic Forum. Special focus was casted on the ITU's upcoming WTDC-21 conference, on Intelligent Connectivity, Technology Demonstration, Global Action & Collaboration, Vertical Industry Segments, Interview Sessions with Media, Digital Application & 5G Ecosystems, Digital Sustainability, and the Internet Economy. Other key technology subject matter that came under discussion during the Leaders' Summit 2021 included the role of broadband networks and advanced digital technologies, such as cloud communications, IoT, AI, with a particular emphasis on understanding their implementation in correlation with emerging social and business value ecosystems as well as thriving digital application ecosystems.

As the year 2021's premier and one of the world's foremost virtual collaboration platforms for global dialogue among the world's and the SA-ME-NA region's topmost organizations and decision-makers, the SAMENA Council Leaders' Summit 2021 was a fully-packed one-day virtual journey through different time zones around the globe as well as a display of leadership power and commitment toward addressing important industry issues in the "Final Decade of Action". The diversity of leaders at the Leaders' Summit 2021 was made possible with the trust, commitment, and participation of both global and regional decision-makers as well as decision-influencers, who perceive SAMENA Council as a trusted voice of the Industry and as a sector-development partner to regional Governments and global ICT institutions. This trust, commitment, and participation of both global and regional decision-makers has established the SAMENA Council Leaders' Summit as a go-to platform, which, through its virtual organization since 2020, has provided new possibilities for the Global Audience, Business Leaders, Policy & Regulatory Decision-makers, and Global Thinkers to participate, deliberate, and align common visions on the realization of a beneficial digital future for the whole of humanity, and for achieving better business gains for the Private Sector.

Huawei's participation and its real-life technology use-case demonstrations, as done live from its DigiTelligent Forest in China during the Leaders' Summit, as well as the presence and exchange of insights from the champions of connectivity (namely, stc Group, Zain Group, among others), champions of digital transformation (especially, Etisalat) in the region, as well as champions of cross-sector collaboration (EDISON Alliance members), and champions of multilateralism, and in-depth discussions held against the backdrop of technology availability and sustainability of digital supply-chain and thriving 5G and digital application ecosystems, corroborated the need for revamping and revitalizing policy approaches to mitigate and overcome challenges that impede the progress on the 17 SDGs and the world's Connect 2030 Agenda.

Messages from the Policymakers, Regulators, the Private Sector, Renowned thought-leaders, and thinkers representing the world's leading organizations touched upon the core of where our focus needs to be: making reality possible with the right policy and technology-deployment decisions. Such messages were delivered in the context of economic development in the digital age; in view of the requirements for a fully inclusive and equitable future for all; to address the necessity for advanced ICT infrastructure and digital technologies and platforms; and to fulfill the need for identifying key stakeholder engagement areas and priorities that can help the Industry as well as world community

transform its dreams, set forth as "Sustainable Development Goals", into transformed reality. Furthermore, the realization that a significant part of the ICT Industry's future-building endeavors now demands Telecom Operators and their leaderships to take on a frontal, transformed role as the enablers of digital economic development was reinforced. A similar realization that the Private Sector simply cannot fund everything and single-handedly overcome the digital divides, internet usage gaps, and the ICT funding gaps, was also pressed upon. Overcoming multi-dimensional gaps requires innovative and better-incentivized approaches, which the Public Sector needs to champion in collaboration with the Private Sector. This is especially needed in consideration of the fact that, based on a recent UNCTAD report, for the last almost 200 years, each time there has been progress, the divide between the haves and have-nots has increased. In our lifetime, the Covid-19 pandemic has highlighted this context and sufficient evidence proves that people with access to the Internet are doing well, while those who do not have access are left even further behind.

To ignite future digital-led economic growth that should be inclusive, the Leaders' Summit 2021 highlighted the need for ensuring internet access as a critical means for making progress on the SDGs, and to build on innovation, information, and incentives as the fundamental pillars. While new forms of partnerships can serve as accelerants to address the connectivity gaps, we also need to overcome the usage gaps and create a sense of relevance for those who are still not using the Internet. A global global campaign to explain and realize new ICT funding avenues is needed as are multilateral approaches in ensuring sustainable digital supply chains, in overcoming issues such as Cybersecurity and privacy protection, and in leveraging digital inter-dependence—which should be valued and not taken for granted.

While the participating industry leaders shared their insights, the Leaders' Summit's global audience also provided its understanding of the definition and understanding of "intelligent connectivity" with 50% respondents considering personalized experiences to be the most important aspect of intelligent connectivity. The audience (71%) suggested to key decision-makers to address policy and business enablement gaps, and reduce financial burdens, to help accelerate "intelligent connectivity". Reflecting on their understanding of global imperatives, especially SDGs and which SDGs may be more quickly and directly achieved through ICT development, 40% felt that SDG 10 (Reduced Inequalities among Nations) may be more quickly achievable, with 40% feeling none can be achieved quickly. 100% of the respondents strongly agreed that without "multilateralism", challenges such as Cybersecurity and sustainable digital supply chains cannot be addressed. Regarding the priority sectors that should benefit the most from 5G and related technologies, the audience expressed a divided view on Finance (50%) and Education (50%) sectors. The audience, similarly, expressed a divided view on new "X-to-ICT" collaboration initiatives that SAMENA Council should focus on to help foster collaboration among the connectivity ecosystem players and essential sectors, with the audience equally divided on Education, Finance, and Healthcare focus. Concerning the stakeholder groups more likely to fund the next infrastructure development wave worldwide, to connect the remaining 3 billion unconnected citizens of the world, 50% of the audience felt that Governments will lead, while the remaining 50% considered the involvement of Internet Companies as key finance contributors in the future.

The SAMENA Telecommunication Council Leaders' Summit 2021 has been conducted in

the "year of recovery", with nine year remaining to the completion of the Final Decade of Action, and at a time when the intrinsic value of 5G and other allied digital technologies are being assessed against the social and business values they create.

Much collaboration has begun to shape up among Telecom Operators and Education, Healthcare, and Finance sectors, and various industries such as Ports & Shipping, Mining, Oil&Gas, are being more vocal about their needs for digital transformation through 5G, AI, Cloud, and other allied technologies. This demonstrates the importance and necessity of industry-wide and cross-industry digital transformation not only for commercial and economic reasons but also for health, overall well-being, and sustainability causes.

Through its Leaders' Summit 2021 platform, SAMENA Council has again drawn parallels between sustainability and inclusiveness and in being able to build successful digital economies.

SAMENA Council's CEO reiterated that through collaboration and by fostering inclusion and participation of everyone, we can ensure that we will take into account different needs and issues into consideration in a timely fashion--and we should waste no time and no effort should go in vain.

Championing Digital Economic Growth is boosted through businesses and investments. Therefore, it is integral to address priority areas that can help bring about greater investments, to help drive sustainable economic growth and better business gains. Some of these key areas, at a higher level, include but are not limited to the need for reduction in taxation and incentives in investment, future-friendly spectrum allocation approaches and rectification of spectrum interference issues, data regulation with an emphasis on cross-border access to data for regional Operators, and fostering ICT-led innovation, with Governments championing the adoption of new digital services.

Since the prevailing global health crisis, while the Leaders' Summit 2020 and Leaders' Summit 2021 have been held virtually, with much appreciation and availability of time and space provided for multiple stakeholders and globally-renowned personalities to conveniently take part in the leadership dialogue on important global ICT development matters, SAMENA Council anticipates that the Leaders' Summit 2022 will be held physically from Dubai albeit remote, time-zone specific participation of leaders from across the world will remain a significant part of the Summit for the foreseeable technology-led future. T

Etisalat honours top sales channel partners of 2020 at a virtual awards event

Etisalat honoured its top performing partners of 2020 at the virtual 'Partner Awards Event 2021'.

Each year, Etisalat holds an awards ceremony to recognise and reward the company's partners for their continued support and efforts in taking Etisalat to greater heights.

The event was held virtually this year in line with Covid-19 protocols and safety standards. A total of 45 partners were awarded from different segments mainly retailers, franchisees and distributors.

Omer Rashid, Senior Vice President, Sales Consumer, Etisalat, said: "Despite the unprecedented impact of the COVID-19 pandemic, Etisalat had a very successful 2020. Our consumer sales partners played a very important role in these achievements. The 'Partner Awards Event 2021' reaffirms our commitment to building strong relationships with our partners in keeping with our slogan 'Together Matters'."

Mohamed Al Zarouni, Senior Vice President, Distribution and Customer Registration, Etisalat, for his part, said: "We at Etisalat use this event as a platform to recognise as well as engage and motivate our partners and frontline staff. As we go from strength to strength, we look forward to working closely together, receiving feedback to maximise sales opportunities and hurdling challenges effectively so we can make 2021 yet another successful year."

Etisalat's partners expressed their appreciation for the awards and declared their continuous support for the event, which serves as a cornerstone of their success. These entities take pride in partnering with Etisalat, one of the world's leading telecom groups in emerging markets, the fastest mobile network globally by Ookla, and the strongest brand across all categories in Middle East and Africa (MEA) region. T

Experts advocate that expanding 5G will drive digital-led economic growth across the region

Attendees at SAMENA Leaders' Summit say 5G is now playing a vital role for consumer and industrial markets, proving its business and social value

Telecommunications leaders and experts from around the world recently gathered at the SAMENA Telecommunication Council Leaders' Summit 2021 to review plans for putting today's digital-led economy back on track. Held virtually due to social-distancing requirements, the summit was organized by the SAMENA Telecommunications Council, and hosted by Huawei for the eighth consecutive year. Held under the theme of 'Championing Digital Economic Growth from Policy to Reality', attendees exchanged insights about current technology, industrial, and economic development opportunities.

During the summit, Huawei emphasized the strategic importance of the region's digital transformation, and that there are significant opportunities to enable more aggressive digitalization of all sectors and industries in support of national development visions and targets.

Charles Yang, President of Huawei Middle East, said: "As we enter the post-pandemic era, the economic recovery of the Middle East is the major target of today. At the same time, ICT is now recognized as the new engine of recovery and development, and together with our customers and partners will light up the future of the Middle East through technology innovations."

"In particular, 5G is now a key enabler of the region's digital economy. The technology is already playing a vital role for consumer and industrial markets proving its business and social value for the future digital economic growth in the Middle East. The number of 5G users has exceeded two million in just 19 months, twice as fast as 4G," Yang added. "Many new smart cities have started to emerge in the Middle East, such as NEOM in Saudi Arabia. Such developments, alongside mega-events such as Expo 2020 and the FIFA World Cup 2022, will benefit greatly from investments in digital infrastructure like 5G. Growth-oriented, future-looking 5G policies, including the sustainable spectrum, fiber-to-site strategies, must be in place to drive investment and enable digital economic growth."

A speaker at the summit, Anjian, President of Huawei Carrier Networks Business Group in the Middle East, also specified the importance of 5G experience benchmark. In GCC, 5G commercialization is moving fast. Although 5G has been deployed on a large scale, there are many opportunities to enhance user experience with better speed and less latency, especially for gaming and video users. This requires us to build a unified benchmark to evaluate comprehensive 5G experience, enabling operators to better focus on user experience, make precise investments, and improve overall ROI. To that end, Huawei proposed the S.L.A (Speed, Latency and Availability) 5G experience benchmark model, this includes three main indices, Speed, Latency and Availability, which considers factors such as 5G spectrum bandwidth, download rate, E2E (End to End) delay, and coverage to evaluate 5G user experience. Operators can identify the experience problems and gaps based on the model, then make precise investments and improve the 5G user experience.

The SAMENA Telecommunication Council Leaders' Summit comes at a time when the intrinsic value of 5G and other allied digital technologies are being assessed against the social and business values they create. During the pandemic, for example, it has been estimated that 88% of global organizations now encourage telecommuting and video conferencing, and more than 40% of Fortune 500 companies now promote online learning channels within their companies. Many industries such as shipping ports, coal mining, oil & gas have expressed greater needs for digital transformation. This demonstrates the importance and necessity of industry digital transformation not only for commercial reasons but also for health and safety and sustainability. Enhanced ICT infrastructure is the cornerstone to meet the digital needs of individuals, households, industries, and for digital economic growth. T

Enjoying ubiquitous 5G experiences with a unified benchmark

Teletimes Report

Following the recent SAMENA Leaders' Summit, a new '5G Experience Benchmark' has been proposed by Huawei to comprehensively evaluate and enhance 5G services for users across the Middle East. This benchmark is being proposed at a significant time as 5G commercialization rapidly grows across the region. The benchmark aims to enable telecom operators to focus on improving 5G user experiences, make precise investments, and improve ROI.

In the GCC in particular, 5G commercialization is already moving fast. In the past five months, with the release of multiple 5G smartphones, the number of 5G users in the Middle East is estimated to increase from 0.7 million to 3.1 million, realizing around 350% growth. On some networks in Kuwait and Saudi Arabia, for example, the 5G traffic ratio has already exceeded 30%. A positive 5G business cycle is emerging in the Middle East.

Globally, 5G has enabled diversified emerging services from imagination to reality. Taking China and South Korea as examples, VR/AR, 4K, multi-view video, and cloud gaming have brought enhanced digital experiences to many. On the other hand, it also brings 5G user experience issues to the surface. 5G users have higher expectations for 5G, as well as higher requirements for the network experience.

According to the experience of the world's 5G pioneer market, 5G users are mainly sensitive to the network rate, real-time experience, and 5G service availability. In the GCC, the insight also shows that although 5G has been deployed on a large scale, there are many opportunities to enhance user experience with better speed and less latency, especially for gaming and video users. This requires the industry to build a unified benchmark to evaluate comprehensive 5G experiences, again enabling operators to focus on the user experience, make precise investments, and improve ROI.

In the SAMENA Leaders' Summit, Huawei proposed the 5G experience benchmark by an S.L.A. model, which considers factors including 5G spectrum bandwidth, download rate, E2E latency, and coverage, to comprehensively evaluate the 5G user experience. The 5G S.L.A user experience benchmark includes three main indexes, Speed, Latency, and Availability, and the overall index is calculated by **S*L*A**.

S indicates the speed. The average downlink rate of 5G UEs is measured and divided by the benchmark value according to different bandwidth to obtain an index score. This index will support operators to evaluate its speed quality who has different spectrum bandwidth.

L indicates latency. The top 5G applications are measured and calculate the good latency ratio to obtain an index score. This index will support operators to evaluate E2E latency quality for its top applications.

A indicates the availability of 5G network. The 5G availability score is obtained by identifying the current network population coverage and multiplying the 5G network camping ratio. This index will support operators to evaluate its 5G availability for end users in combination of 5G covered areas and non-covered areas.

The score obtained by multiplying the three indexes, is the final network experience benchmark value.

The 5G experience benchmark is a multi-dimensional comprehensive measurement model. For the specific measurement method and detailed scoring mechanism, it is suggested that regulatory authorities and operators should discuss and cooperate to further clarify the quantification. For example, top services on an operator's network are different. Based on different services, entities need to perform modeling based on a large number of live network samples or lab test data.

In addition, the baseline values corresponding to good user experience, such as the rate and latency, are provided to help measure and score the network experience gap and identify the operator network construction direction. It is hoped that regulatory agencies and operators can reach a consensus on the availability of rate and latency firstly, use these dimensions as the criteria for measuring their networks, and then perform detailed measurement and analysis based on their networks.

This is the key for operators to identify the experience problems and gaps, then to make precise investments and to improve the user experience, finally accelerate digital economic growth. T

Etisalat Group CEO participates in Leaders' Summit

Joins the 'Global Leaders Insights' to discuss digital policy and transformation

Etisalat announced the successful participation of Hatem Dowidar, CEO at Etisalat Group, at the Leaders' Summit 2021 headlining top decision makers from the telecom and ICT industry spanning multiple geographies.

The virtual event gathered global leaders and entities focused on fostering cross sector collaboration as the world embraces new norms in socialisation, conducting business, and adopting digital technologies to benefit from the social and business values created by them.

Eng. Hatem Dowidar, CEO, Etisalat Group, gave his insights into the increasing relevance of 'Digital Transformation' in today's extraordinary times during a one-on-one session.

"The COVID-19 crisis provides a glimpse into a future world, one in which digital has become central to every interaction, forcing both organisations and individuals further up the adoption curve almost overnight. In this world, digital channels take precedence to build resilient societies, allowing millions of people to continue to work, buy basic necessities, socialise, access medical care, entertainment, and learn, all without leaving their homes. At Etisalat we have taken extraordinary measures to digitally accelerate, become agile and flexible to meet the varying customer requirements across sectors," said Dowidar.

Bocar A. BA, CEO and Board Member SAMENA Telecommunications Council, UAE said, "I want to thank Eng. Dowidar for shedding light on the tremendous role of telecom operators and their commitment to bringing digital connectivity and benefits to everyone as we master our effort to achieve universal digital access, and tirelessly work that no one is left behind. The Leaders Summit this year was a success with virtual discussions and keynotes focusing on the acceleration of the digital economy gathering leaders and regulators from the telecom industry encouraging them to work collaboratively in the new normal."

Leaders' Summit 2021 organised by SAMENA Telecommunications Council is a premier annual congregation of public and private sector leaders from South Asia, the Middle East, North Africa, Asia, Europe and beyond. The event is designed to exchange business, commercial, policy, and regulatory perspectives on rising complexities of the digital space in an open, multi-stakeholder setting and a world-class business ambience. T

Teletimes Report

Charles Yang: Huawei sees significant potential to support Middle East partners on digitization journey

- ICT is the new engine of economic recovery and development, that R&D is the key to innovations driving humankind's future, and that a spirit of collaboration and exchange will be all the more important for Huawei in 2021
- The Middle East region will continue to be a strategic market for the company, which is keen to contribute to major events such as Hajj, Expo 2020, FIFA World Cup 2022, offering unparalleled 5G experiences
- Local ICT talent ecosystems essential to the region's digitization journey and achieving national development targets and visions

On the sidelines of the SAMENA Leaders' Summit, the President of Huawei Middle East, Charles Yang, has provided an update on the company's business globally and across local markets, with his comments following Huawei's release of its annual earnings results for 2020. The executive has emphasized the strategic importance of the region to the company internationally, noting Huawei's commitment to the region, and that there are significant opportunities to enable more aggressive digital transformation in support of national development visions and targets, as well as to grow its market presence.

"Digitization in the Middle East has accelerated remarkably over the last year, with global network traffic having increased by around 50% during the pandemic," notes Yang. "The ICT industry thus has an important responsibility to create new social and business value for governments, organizations, and individuals. We are fully committed to this value creation. We already bring the power of technologies like 5G to key events such as the annual Hajj pilgrimage in Saudi Arabia, and are now aligning with governments to support mega-events like Expo 2020 in the UAE and the FIFA World Cup 2022 in Qatar. We will keep innovating to create value for our customers and to support economic recovery and social progress."

To that end, Huawei has said that it used the last year to further enhance its operations despite a challenging global environment. That led to achieving revenue and profit growth during 2020 overall. Part of that came down to an unwavering focus on R&D and joint innovation programs in areas like 5G, AI, and cloud, says Yang, with Huawei establishing 13 Open Labs around the world to support open collaboration for shared success.

In particular, global 5G deployments have proceeded faster than expected. By the end of 2020, more than 140 commercial 5G networks had been deployed in 59 countries and regions, and the number of 5G subscribers worldwide had exceeded 220 million. Globally, the number of 5G networks and base stations of the first year is 6 times more than 4G, and user growth of 5G is 500 times faster. Middle East has become a leading 5G region globally. In just 19 months, the number of 5G users have exceeded 2 million which 4G took double times, and it is expected that 5G user grow very fast. That's why Regulators in the Middle East have released many policies which greatly promote 5G development, yet Yang says that more industry policies are still needed to unleash 5G's full potential.

Today, Huawei is a major 5G solutions partner to telecom carriers and enterprises across the Middle East. It is a position earned as a result of investing early and heavily in technology R&D. The company began 5G research as early as 2009, and has invested USD4 billion in 5G so far. Moreover, Huawei's R&D investments over the past decade have exceeded USD110 billion. In 2020 alone, Huawei's carrier business group ensured the stable operations of more than 1,500 networks across over 170 countries and regions throughout COVID-19 lockdowns.

"The Middle East has been an exciting region for us given the enormous scale of developments that are underway that can be empowered by technology. This is epitomized by the rapid development of 5G that has exceeded many expectations. Computing power also plays an integral role in enabling businesses when it works in parallel with 5G. The region today is more connected than at any point in history," comments Yang.

After contracting in 2020, overall ICT spending in the Middle East, Turkey, and Africa is expected to make a comeback in 2021, returning to positive growth of over USD209.5 billion, according to IDC.

To serve these ambitious projects, Huawei acknowledges there is still a need to develop a stronger local talent ecosystem. Due to the pandemic, knowledge-exchange platforms must be revisited, with new programs initiated. Yang cites how Huawei's own "LearnOn" online learning platform was launched in the Middle East last year, and to date more than 35,000 people have used the platform for training. Yang has also stressed that Huawei will continue investing in programs such as its Seeds for the Future initiative and ICT Competition, as well as in Huawei ICT Academies and laboratory funding, to develop 70,000 ICT talents and build 100 Joint Innovation Centers for the Middle East by 2025.

In 2021, that spirit of collaboration and exchange will be all the more important for Huawei.

"In today's digital economy, we judge cooperation as fundamentally more important than competition. We need to enable others," contends Yang. "At Huawei, we don't compete for profit with others or with our partners. It is not a zero-sum game. We are a business that thrives on openness, collaboration, and shared success, where we can address real needs and create real value. As such, we will continue to advocate for broader collaboration between the industry, government, and academia to help light up the future through innovation."

Huawei believes that underpinning that cooperation is a shared responsibility towards cybersecurity. The company has thus been working closely with governments, security experts, and enterprises across the Middle East to help evolve cybersecurity assurance and privacy protection systems.

"Cybersecurity and privacy protection have been and will always be our top priorities. Yet cybersecurity is not an issue for any single company or country alone," Yang highlights. "Huawei has not had any major cybersecurity incidents while working with more than 500 telecom providers, including most of the top 50 telecom operators worldwide. To ensure transparency and joint collaboration, Huawei is always ready to sign cybersecurity cooperation agreements with governments and customers in the Middle East. Together, we will keep pushing the boundaries of technology and driving digital transformation forward with our customers and partners."

In March, Huawei released its 2020 Annual Report noting that sales revenue in 2020 rounded off at approximately US$136.7 billion, up 3.8% year-on-year, and its net profit reached US$9.9 billion, up 3.2% year-on-year. To date, 700+ cities and 253 Fortune Global 500 companies have chosen Huawei as a partner for digital transformation.

Responding to a question from Teletimes International regarding Leaders' Summit, Mr. Charles Yang remarked, "My personal view is that of course, we want to attend this kind of events offline, and I hope that the pandemic is over soon so that we can have face to face meeting with our friends from the carrier, government and third parties in UAE during SAMENA Summit. But online events have its own advantages, it is more convenient, Global Leaders can join at the same time and share their views and more people can participate. I have participated in the past two years online as well and have learned a lot."

"Secondly, I believe SAMENA's Leaders' Summit is a valuable platform for leaders in ICT from the Middle East region, Africa, Central Asia and international organizations to share their views and exchange ideas to help mutually increase insights and I would say that without the SAMENA Summit the 5G development in the Middle East would not have happened this fast. At Huawei, we are grateful for this platform and grateful for the contribution led by its CEO Mr. Bocar Ba. We hope that the SAMENA Leaders' Summit can be finally organized offline in 2022."

Huawei Middle East unveils NetX2025 Target Network Technical White Paper

The President of Huawei's Carrier Network Business Group in the Middle East has recently unveiled what the company believes will be key features of the future target network. Based on a "GUIDE" model, these features are examined in detail in the NetX2025 Target Network Technical White Paper, which was showcased to organizations in the Middle East for the first time at the recent SAMENA Leaders' Summit 2021.

An Jian, President of Huawei's Carrier Network Business Group in the Middle East, noted that as transformation towards an intelligent society accelerates, all industries are entering the digital era in which ICT infrastructure will play a crucial role in the digital economy. For telecom operators, their customers and service types are changing, and there will be even more uncertainties in application scenarios. This raises the question of how operators can best address these challenges and seize related opportunities. Huawei has recommended that operators should make a target-network plan today in order to seize the prospects of tomorrow. With target-network planning, there is a change in focus from traffic-centric to service-centric planning.

To build business success and strengthen technological capabilities, Huawei believes that the target network of 2025 must have five characteristics: Gigabit Anywhere, Ultra-Automation, Intelligent Multi-Cloud Connection, Differentiated Experience, and Environment Harmony. These five key characteristics are abbreviated as "GUIDE".

The "**GUIDE**" model in detail

G: Gigabit Anywhere is essential for target networks to provide digital services to users. Gigabit networks are the foundation upon which a company, a city, and even a country's economy can grow. Gigabit connectivity is the most fundamental requirement for manufacturing applications like VR and AR, industrial camera, and production data collection.

U: Ultra-Automation is essential for target networks with intelligent O&M. With 5G seeing massive deployment and more operators launching industry digitalization services, the scale and complexity of networks are increasing exponentially. Operators must enable ultra-automation by adopting big data and intelligent technologies. Operator networks can create greater value by intelligently automating complex tasks and simplifying human work.

I: Intelligent Multi-Cloud Connection creates a target network platform for service aggregation. After years of development, cloud technology has evolved from traditional IT to cloud computing, and then to cloud native. The digital transformation of enterprises has driven IT systems to become cloud-based, and multi-cloud connection is now essential to meet requirements for cost control, service reliability, and multi-cloud disaster recovery. These changes have driven new requirements for intelligent multi-cloud connection and brought new opportunities for operators to develop cloud-network convergence services.

D: Differentiated Experience is the key to allowing target networks to facilitate business success. The essence of user experience is business, and the essence of business is monetization. More and more practices have proven that differentiated experience can create a premium. For example, in the enterprise and government market, stock exchanges are willing to pay 10 times the rent for a 1-ms lower network latency. For operators, differentiated experience means providing both best-effort experience and deterministic experience. A good experience can satisfy users' personal needs and differentiated experience is where operators gain new value.

E: Environment Harmony is the target network's commitment to social responsibilities, and is part of the sustainable development strategy of leading operators worldwide. Operators must continuously innovate products and technologies to save energy, reduce emissions, and develop a circular economy. They should also drive industry players to cooperate in order to build a low-carbon society by enabling green connections, services, O&M, and applications through innovations in equipment, power, network deployment, data centers, operations, and applications.

The latest whitepaper explains Huawei's approach to target networks, including the driver of NetX2025, the "GUIDE" model that characterizes NetX2025, recommendations on developing NetX2025, and important innovative technologies for 2025. According to An Jian, the "GUIDE" model effectively summarizes the future target network, and hopes to work with Middle East operators to plan the future target network through research and innovation, and achieve business success by 2025. T

The Economic Programme is vital for the economy to recover as fast as possible

Mohammed Abdulla Shael AlSaadi,
CEO - Corporate Strategic Affairs Sector at Dubai Economy speaks to Teletimes

Interview: Khalid Athar & Syed Zulfiqar Ali

Mohammed Shael AlSaadi is currently CEO of the Corporate Strategic Affairs Sector at Dubai Economy. Additionally, he holds the Economic Track Secretariat position at Dubai Majilis, an apex Government Council led by H.H. Sheikh Mohammed Bin Rashid Al Maktoum, Vice President & Prime Minister of UAE & Ruler of Dubai. He also served as Advisor for H.H. Ruler's representative at the Government of Ajman.

Mohammed has years of executive board experience serving on many Governmental and NGO boards such as Dubai Smart City, Dubai Design District and the Pakistan Association Advisory Board. He is also an Academia board member of the University of Dubai, RIT University, and Hamdan Bin Mohammed Smart University.

He plays a pivotal role in DED's strategic collaboration amongst the Business, Regulatory & Academic communities. He pioneered the "Future Economy Agenda" in Dubai and is passionate about the Digital Economy, Sharing Economy & Circular Economy. In his previous roles, he served as Vice President CSR & Planning at Jebel Ali Free Zone (Jafza) and the CEO of Business Registration & Licensing in DED, where he is credited with developing a suite of smart services to enhance the ease of starting & doing business which contributed to the overall improvement of UAE's ranking in the Global Ease of Doing Business Index.

Q: How important is the Economic Program for Dubai in context to post COVID-19 recovery?

A: The Economic Programme is vital for the economy to recover as fast as possible while balancing the need to ensure a healthy population. The principle adopted by the Dubai Government is to ensure that the health of its residents takes first priority, which will create confidence for economic and business recovery. Indeed, the mass vaccination programme by the UAE and Dubai government has instilled international confidence.

International flights from safe countries have resumed and our hotels are seeing increasing occupancy rates. The government has put in place a package measures and incentives to help ease the pain points inflicted by the pandemic.

At the same time, the government has enforced strict guidance on businesses that flout COVID19 rules to deter errant behaviors. From the part of DED, we have reduced and frozen our business registration and licensing fees up to June 2021. We see that businesses in all our sectors are slowly recovering. We are confident that once international flights and travels resume, Dubai will be even stronger and more attractive to businesses, investors and travelers.

"UPN is an integrative platform to unify the existing e-wallets available in the country; it also provides a competitive transaction cost to SME merchants many of whom are still using cash payments due to the current high rate of adoption using the existing cards system."

Q: How would the Unified Payment Network (UPN) empower the existing players in the payment ecosystem to accelerate the transition towards a cashless society?

A: UPN is an integrative platform to unify the existing e-wallets available in the country; it also provides a competitive transaction cost to SME merchants many of whom are still using cash payments due to the current high rate of adoption using the existing cards system.

UPN will also provide choice to merchants to choose the best wallets for their transactional & payment needs. Through UPN, we are confident that the rate of cashless payments in our SME merchant community will be reduced which in turn will enhance the efficiency and productivity of our businesses. We are confident that UPN will drive our effort to digitalize the economy further, making UAE the top 10 cashless economies in the next few years.

Q: How will blockchain technology change the way that new businesses are set up in Dubai?

"Dubai Economy is participating in the blockchain initiative led by Smart Dubai which is experimenting the use case for business licensing and registration linking with other regulatory authorities and the banks."

A: Dubai Economy is participating in the blockchain initiative led by Smart Dubai which is experimenting the use case for business licensing and registration linking with other regulatory authorities and the banks. The whole idea is that blockchain technology will create the KYCs of businesses owners that is portable and known to other users. With a single record on identity and other KYC profile attributes, customers need not be asked repeatedly for their data.

The correct use of blockchain together

with reengineering the processes of registration and administration will enhance the efficiency of businesses and improve the overall business environment.

Q: Do you think that digital IDs may soon become a reality in the country, utilising digital signatures?

A: It is already becoming a reality. As we all know, the technology has arrived and many governments are developing use cases across a range of applications that start with identity. Cryptographic technology has seen great improvements over the years propelled by blockchain technologies. It is not only digital signatures, but facial recognition and DNA printing.

How fast it is adopted depends on the role of government to prepare and invest in the infrastructure needed as well as the readiness and mindsets of the residents. The UAE Government and The Dubai Smart Government Office is actively enabling digital identity and signatures including facial recognition in the country's digitalization drive.

Q: What is the role of DED in implementing the Smart Dubai 2021 vision?

A: Dubai Economy has provided advice and expertise on the strategies for the Smart Dubai Vision 2021, which in essence, is the drive towards making Dubai a future digital and data-driven economy. In addition, DED has helped shape the regulatory environment for the Smart 2021 vision by helping to develop such regulations as the open data law & data privacy. From FDI prospective, Dubai Economy is also actively attracting data hosting companies and investors.

Q: Why has happiness moved completely to the center of the economic policy in Dubai?

A: Why governments exist is to deliver happiness to its residents, businesses and investors. Economic, business and investor happiness are the underpinning philosophy of why we make it a central economic policy. We make our laws, policies and regulations customer and

"Through our future economy lab program, we worked with the retail ecosystem across the value chain from physical brick and mortar stores to e-commerce platforms to hack the future of retail."

business friendly and as a starting point to ensure a customer – first or business -first policy. More initiatives will be developed to help our businesses and investors address their challenges and listen to their feedback to improve the overall business environment.

Q: How will 'EngageDXB' smart application accelerating digital adoption across business in the emirate and facilitate communication between the public and private sectors?

A: The whole basis of EngageDXB is to connect businesses with each other as well as with government officials to create new business opportunities in Dubai. This application will have many services related to connecting the business communities across sectors. It will also provide the platform for businesses to engage with their peers regionally and internationally. Dubai Economy is very excited that EngageDXB has reached more than 20K users in the last 5 months.

Q: What opportunities does Dubai offer to capitalise on the digitalisation of healthcare?

A: Dubai aims to embed digitalization technology in its healthcare system from patient care, surgeries to telemedicine.

In particular, the medical IoT is also set to lay the foundation of healthcare development in Dubai where wearables and medical equipment are underpinned by 41R technologies and enabled by 5G.

Q: What is the role of DED in co-creating solutions to reinforce Dubai's position in the retail market and as a global shopping destination?

A: Through our future economy lab program, we worked with the retail ecosystem across the value chain from physical brick and mortar stores to e-commerce platforms to hack the future of retail. Dubai economy is helping to shape the future of retail and e-commerce through its policy and programs to become the destination for shopping both physically and online.

We are also attracting e-commerce merchants to base their operations in Dubai by investing in automated warehouses, supply chains, distribution centres and data centres. The focus is to delight the customer experience both physically and digitally (phy-gital experience)

Q: What motivates you the most about what is happening in Dubai and what is the most exciting thing for you?

A: What motivates me is the leadership vision and tireless energy to make our city vibrant, sustainable and attractive hub for global citizens. I share this excitement with my colleagues on a daily basis. The most exciting thing for me is to realize the leadership's vision and work with my colleagues to develop initiatives that supports the future of the city. We are only limited by our imagination. Our energy and passion drive us to create endlessly for the future. T

Smart Dubai and the GD of Residency & Foreigners Affairs launch a new bundle of services on the DubaiNow App

Smart Dubai has launched a new bundle of residency services on its flagship DubaiNow application, in collaboration with the General Directorate of Residency and Foreigners Affairs in Dubai.

The new additions expand the integrated network of services offered to users of DubaiNow – the first and only application of its kind for the Dubai Government – to save their time and effort, reduce paper consumption in government transactions, and support Dubai's efforts at comprehensive digital transformation.

Available for the first time and exclusively online on DubaiNow, Smart Dubai have now introduced residency services for parents, grandparents and other relatives, in addition to the residency services for newborns, spouses, and children that were launched last year. The residency services being introduced will allow users to obtain residency visas easily and without having to visit service centers.

All transactions associated with these services can be easily completed from the application, which offers citizens and residents an all-in-one experience and a single tool for all dealings with Dubai government and several private sector partners.

H.E Major General Mohammed Ahmed Al Marri, Director General of the General Directorate of Residency and Foreigners Affairs in Dubai (GDRFA-Dubai) said: "The government of the United Arab Emirates has taken steps towards adopting the best global solutions and practices in all fields, and engaging all government entities in designing services and developing innovative digital solutions comes in line with the country's digital future and in line with the government's needs for smart services to provide the seamless and fastest customer journey that make him happy."

"Providing a unified platform for government services in the Emirate of Dubai has made a qualitative leap in the concept of government services, customer can complete his government transactions easily through an integrated digital platform." Al Marri added.

Wesam Lootah
CEO, Smart Dubai Government Establishment

pointing out that GDRFA Dubai is keen to continue working in cooperation with all government entities to provide all its services in a way that contributes to enhancing the quality of life, and to ensure the acceleration of Dubai's transformation into the most prominent developed and smart city in the world.

His Excellency Wesam Lootah, CEO of the Smart Dubai Government Establishment, said that employing the latest technology to facilitate people's lives and provide exceptional living experiences is an approach that Smart Dubai is committed to in its march towards achieving the emirate's full smart transformation. He reiterated that through its variety of initiatives that encompass all sectors, Smart Dubai is making it quicker, simpler and easier to utilize services, especially vital ones that affect people's daily lives.

"Smart Dubai and its strategic partners from the government and private sectors are intensifying their joint efforts to expand the scope of the DubaiNow application to become more comprehensive, integrated and easier to use. It has been designed to meet the needs and aspirations of the residents of Dubai and to ensure the provision of smooth services that save time and effort, thereby allowing them to focus on doing what they love. Ultimately, DubaiNow aims to increase the levels of happiness across all members of society, in alignment of our vision to make Dubai the happiest city on Earth," said His Excellency.

The DubaiNow application already offers users a host of residency services, namely applying for, renewing, or cancelling residency sponsorship for a spouse and children; viewing dependents' residency visas and entry permits; tracking the status of visa applications and entry permits for residents and visitors; and requesting official travel and dependent reports from the General Directorate of Residency and Foreigners Affairs.

DubaiNow allows users to access more than 130 government and private sector services from over 30 entities (28 government departments and 8 non-government institutions). These services can be classified into 12 different categories, namely: Bills, Mobile, Driving, Housing, Residency, Health, Education, Police, Travel, Islam, Donations and General.

Smart Dubai is constantly adding more services, which saves time for users and allows them to reduce the number of times they need to visit customer service centers annually from 23 to 9 times, saving every person 28 hours on average. T

Mr. Gelerman is a visionary engineer, innovator and businessman with over 40 years of experience. In 1990, Mr. Gelerman founded SpaceBridge Inc. (formerly Advantech Wireless Inc.), serving as President and CEO for the last 33 years. Steering the company from start-up to becoming a dominant global player in the satellite ground communication business, both in baseband products and networking, as well as radio frequency converters and amplifiers. In 2018, after the divestiture of radio frequency business, Mr. Gelerman carries on forward with the VSAT Networking business, keeping in tradition and with continued strengths as a best-in-class industry leader, leading the pace of innovation with one of the most advanced VSAT satellite network platforms, concentrating on VHTS, NGSO satellites and cost effective modems/routers for mass broadband consumer Internet market.

Prior to founding the company, Mr. Gelerman held various management and design engineering positions at Nortel Networks, in the Transmission Networks Division, where he led team that developed multibillion dollar microwave terrestrial radio business.

Mr. Gelerman holds a Master's of Science degree in Electrical Engineering (MSEE), specializing in Wireless Communications and Broadcasting.

Though 2020 was uniquely challenging, it has now led us onto a strong growth trajectory

David Gelerman

President and CEO of SpaceBridge speaks to Teletimes International

Khalid Athar: How did the year 2020 play out for the satellite industry especially in context to the global pandemic that hit the world?

David Gelerman: 2020 was a challenging year that presented unique challenges for the Satellite industry. Short term delays were observed as COVID affects work environments and possibly slows manufacturing, logistics, etc. But the longer-term planning remains unchanged and new services, new Very High Throughput Satellites (VHTS GEOs and new constellations like MPower and alternate MEO constellations and many LEO constellations) will continue to move forward through 2021 and beyond.

SpaceBridge has remained vigilant in fulfilling the needs of our customers. Our amazing team continues to innovate and work just as hard as they had, prior to the COVID pandemic, and I would say even harder. I am very proud of our team for our persistent pursuit in innovation, quality, reliability and regulatory compliance for all our products and solutions that are not only relevant to our customers, but also provide them with the capabilities to make their operations more agile and versatile.

KA: What were the major projects and milestones achieved by SpaceBridge in the last year?

DG: Though 2020 was uniquely challenging, it has now led us onto a strong growth trajectory. We are hiring additional team members for key positions and seeking top talent, to continue to shape our future growth and innovations. In terms of technology and products, we took the opportunity to review our portfolio, revamp our plans for new terminals and service offerings, and realign our strategy for new markets in line with our core competencies, thinking more in the direction of simplifying our customers life from a financial investment perspective, bandwidth efficiency and also technical, assisting them on overall total cost of ownership of new ground segment platforms and technologies throughout innovative implementation of creative business structures.

> *Our amazing team continues to innovate and work just as hard as they had, prior to the COVID pandemic, and I would say even harder.*

We have remained focused on the evolution of our WaveSwitch™ solution. SpaceBridge ASAT™ WaveSwitch™, is a first in-class innovative, award-winning technology that enables dynamic return link selection and switching to the most appropriate waveform. WaveSwitch™ enables our customers to define custom tailored triggers that are programmed and then implemented by Artificial Intelligence (AI) to provide the appropriate MF-TDMA, A-SCPC, and SCPC waveform traffic selection and delivery in real-time, thereby optimizing satellite resource usage for satellite networks and operators. Real-time waveform switching provides ample savings for applications seeing drastic traffic density changes, such as cellular backhaul and trunking. We continued our efforts to provide improved end-to-end platform efficiencies in the Datalink layers by innovating new compression mechanisms, and in the physical layer we have improved dynamic high arrays

> *SpaceBridge welcomes all kinds of partnerships that can secure and execute needed initiatives that together, effectively provide quality and more affordable solutions for our customers.*

of MODCODs, providing a very efficient total cost of ownership. We have also added several new hardware platforms with advanced computing capabilities, enabling value added services to be provided in EDGE computing devices. We can confidently disclose that our HTS experience is profoundly enabling end to end Layer 2 connectivity, integrating with MPLS or SD-WAN network services.

KA: How important are partnerships going to be, going in the new decade to bridge the digital divide and connect the unconnected?

DG: SpaceBridge welcomes all kinds of partnerships that can secure and execute needed initiatives that together, effectively provide quality and more affordable solutions for our customers. It is true that competition makes for a stronger industry. But when we are able to join efforts in these joint missions, we are able to make large strides forward in closing the digital divide.

At the end of the day, a lot of it boils to time-to-market. We are more than capable to bring a complete platform solution of our own. But in many cases, it makes more sense to leverage the experience, market reach, and manufacturing capabilities of our partners that specialize in certain areas.

We would like to remind our customers and prospective customers; as a SATCOM powerhouse, we hold the unique end to end integration capabilities to provide our customers with a holistic, flexible and comprehensive ground segment solution. We are very happy with the various business ventures we are part of, whether made possible by revenue share or managed services. We notice that these offerings enable us to provide a good price point and excellent performance. End-users choose our services for these reasons, and we are very pleased with this trend.

KA: How is SpaceBridge helping its customers monetize upon the offering of their value-added services?

DG: On the services front we launched a new service that offers seamless connectivity on a pay-by-the-byte basis with no upfront CapEx. We are actively engaged with several partners for providing capacity over several regions. In addition to the savings that are made possible by WaveSwitch, where waveform switching provides substantial savings for applications with drastic traffic density changes, such as cellular backhaul and trunking. SpaceBridge also provides autonomous managed services for our customers. These managed services help our customers to eliminate initial large CapEx investments and save on network management OpEx, while also speeding time-to-market.

KA: Can you tell us a bit how SpaceBridge is assisting in providing backhaul connectivity over satellite to unserved remote areas without or limited cellular coverage in Africa?

DG: SpaceBridge is working with the largest MNO in Africa, to provide connectivity to unserved communities that are equipped with SpaceBridge's WaveSwitch technology, offering VSAT stations that can switch on-a-fly, between MF-TDMA, A-SCPC, or SCPC waveforms.

> *With the arms race of all LEO and MEO constellations, the industry is definitely experiencing a re-assessment and consequential drop in orders for GEO satellites.*

Such flexibility will enable the population to receive adequate service for years to come and at the same time at better transmission quality, providing faster Internet access for sending pictures, videos, texts and superior voice communications. For MNO, various communication protocols, network security, Abis/GTP traffic optimization, and TCP acceleration inside the GTP tunnels are important features required for successful 2G/4G deployment. SpaceBridge embedded optimization software provided space segment savings of up to 40%. As well as the use of native Layer 2 and the ability to prioritize data transmission between Control Plane, Management protocols, and user traffic with high rate of packets per-second. SpaceBridge Cellular Backhaul equipment provided the mobile operator with the ability to fully meet its network growth requirements and seamlessly connect the Satellite network to its established network as an integral part. The major operators are trying to improve the space segment network resources utilization, and paired with the SpaceBridge multi-service platform, are able to provide corporate services and 2/3/4G in the same exact platform, enabling optimized precious resource unitization.

KA: While the pandemic severely restricted travel, how quickly did the teams at SpaceBridge adapt to a more virtual world?

DG: While the effects of COVID are visible all around us, from tradeshows now going virtual, or the lessened amount of in-person interaction and travel, we have adapted our focus toward achieving the best touchpoints and interactions possible, adapting to the new working environment brought upon us by COVID restrictions.

Our work environment has the flexibility to provide team members with the ability to keep our focus on their well-being and productivity at a maximum. In reference to R&D work, much of these operations can progress remotely regardless, especially with the rise of cloud hosted development environment. Many studies have evidenced that working from home can enhance development productivity, since engineers can more easily concentrate on work and have less disruptions than in an office environment.

At SpaceBridge there are several development centers that are dispersed across the globe, and are already up and running virtually, as remote offices. There has been no impact on our connectivity and ability to scale to take on growing demands. This opens new horizons to hire capable self-motivated individuals practically anywhere in the world.

KA: What is your prediction on demand for legacy wide beam capacity and current HTS?

DG: With the arms race of all LEO and MEO constellations, the industry is definitely experiencing a re-assessment and consequential drop in orders for GEO satellites, with many satellite providers sitting on the fence until the expected network deployment is becoming clearer.

However, the full range of risks and opportunities in constellation formations does not leave industry leaders feeling indifferent. In our opinion, there are several regions in the world and of course a number of specific applications and customers, who for many, will reason and choose to continue to operate over GEO services.

These are mainly SOTM applications that require wide hemi or regional beams, as opposed to spot beams. Applications for defense users that require information cyber security, encryption, TRANSEC and of course, consumer applications where price elasticity has not yet reached the point of an affordable price level for the terminal (which is still a major task that the industry leaders are working on substantially improving in this area).

KA: How does the future look for classic satellite markets in remote and developing areas?

DG: We believe that the market will continue to consolidate. Satellite companies will have to acquire technology companies to realize the vision of providing services, or inversely the technology companies will move into the domain of satellite operators and service providers, utilizing the most advanced satellite technologies that include SD-WAN and Software Defined Radio capabilities. Also, the newly planned satellite LEO constellations with enormous amount of gateways and inter satellite link systems pose a real threat for traditional GEO operators. The industry will continue to accelerate its efforts to compete optimally with more available broadband services and we will see an addition of about a million new users. This will eventually lead to further maturity of the satellite industry and of course, continued efforts to become an integral part of any network broadband services. Our experience is leveraged to put forth the highest level of performance, quality and reliability at competitive prices like any other communication medium, this is our main goal.

KA: Do you think that the trend towards multi-orbit-based constellations and services, integration with terrestrial networks and adopting cloud-based technologies will continue?

DG: Of cause, the trend towards multi-orbit-based constellations and services, integration with terrestrial networks and adopting cloud-based technologies will certainly continue. It may be reasonable to see some impacts in timelines due to the changing worldwide financial arena.

COVID's "new norm" has revealed the overwhelming demand for bandwidth everywhere. On the ground, mobile operators are expediting the rollout of greater 4G/5G (already covers +90% of NA thanks in part to Dynamic Spectrum Sharing), and tests of 5G over LEO experimental satellites are already showing high bandwidth with less than 50msec latency, which is at par with terrestrial networks. These findings should bode well for the satellite's future. However, we are constantly in need of re-building satellite value propositions in a world in which competitive technologies themselves become more pervasive and mainstream (fiber's ever-expanding footprint, SDN/MEF, Cloud to the EDGE).

> *We hold the unique end to end integration capabilities to provide our customers with a holistic, flexible and comprehensive ground segment solution.*

KA: Will the movement toward diverse and complex satellite constellations and convergence with the big telco world continue to drive all the peripheral technology ecosystem?

DG: The movement toward diverse and complex satellite constellations and convergence with the big telco world will remain a key driver for all the peripheral technology ecosystems in our industry. As LEO, MEO, and GEO satellite constellations are leveraged more and more, each day, the systems that support these constellations must also be prepared for the evolution cycles ahead, and how these systems integrate and communicate with one another.

These are exciting times for the satellite industry. We are in a midst of a technological evolution that started last decade and will likely continue well into this one. The market drivers remain more-less the same, with a mix of the traditional ecosystem and new vertically integrated unicorn players with deep pockets; as well as the environmental and economic changes that COVID-19 imposed on everyone. But these factors did not significantly change the overall technology direction.

KA: How important is satellite connectivity in saving human lives, especially in context to natural disasters which may impact the on-ground connectivity services?

DG: Satellite connectivity plays a crucial role in providing connectivity when it is needed most. In the event of a natural disaster, or loss of connectivity over dedicated networks, reliance on backup connectivity solutions, such as VSAT or Cellular Backhaul, keep emergency response networks established and available. In turn, safeguarding the connectivity and mobility of critical infrastructure communications that is demanded in the many challenging scenarios of disaster response. As the past experience shows, in the aftermath of many devastating hurricanes and typhoons our fly-away VSAT terminals were the only means of communication that provided connectivity to the region. T

Innovation in the Space and in the Ground Segment

Alvaro Sánchez, CEO of Integrasys

The dizzying technological advances and the demand for constant communication have fostered the implementation of satellite networks in recent decades. Currently there are approximately 2,800 satellites orbiting the earth, being a vital source of information for the development of the evolution in the field of telecommunications and the needs that the investments of recent years have entailed.

The satellite market trends revolve around the new constellations, LEO (Low-Earth-Orbit) and MEO (Medium-Earth-Orbit), these being a disruptive value proposition, but with greater complexity. Broadband projects carried out by companies such as SpaceX, AWS or Telesat, promise to revolutionize the market in the next 10 years, launching 990 satellites per year in 2028, which would mean a market value of 292 billion dollars, according to Euroconsult. These new constellations will cover 77% of the demand, and with this growing demand, at least 20 countries will launch a satellite for the first time, which means that the market will not only experience unprecedented growth but will also change the structure that we know today.

In this context of space revolution, the ground segment will play a fundamental role in making the most of the high performance promised by the new constellations. It is estimated that, in 2028, the ground segment will bill approximately 14,400 billion dollars, this growth will be given by the new types of antennas, such as flat antennas, balloon antennas, and more compact parabolic antennas. The efforts of antenna manufacturers are based on automation and autonomy, the main requirements they provide are electronic pointing, the possibility of tracking multiple satellites simultaneously and being adapted to mobility scenarios, leaving aside the human presence in all processes. Physically, they will be much more compact, and manageable, suitable to be able to remain on any type of surface. These new Smart-Antennas will be the best allies for data reception and transmission, as well as to support the maximum performance of the new constellations.

The data collected during this new paradigm requires high precision, and it is intended to achieve greater integration and autonomy between applications, being the alternative to traditional satellites and antennas, in order to obtain interoperability, between constellations. The ground market aims to achieve the virtualization of satellite networks and M2M dependency, so that deployments, management, and control can be done remotely. To be able to handle the Smart-Antennas and take full advantage of the immense range of opportunities that the LEO and MEO constellations bring with them, it is necessary to implement new specialized technologies in the management of the network and each antenna. These new digital solutions allow automation and remote control to become a reality, being essential to be able to adapt to the new ecosystem we are under.
The high demand has driven the adoption of 5G, which means connectivity up to 100 times faster than the previous generation. A similar evolution is required in the satellite industry to opt for these LEO and MEO constellations and the advantages they bring with them, higher speed, lower latency, and higher bandwidth.

The radical transformation of the telecommunications industry generates new opportunities for the digitalization and virtualization of networks in the land segment, becoming essential tools, especially for mobility scenarios: air, sea and land.

The large investment required to deploy these new orbits makes the optimization of operations essential in this new ecosystem, in order to evolve and prevent the ambitious projects that invest in these new constellations from failing. Cloud-based systems that allow M2M integration will be the main characters when it comes to achieving a total optimization of new developments, efficiently unifying the space and the ground segment; totally critical to the success of this new wave of innovation in the space industry. T

Infinet Wireless helps to spot traffic violations on Kazakhstan's roads

Infinet Wireless has helped Supervision Technology Company, a purveyor of the unique hardware and software AvtoUragan system, to deploy a reliable and highly protected network in Kazakhastan for the client in the field of information security who controls the road situation. The goal was to provide high throughput for video transmission, as this type of data is usually the 'heaviest'. The Quanta 5 solution was chosen by the company to quickly create reliable high-speed PtP channels during interference.

The core industry in which the client operates is the collection and processing of data concerning the road situation, such as future forecasting and prevention of any possible collapse and violation of traffic regulations. The 'AvtoUragan' system is capable of spotting speeding of up to 255 km/h, recognising state license plates of 87 countries, controlling congested roads and automatically spotting a car, as well as scanning data bases of several CIS countries. With the help of access to the unified system where all the information about spotted violations is stored, it is possible to identify the incidents and react to them appropriately. The expansion of such a system is costly and time-consuming.

Usually fiber-optic cable is used for organizing such distributed systems. Nevertheless, the fact that objects were located far away from the central point of connectivity, and the long period of execution and unprofitability of fiber-optic network deployment influenced the client's final decision. They chose Infinet Wireless solutions of organizing connectivity channels and planned the expansion of the monitoring system on Kazakhstan's roads with their help.

The client was attracted by the key preferences of the Infinet Wireless solutions, which include interference mitigation, subsequent throughput growth and data transmission at long distance. The final choice was also influenced by Infinet Wireless products' resilience, scalability and reputation in the world market, proven by numerous successes. Building up radio links with the help of the Quanta 5 solution allowed the launch of the 'AvtoUragan' hardware and software system as it was on schedule and identified more than 127 thousand cases of administrative violations of traffic regulations on Kazakhstan's highways over one year only.

After having Infinet Wireless solutions installed the client performed an additional test, utilizing fiber-optic wire network. The outcome was outstanding, with Infinet Wireless products operating much faster than wire solutions. This improved performance was possible thanks to network functionality, routing and switching protocols support as well as the extensive set of tools for secured data transmission and unauthorized access protection.

'It was great to know the deployment took only 3 or 4 days. In the meantime, the certified Infinet Wireless engineers were doing everything impeccably. It's a result of the work which started several years ago, when we asked all our questions on time. The Quanta 5 solution completely met our needs. The expansion of the operating monitoring system to other Kazakhstan's regions will help us with the timely identification of violations on roads and to transmit actual information on it to fix and improve the situation', Erkebulan Olmesov, CEO of Supervision Technology Company, comments.

At the moment, the 'AvtoUragan' system is deployed in the following locations: the Almaty Region, the Akmola Region, the city of Kokshetau, the Kostanay Region, the city of Rudny, the Districts of Auliekol, Karasu, Karabalyk, the Jambyl Region, the city of Taraz, and the Korday District. With the help of Infinet Wireless solutions the client plans to expand the monitoring system on Kazakhstan's roads in the near future. T

"Satellite market is adapting a more integrated approach between different types of satellites"

One of Azercosmos' biggest accomplishments was and is, its own founding and its successful operation

Mark Guthrie, Chief Commercial Officer of Azercosmos speaks to Teletimes

Established in 2010, Azercosmos is the only satellite operator in the South Caucasus, aspiring to turn Azerbaijan into a driving force of the global space industry. Keeping customised excellence at the heart of the organization, the company provides high quality, reliable telecommunications and Earth observation services in both public and private sectors.

On the occasion of Azercosmos' 10th anniversary, Mark Guthrie, Chief Commercial Officer at Azercosmos, spoke about Azercosmos' plans for the next decade and shared his vision on the future of the space industry.

Teletimes: Mr. Guthrie, it is already your second year as the Chief Commercial Officer at Azercosmos, as well as your second year in a new country and culture. What was it exactly that drew you to Azercosmos, and Azerbaijan as a whole, and made you want to join the team in 2019?

Mark Guthrie: The Azerbaijani space industry, as well as the local satellite market, were quite new to me when I first joined Azercosmos a couple of years ago. One of the main things that attracted me not only to Azercosmos but to Azerbaijan as a whole, were the international development opportunities in many different spheres, including the space industry where I saw massive potential. Considering Azercosmos' accomplishments over the past 10 years since its establishment, the company was positioning itself and working hard towards becoming the business and space hub in the region. To me, this signaled three key things: enthusiasm, determination and consistency – a powerful combination of qualities which drive success. Given that Azercosmos was a nascent business that aimed to grow, I wanted to contribute to their journey and help them break into the international business market.

Another reason that attracted me to the company was the experienced team of space professionals, despite only 10 years of Azercosmos' operation. I was keen to experience the culture and rich diversity in Azerbaijan, I had been made extremely welcome by the people of Azerbaijan and it's a wonderful place to live and work. The generosity of the people and they willingness to engage and develop, will I believe, ensure continued success for Azercosmos and Azerbaijan.

TT: What can you tell us about Azercosmos' development over the years, from its founding in 2010 to where it stands today?

MG: As mentioned, Azercosmos was established in 2010 and in just 10 years, the company have managed to develop in so many different ways starting from the satellite fleet and the services provided to different regions, including Video, Data and Teleport services, the Earth observations services and products and ending with international cooperation and research and development activities.

"Our partnerships with Intelsat, Measat, Infostellar, iSAT Africa, Intersat and many other leading space players is definitely another accomplishment of Azercosmos, which adds to our company in many different ways."

The first telecommunication satellite, Azerspace-1 (46º E), was launched in 2013, followed by Azersky Earth observation satellite in 2014 and, our second telecommunication satellite Azerspace-2 (45.1º E) in 2018.

As years passed by, Azercosmos sought to expand its service portfolio and strengthen the relationship with our customers and partners. Speaking of our financial stability, 90% of Azercosmos' revenues are generated from outside of Azerbaijan to over 50 countries globally. Our export portfolio consists mainly of leading companies in the United States, the United Kingdom, France, Germany, UAE and Malaysia. In 2020, Azercosmos' revenues increased by 2% compared to 2019. Azercosmos earned $50.2 million revenue from the telecommunications and Earth observation services of our satellites. Increased company revenues in the COVID-19 era are a clear illustration of Azercosmos' high adaptability and resilience, which stem from correct measures taken at the right time.

TT: Azercosmos is celebrating its 10th anniversary this year. A lot has been achieved in different spheres of company's activities. What do you feel have been the greatest accomplishments over the past 10 years?

MG: I believe that one of Azercosmos' biggest accomplishments was and is, its own founding and its successful operation, as it allowed for Azerbaijan's establishment and recognition on the international arena as a space player.

Azercosmos' improved brand awareness and recognition both locally and internationally is another accomplishment, which has now made the brand prominent in the regions we serve.

Our partnerships with Intelsat, Measat, Infostellar, iSAT Africa, Intersat and many other leading space players is definitely another accomplishment of Azercosmos, which adds to our company in many different ways. These key partnerships allow us to expand and reach diverse markets, helping us develop business and market opportunities and help shape and plan for the continued success of the space industry in Azerbaijan.

Another important accomplishment was the Tier 4 certification of our Baku teleport by the World Teleport Association, which guarantees almost 100% reliability and security of our technical infrastructure, work process and shows our team's high level of professionalism.

Lastly, as a socially responsible business, we always remember to give back to our community through our CSR initiatives, be it by organising competitions, blood donation and fundraising campaigns, as well as internship and volunteering programs, aiming to increase the welfare of our community.

TT: Can you tell us more about Azercosmos' services and market presence? What is it that differentiates Azercosmos from other satellite operators?

MG: As the first and only satellite operator in the South Caucasus region, Azercosmos' market presence is strong in Azerbaijan, as well as in the local geographic region, including Turkey and the CIS countries. Azercosmos is also strong in Africa and the Middle East, where we have an extensive portfolio of services and solutions that we provide to our customers in those regions.

When it comes to what differentiates us from others, I would say that we are agile, responsive and customer-oriented, which we try to reflect in all of our marketing activities, sales negotiations and technical assistance.

We are always seeking to do more and increase our knowledge of our customer requirements and work closely with them. And this comes primarily from our consultative approach to customers.

We are not trying to sell; we are trying to understand what our customers want and help them achieve their business goals – this is our point of difference. We have very talented multilingual team, which allows us to communicate and operate in the differing cultures and environments.

TT: Where do you see the most opportunities for Azercosmos, and do you anticipate any challenges going forwards?

MG: Well, there are certainly different ways of looking at it. If we assess the Azerbaijani TV market, it is maybe not as sophisticated as some of the European operators. It is still mainly SD as opposed to other platforms broadcasting channels in HD and UHD quality. If we compare the case to Europe, SD is being rapidly replaced by HD and is now moving towards 4K TV.

So, I think that there is an opportunity to improve the TV and Media market in Azerbaijan. There are opportunities to build a strong neighbourhood of TV channels via Azerspace-1 satellite for the CIS region, as well as moving services from SD to HD, and eventually to UHD in the next 3-5 years, is something we see as a development opportunity.

Apart from a strong bouquet of channels, more cooperation with other businesses within and outside Azerbaijan is what we are prioritising. We seek to focus on LEO and MEO constellations, and use these technologies to complement our GEO satellites, making our company and the services we provide well-rounded.

In the Azerbaijani market, there is also an opportunity to build internet over satellite for remote areas which lack fibre and/or cable. There are schools, colleges, hospitals in certain areas that lack good internet connectivity, so there is a need to focus on internal infrastructure problems first, and then look outside of Azerbaijan in terms of business opportunities within the market segments that we do not currently serve in but have huge potential to do so, such as oil & gas, maritime, government, healthcare, education and other areas.

"One of our other major goals is to help and assist in the development of the space industry in Azerbaijan, as well as build out more industry-related opportunities within the fields of Artificial Intelligence (AI), Virtual Reality (VR), and Research and Development. "

TT: Azercosmos has accomplished quite a lot over the past decade. What are company's plans for the next 10 years? Which areas of business operation are planned to be expanded?

MG: First and foremost, we look to continue to develop our business, both telecommunication and Earth observation services.

"Despite being among young and developing economies, Azerbaijan, as a transportation hub, is also turning into a business, space and technology hubs of the region."

We are also looking to launch a new Earth observation satellite in the next five years. The launch of a telecommunication satellite in 9 years' time is also on the horizon, as well as our plans to explore Ka-band, S-band and L-band frequencies to improve the quality of services provided in our target regions.

Apart from that, we are determined to develop and make Baku an international gateway for communications and a major point of presence on the globe, connecting Europe and Asia. We are also planning more cooperation, collaboration and partnerships with international companies that can provide innovative and creative solutions to the space industry.
One of our other major goals is to help and assist in the development of the space industry in Azerbaijan, as well as build out more industry-related opportunities within the fields of Artificial Intelligence (AI), Virtual Reality (VR), and Research and Development.

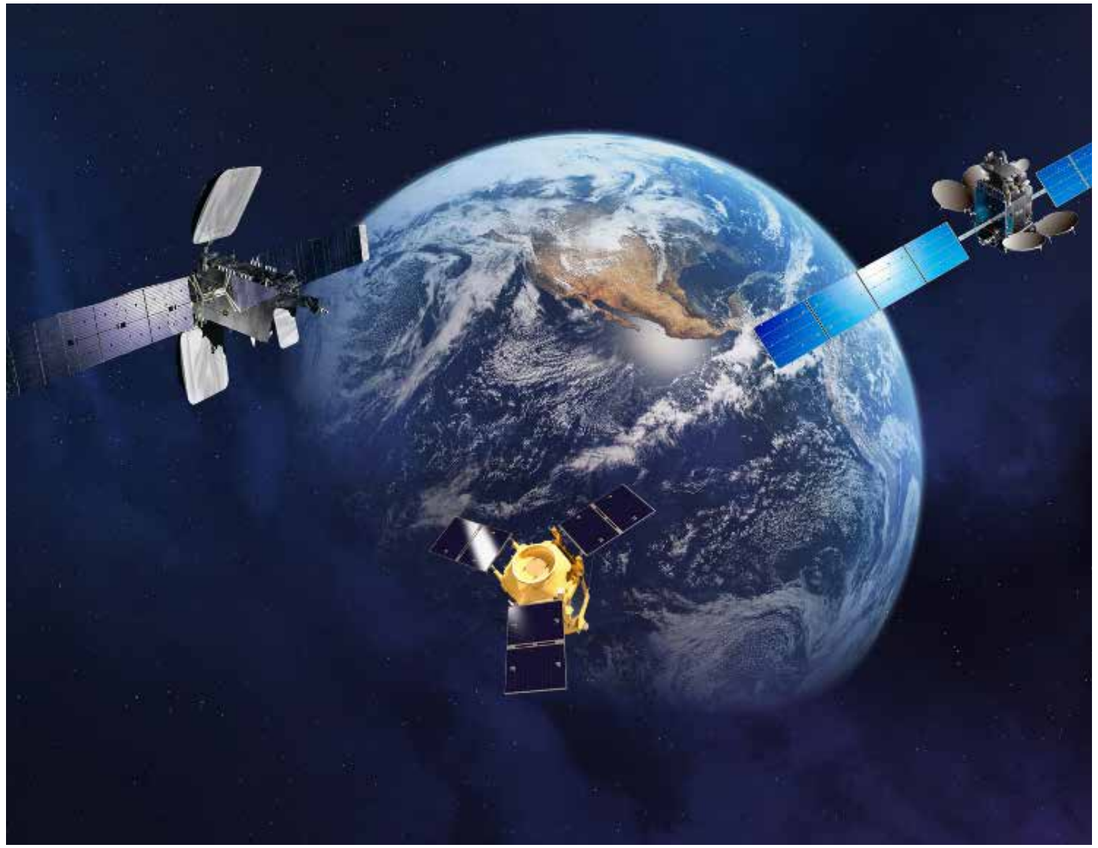
Coming to collaboration, we aim to build better communication infrastructure and a more cohesive communication strategy, working closely with Azerbaijan's telecommunication providers such as Azercell and Aztelekom.

We also have the International Astronautical Congress (IAC), the most prestigious global space event, to host in 2023, which is a great honour. We would like to build on the exposure we receive from the IAC and increase the awareness and image of Azercosmos and Azerbaijan in the global space industry.

And finally, we look forward to identifying and developing talent among the Azerbaijani youth, attracting them to the space industry through university courses, exchange programs and other tools to strengthen local human capital.

TT: On a larger scale, we know that the roots of Azerbaijan's space industry go back to the 12th century. From your point of view, what is the significance of the space activities in this region, particularly in Azerbaijan, to the global space sector?

MG: Azerbaijan has a lot to offer. Despite being among young and developing economies, Azerbaijan, as a transportation hub, is also turning into a business, space and technology hubs of the region. As a matter of fact, Azercosmos has a group of talented engineers, developers and specialists in the fields of AI and Robotics, who contribute to our company with innovative solutions and technologies and initiate various projects and competitions to foster the development of high technologies and help us further identify young talent in the space field. Through collaboration and investment, we aim to



expand and develop other space related activities and opportunities in Azerbaijan to further enhance the country as a major player in the space arena.

In addition to that, and as previously mentioned, the International Astronautical Congress will be taking place in Baku in just a couple of years, gathering leading space agencies, scientists, young professionals, students and many space enthusiasts from all over the world. This will definitely contribute to the global space platform with many new ideas, discussions and debates, while also creating opportunities for guests to immerse in Azerbaijan's rich culture.

These are just a few examples of our contribution to the global space sector, and we are very excited to bring out even more of country's potential.

TT: Where do you think the global space industry is heading in the third decade of the 21st century? What new verticals can you imagine the industry playing in over the next few years?

MG: Looking into the future, I think that the satellite market is adapting a more integrated approach between different types of satellites to provide much more versatile, flexible and cohesive communications, driven by the market requirements. Something that is currently trending and will be trending for the nearest future, is the transformation of traditional services, such as healthcare and education, to be more accessible than ever before through telemedicine and remote learning, respectively.

And obviously, as all online platforms depend on data and satellites, the telecommunications segment will need to adjust and improve to meet the growing demand worldwide. AI, VR and Augmented Reality will also keep developing and, together with remote learning and remote work concepts, it will soon be possible to do trainings virtually without leaving your home.

From the infrastructure point of view, as we move forward, smart cities are going to become more commonplace utilising IOT and ML to improve and manage data and analysis. Many things will be interconnected not only in terms of communication but also in terms of infrastructure management and operations. I believe, this will include such things as driverless and autonomous vehicles, allowing for the space industry to play a big role in the formation of these systems. T

stc becomes digital enabler and a strategic partner for the SAFEIS

stc has signed an MoU with the Saudi Arabian Federation for Electronic and Intellectual Sports (SAFEIS), as a strategic partner and digital enabler in the field of games, electronic and mental sports, and joint media communication activities for the agreed initiatives.

stc launched the stcplay platform—as a new product—on the sidelines of the signing of the MoU, in the presence of a delegation from the SAFEIS visiting the Digital Operations Control Center. The delegation listened to a detailed presentation on stc's capabilities as a digital enabler with regards to following up the operational data of electronic games on its network, in addition to the most important and most prominent improvements made by the company to improve customers' and gamers' experience.

The stcplay platform hosts SAFEIS's activities and participates in the games supported by the latter, in addition to being the main sponsor and digital enabler of the Saudi Electronic League, which is organized by SAFEIS, in line with the platform's vision that aims to lead a community of electronic gaming enthusiasts and professionals in the Middle East and North Africa by providing innovative services to better meet the needs of players, while adding a new dimension to the gamer experience and the electronic sports and games sector.

His Royal Highness Prince Mohammed bin Khalid Al-Abdullah Al-Faisal, Chairman of stc's Board of Directors, explained that the agreement reflects stc's commitment to play a leading role nationally in digital empowerment for various governmental and private sectors, in parallel with the goals set by the Kingdom's Vision 2030, particularly in the field of digital transformation. He pointed out that stcplay will be a digital platform that contributes to enriching the company's customer experiences, especially among youth.

Meanwhile, His Royal Highness Prince Faisal bin Bandar bin Sultan, President of SAFEIS, thanked stc for launching the stcplay platform. "We are proud of the presence of such companies participating in the field of e-sports and SAFEIS is striving to support Saudi electronic platform startups in order to enable them in this field," he said.

He also added that stcplay poses as a model of what we hope to see in the future, i.e., to support e-sports and the players' environment by major companies such as stc, and went on to point out that projects like stcplay are no surprise coming from stc—being the dedicated supporter of youth and society. "We hope this partnership will ultimately ameliorate the players' environment," he remarked.

Prince Faisal indicated that SAFEIS will work in cooperation with stc on future plans for activities and initiatives, and will hold a periodic workshop on issues related to games and electronic sports, as the sponsor of all electronic sports.

For his part, the stc Group CEO, Eng. Olayan bin Mohammed Al-Wetaid, affirmed that the stcplay platform will provide users with the opportunity to compete in e-sports tournaments designed for the electronic gaming community, enrich content related to games and communicate with other players, alongside the innovative features designed to provide the best experience for the electronic gaming community, pointing out that players will be able to create a profile and register using a variety of different methods, in addition to searching, joining and creating tournaments for different games, as well as providing a personal control panel, with the ability of following up, receiving notifications and communicating with other players.

"stc is assessing opportunities to participate in the establishment of activities, initiatives and tournaments with SAFEIS, as it is the strategic partner and the digital enabler in providing communications and information technology services, digital solutions, cloud and infrastructure," he added. Al-Wetaid indicated that the stcplay platform targets hobbyists and professional players to provide many services, such as participating in tournaments, winning prizes and meeting new players.

It is noteworthy that SAFEIS is classified as a regulatory and supervisory body, aiming to sponsor and improve the best electronic and mental sports players to enable them to reach the highest global ranks. Moreover, SAFEIS aims to plot the Kingdom a major and global destination for electronic and mental sports by organizing local and international tournaments in this domain. T

stc announces financial results for Q1 2020

stc's Net income compared to the corresponding quarter last year increased by 1.34%

stc has announced the company's preliminary financial results for the period ending at 31 March 2021:

- **Revenues for the 1st quarter reached SR 15,695m with an increase of 12.63% compared to the corresponding quarter last year.**
- **Gross Profit for the 1st quarter reached SR 8,557m with an increase of 4.40% compared to the corresponding quarter last year.**
- **Operating Profit for the 1st quarter reached SR 3,482m with an increase of 15.91% compared to the corresponding quarter last year.**
- **Earnings before Interest, Taxes, Zakat, Depreciation and Amortization (EBITDA) for the 1st quarter reached to SR 5,841m with an increase of 9.59% compared to the corresponding quarter last year.**
- **Net Income for the 1st quarter reached SR 2,952m with an increase of 1.34% compared to the corresponding quarter last year.**

Eng. Olayan Mohammed Alwetaid
stc Group CEO

In accordance with the approved dividend policy for three years starting from the 4th quarter 2018, which was announced on 16 December 2018, and has been ratified during the Extra Ordinary General Assembly Meeting on April 24th 2019, stc will distribute a total of SR 2,000 million in cash dividend for Q1 2021, representing SR 1 per share. The eligibility of dividends shall be for the shareholders at the close of trading on Tuesday 04/05/2021 corresponding to 22/09/1442 H and as per the registered shareholders in the register of The Securities Depository Center Company at the end of the 2nd trading day following the eligibility date. Dividend distribution date will be on 31/05/2021 corresponding to 19/10/1442H.

Commenting on these results, Eng. Olayan Mohammed Alwetaid, stc Group CEO, stated that the company's results for this quarter as compared to the comparable quarter last year was distinct. The company was able to grow its top line by 12.6%, supported by the increase witnessed in Consumer Business Unite revenues due to the growth in the Broadband & Fixed Wireless Access subscriber base by 10.1%, FTTH by 26%, working lines by 3.1% and data revenue by 4.5%. Further, Enterprise Business Unite revenues also grew by 33.4%, as a result of the increased demand for the company's services & products along with its ability to swiftly respond to customers' request and demand in a competitive manner. As for Wholesale Sector, it managed to increase its revenues by 5.1%. Moreover, the revenues generated by stc's subsidiaries grew by 23.2%, which contributed positively to the group's overall results.

Eng. Alwetaid also pointed out that stc surpassed its counterparts in the region to become the most valuable brand in the telecommunications sector, and the third most valuable brand in all sectors, according to Brand Finance. The company also celebrated being the region's fastest-growing brand, up an impressive 14% to US$9.2 billion and simultaneously jumping 51 positions to 189th, making stc the 2nd fastest-growing brand of the largest 20 global telecommunications companies.

In addition, and as part of our journey for digital transformation, stc has launched the digital operations control center, which is considered the largest integrated operating center in the region with an area of more than 42,000 square meters.

The digital operations control center includes a system made out of advanced digital processes in several areas, such as simulation, digital infrastructure management, digital crises management and reinvention within a range of other digital solutions while abiding by high security standards. He also noted that the center will enhance Saudi Arabia's position as a leading regional business center or a" HUB". Which would help to achieve the objectives of the second phase of stc's "DARE" strategy, in order to enable digital transformation in various fields.

Recently, stc Group announced the launch of the Advanced Technology and Cybersecurity Company; a new company dedicated to providing advanced cybersecurity services and solutions to the business sector. The recently announced launch comes to keep abreast of the growing demand for digital services in parallel with stc's DARE Strategy, which aims to foster digital transformation, pave new paths for development, and achieve the objectives of Saudi Vision 2030. T

Saudi Ministry of Transport signs MoU with Huawei to enhance future mobility and technology adoption in transport and logistics sector

The Saudi Ministry of Transport and Huawei, a leading global provider of information and communication technology (ICT) infrastructure and smart devices, signed a Memorandum of Understanding (MoU) to enhance future mobility and technology adoption in the transport and logistics sector by exploring the prospects of utilizing advanced technologies such as 5G, AI and Big Data.

The MoU was signed by Deputy Minister of Transport for Roads, Eng Badr Al-Dulami, and David Shi, President of Enterprise Business Group, Huawei Middle East.

Deputy Minister of Transport for Planning and Information Dr. Mansour Alturki represented the Ministry of Transport and David Tao, General Manager of Enterprise Business Huawei Tech Investment Saudi Arabia, represented Huawei.

As per the MoU, Huawei will provide solutions in the field of automation, big data, and digitization. It will also contribute to the provision of solutions for shared mobility, sustainability, and the use of disruptive technology in the development of the logistics sector and intelligent transport systems in the Kingdom.

Alturki said the MoU ensures the utilization of the latest technology in the Saudi transport sector to enhance its performance in transporting freight and people, which is part of the Vision 2030 objectives. The adoption of advanced technologies such as artificial intelligence (AI) and Internet of Things (IoT) will improve the logistical performance of our transport systems, hence directly boosting Saudi Arabia's rank on the Logistics and Trading Across Borders performance indexes, further establishing the Kingdom as a global logistics hub connecting three continents.

The Deputy Minister added that the agreement will also contribute to enhancing the quality of life across the country through the adoption of advanced smart transport systems as well as improving the services provided to citizens, residents and visitors across all transport facilities including airports and railway stations. It focuses on finding ways to implement the latest automation and IoT practices in our operations in addition to increasing multimodal integration to enhance transportation inside and across cities and reduce travel time.

Commenting on this strategic partnership, David Shi, President of Enterprise Business Group, Huawei Middle East, said: "Huawei is pleased to be a strategic partner of the Ministry of Transport as it embarks on the mission to accelerate the development of Saudi Arabia's transportation industry and the logistics sector to transform the Kingdom into a leading logistics hub in the region. Huawei will collaborate with the Ministry of Transport to identify and develop the next generation of modern transport technologies that cover multimodal transport across the Kingdom, including maritime transport, aviation, roads, railways and logistics."

The Ministry of Transport targets to boost the adoption and utilization of technology in the field of transportation and logistics through collaboration with leading ICT organizations to enhance the services it provides and realize the objectives of Saudi Vision 2030. T

Sheikh Mohammed bin Rashid honours Etisalat as a '100 Million Meals' campaign partner

His Highness Sheikh Mohammed bin Rashid Al Maktoum, Vice President and Prime Minister of the UAE and Ruler of Dubai, honoured Etisalat for its contribution to the remarkable success of the "100 Million Meals" campaign launched by the Mohammed Bin Rashid Al Maktoum Global Initiatives (MBRGI) and the charity auction under the patronage of His Highness Sheikh Mansour bin Rashid Al Maktoum.

Etisalat was honoured in the presence of His Highness Sheikh Hamdan bin Mohammed bin Rashid Al Maktoum, Crown Prince of Dubai and Chairman of the Executive Council, in appreciation of the outstanding support that it provided to the '100 Million Meals' campaign, the region's largest food drive that will benefit underprivileged communities in 30 countries in Middle East, Asia, Africa, Europe and Latin America.

Etisalat is proud that exclusive mobile numbers that it had allocated were sold for a total of AED3.6 million through the Most Noble Numbers charity auction to raise funds in support of campaign.

Commenting on this occasion, Abdulla Salem Al Mana, General Manager, Dubai Region, Etisalat, said: "Etisalat is proud of this honour which inspires us to be involved in more humanitarian and charitable initiatives by the UAE government. Our participation in the '100 Million Meals' campaign stems from our commitment to corporate social responsibility and participation in extending a helping hand to underprivileged families this Ramadan and alleviating the suffering of people affected by the COVID-19 pandemic."

Etisalat has supported the '100 Million Meals' campaign since its launch by pledging to donate five percent of all food orders placed on its Smiles app; promoting the campaign via text messages, social media, and changing the network name to '100M Meals' to raise awareness of the initiative; and allocating exclusive numbers in the numbers charity auction. T

Etisalat Group reports AED 2.3 billion consolidated Net profit in Q1 of 2021

Etisalat Group has announced its consolidated financial statements for the three months ending 31st March 2021.

Financial Highlights and Key Developments of Q1

- Aggregate subscriber base reached 156 million, representing a year over year increase of 4%.
- Consolidated revenues amounted to AED 13.2 billion while consolidated net profit after Federal Royalty amounted to AED 2.3 billion representing a year over year increase of 7.9% and resulting in a net profit margin of 18%.
- Consolidated EBITDA totalled AED 6.8 billion, representing an increase of 0.7% year over year and resulting in EBITDA margin of 51%.
- Etisalat crowned strongest brand in the MEA region across all categories.
- Etisalat Misr and Huawei completed the first VoLTE call using Huawei's Virtual IMS
- Etisalat launched the region's first online Mobile Service Centre, offering real-time visibility and control over business customers' mobile usage.
- Etisalat partnered with Aruba to offer managed Wi-Fi and networking solutions.
- Etisalat partnered with Cisco to simplify Emirates Internet Exchange (EMIX) operations by building the region's first open and autonomous and secured network.
- Etisalat collaborated with Smart Dubai to provide cyber security services to Dubai government entities.
- Etisalat is now Etihad Airways' official telecom partner, providing the best-in-class mobile and digital solutions for the evolving business requirements of the SMB and startup community.
- Digital Financial Services partnered with Al-Futtaim to enable secure and contactless payment options for eWallet customers.
- As part of its commitment to support and empower People of Determination Etisalat partnered with Ministry of Community Development to launch a web extension to make accessing the web autistic friendly.
- Etisalat launched the Smiles' food order and delivery service in the UAE.

"Etisalat Group's first quarter results are a continuation of the strong performance the company has achieved over the past year due to the resilience and agility shown across our business operations. The company generated record results in the new hybrid scenario helping consumers adapt to a new work-and-learn-from-anywhere reality while continuing to deliver innovative services subscribers require and demand.

"Our teams rallied to support our customers with technology playing a central role in keeping our society, economy and lives connected. Digital evolution is the future where telecom operators are the key players to enable the transition and be the exemplary adopters of digital transformation. Stemming from this conviction, Etisalat will continue its efforts to align its business with the digital mandate it has undertaken, by shifting the operating model, investing in future technologies, generating new revenue streams and by acquiring and disseminating digital capabilities across its markets.

Etisalat is also thankful to the vision of our wise leadership in the UAE in positioning the country among the most digitally advanced globally, inspiring us to deliver world-class networks and innovative services. We will continue to focus on capitalising opportunities and enhancing overall customer experience while delivering long-term value for all our shareholders."

Subscribers

In the UAE the subscriber base reached 12.4 million subscribers in Q1 of 2021, while aggregate subscriber base reached 156 million, representing a year over year increase of 4%.

Revenue & Net Profit

Consolidated revenues amounted to AED 13.2 billion while consolidated net profit after Federal Royalty amounted to AED 2.3 billion representing a year over year increase of 7.9% and resulting in a net profit margin of 18%.

EBITDA

Group Consolidated EBITDA for the first quarter of 2021 increased by 0.7% to AED 6.8 billion while EBITDA margin remained stable year on year at 51%. T

Huawei announces 2021 Q1 Business Results, Business Remains Resilient

Huawei has announced its business results for the first quarter of 2021 today, which were in line with forecast.

In Q1, Huawei generated USD23.17 billion in revenue, a 16.5% decrease year-on-year. Its network business maintained steady growth, while consumer business revenue declined, in part as a result of selling the Honor smart device brand in November 2020. Huawei's net profit margin was up 3.8 percentage points year-on-year at 11.1% – the result of the company's ongoing efforts to improve quality of operations and management efficiency, as well as a patent royalty income of US$600 million.

"2021 will be another challenging year for us, but it's also the year that our future development strategy will begin to take shape," said Eric Xu, Huawei's Rotating Chairman. "We thank our customers and partners for their ongoing trust. No matter what challenges come our way, we will continue to maintain our business resilience. Not just to survive, but do so sustainably. As always, we will remain focused on the needs of our customers and keep delivering practical business value."

Huawei is driving efforts to fully unleash the value of 5G. It is helping carriers around the world roll out their 5G networks, meeting the demands of consumers and industries alike, while boosting its own delivery efficiency. It continues to improve its software engineering capabilities and ramp up investment in the software sector to gradually increase the proportion of software and services in its total revenue mix.

"As always, we remain committed to technological innovation and investing heavily in R&D as we work to address supply continuity challenges caused by restrictions in the market", stressed Xu. "We will continue making breakthroughs in basic science and pushing the frontiers of technology." T

Ooredoo Group announced Net Profit of QAR 193 million in Q1 2021

EBITDA increased 6% to QAR 3.2 billion

Ooredoo Group has announced its financial results for the quarter ended 31 March 2021.

Financial Highlights:

	Quarterly Analysis		
	Q1 2021	Q1 2020	% Change
Consolidated Revenue (QAR m)	7,197	7,295	-1%
EBITDA (QAR m)	3,213	3,023	6%
EBITDA Margin (%)	45%	41%	-
Net Profit Attributable to Ooredoo Shareholders (QAR m)	193	387	-50%
Customers in million (consolidated)	118	118	0%

• Marginal year-on-year revenue decline of 1% to QAR 7.2 billion in Q1 2021 due to a negative FX impact. Despite the COVID-19 pandemic excluding FX impact, revenue increased by 1%, mainly driven by growth in our home market Qatar and in Indonesia.

• EBITDA increased by 6% year-on-year to QAR 3.2 billion in Q1 2021, as the company maintains its focus on digitalization and cost optimisation. EBITDA margin increased to 45% in Q1 2021 from 41% in Q1 2020, supported by EBITDA margin expansion in Indonesia, Kuwait, Iraq and Myanmar. Excluding FX impact EBITDA increased by 9%.

• Group Net Profit attributable to Ooredoo shareholders decreased by 50% year-on-year to QAR 193 million in Q1 2021 mainly due to Foreign Exchange impact coming from Myanmar with an FX Loss in Q1 2021 versus an FX Gain in Q1 2020. Excluding the FX impact the Net Profit increased by 120%.

• Data revenues account for more than 55% of total Revenue driven by data leadership and digital transformation initiatives across our operations.

Operational highlights:

• On March 30, 2021 Indosat Ooredoo signed a sale and leaseback agreement with PT EPID Menara Asset Co ("Edge Point Indonesia") for more than 4,200 telecommunications towers. The transaction, which is valued at approx. USD 750 million, forms part of Ooredoo Group's strategy to move to a more efficient and flexible asset-light model. The transaction is expected to close in Q2.

• Ooredoo Group appointed new CXOs as of 8 March 2021: Abdulla Ahmad Al Zaman as Group Chief Financial Officer, Fatima Sultan Al Kuwari as Group Chief Human Resource Officer, Nigel Thomas Byrne as Group Chief Technology Information Officer (GCTIO) and René Werner as Group Chief Strategy Officer.

• Ooredoo Qatar appointed new CXOs as of 8 March 2021: Sheikh Nasser Bin Hamad Al Thani as Chief Commercial Officer, Eman Mubarak Al Khater as Chief Human Resources Officer and Eisa Mohammed Al-Mohannadi as Acting Chief Financial Officer.

• On 22 March 2021, Ooredoo Oman accepted the resignation of its CEO, Ian Dench effective as of 30 June 2021. The appointment of the new Ooredoo Oman CEO will be announced in due course.

• On April 28, Ooredoo Group extended the exclusivity period of the non-legally binding MoU with CK Hutchison to Jun 30, 2021, in relation to a potential transaction to combine their respective telecommunications businesses in Indonesia. This extension will provide more time to complete the ongoing due diligence and negotiate the final terms of a possible combination of the entities.

• Ooredoo Group successfully priced its USD 1 billion issuance of senior unsecured Reg S/Rule 144A notes. The Notes will mature on 8 April 2031 and will have a coupon of 2.625% per year. The transaction was priced at a spread to the 10-year U.S. Treasuries of 103.4 basis points. Net proceeds from the sale of the Notes will be used for Ooredoo's general corporate purposes, including refinancing of its existing debt.

• On 19 April 2021, Ooredoo QPSC entered into a new USD 500 million Revolving Credit Facility (RCF) with a consortium of 11 banks. The RCF will mature on 19 April 2026 and will be used for Ooredoo's general corporate purposes. In addition, Ooredoo, on 14 April 2021, exercised its right to prepay and cancel in advance a USD one billion Revolving Credit Facility (RCF) with original maturity date in June 2022.

• Ooredoo published its first ESG report, available only as softcopy on our website

Commenting on the results, HE ¬Sheikh Faisal Bin Thani Al Thani, Chairman of Ooredoo, said:

"Ooredoo Group delivered a robust set of results during the first quarter of 2021 despite challenging market conditions across many of our territories. We remained focused on our digital transformation agenda which has enabled us to create value for our customers by offering a seamless and convenient user experience as well as optimise our cost base by streamlining and automating processes. Consequently, our EBITDA margin improved to 45% in Q1 2021 compared to 41% for the same period last year.

We made good progress with our strategy to move to a more efficient and flexible asset-light model with the successful sale and leaseback agreement valued at USD 750 million for more than 4,200 of our telecom towers in Indonesia to Edge Point Indonesia. Monetising these assets forms an integral part of our group strategy to create value for both our shareholders and customers.

During the quarter Ooredoo Group successfully priced its USD one billion bond issuance, reflecting the market's confidence in the strength and stability of our balance sheet as well as our strategy to deliver new and innovative solutions to our customers by leveraging our world class technology and infrastructure."

Also commenting on the results, Aziz Aluthman Fakhroo, Managing Director of Ooredoo said:

"I am pleased to report that Ooredoo Group had a solid start to the year, despite challenging market conditions due to the COVID-19 pandemic. Ooredoo Group delivered a 6% increase in EBITDA to QAR 3.2 billion in Q1 2021 compared to the same period last year. The growth was driven by the ongoing implementation of our cost optimisation strategy which includes leveraging technology to drive efficiency. As a result, our EBITDA margin for the period increased to 45% in Q1 2021 compared to 41% for the same period last year, supported by margin expansion in Indonesia, Kuwait, Myanmar and Iraq.

Revenues remained under pressure due to a soft macroeconomic environment in many of our markets. Ooredoo Group reported revenues of QAR 7.2 billon during the first quarter of 2021, down 1% compared to the same period in the previous year. Net Profit decreased by 50% to QAR 193 million in Q1 2021 compared to the same period last year, mainly due to Foreign Exchange impact primarily coming from Myanmar with an FX Loss in Q1 2021 versus an FX Gain in Q1 2020.

Indosat Ooredoo continued to make strong progress with its strategy of offering simple, relevant, and transparent products supporting a 13% increase in revenue and a 36% increase in EBITDA. Ooredoo Kuwait increased its EBITDA margin to 28% in Q1 2021 compared to 25% Q1 2020 and Ooredoo Qatar's revenue increased slightly compared to Q1 2020.

Ooredoo Group invests further in its infrastructure to bring world class services to its customers. During the quarter Asiacell launched 4G in Iraq and Ooredoo Oman is preparing for the launch of mobile 5G services in Q2 2021."

Operational Review

Middle East

Ooredoo Qatar

Ooredoo Qatar saw positive growth during the period, with reported revenue growing 0.6% year-on-year to QAR 1.8 billion (Q1 2020: QAR 1.8 billion). EBITDA stood at QAR 962 million (Q1 2020: QAR 966 million), while EBTIDA margin remained stable at 54% (Q1 2020: 55%). Total customer numbers were 3 million (Q1 2020: 3.2 million).

Ooredoo Qatar continued to work with a range of content providers to expand the home entertainment options. The Ooredoo ONE 'All-In-One' Home Service was a key factor in the growth of the Ooredoo tv customer base, which grew by 1% compared to Q1 2020. New products launched during the period include a new customisable app-managed postpaid plan and a revamped version of the Ooredoo Money app.

The company was recognised as 'Global Partner of the Year' and 'Digital Partner of the Year' by leading money transfer company MoneyGram. Successful community programmes included the Ooredoo Virtual Marathon, which drew a strong response in February 2021.

Ooredoo Oman

Ooredoo Oman's performance was affected by economic conditions, increasing competition in the prepaid segment and the COVID-19 impact. Revenues declined 4% to QAR 610 million in Q1 2021 compared to the previous year, driven by a reduction in prepaid revenue which was partially offset by post-paid revenue gains.

Consequently, EBITDA declined 12% to QAR 314 million during the first quarter of 2021 compared to the same period in the previous year. The company remains committed to managing its overall cost structure.

Ooredoo Oman's customer base increased by 2% of 2.9 million in Q1 2021 compared to the same period in the previous year, as the company prepares to launch 5G mobile services in Q2 2021.

On 22 March 2021, Ooredoo Oman accepted the resignation of its CEO, Ian Dench effective as of 30 June 2021. The appointment of the new Ooredoo Oman CEO will be announced in due course.

Ooredoo Kuwait

The COVID-19 pandemic contributed to a softening macroeconomic environment in Kuwait, impacting Ooredoo Kuwait's performance during the period. The company's revenues declined 8% to QAR 607 million in Q1 2021 compared to the previous year. EBITDA for the period increased 2% to QAR 169 million, compared to the same period in the previous year, supporting an increase in EBITDA margin to 28% in Q1 2021 from 25%.

Recognising the company's long-standing commitment to its customers, Ooredoo Kuwait was awarded the "Best Internet Service Provider" at the annual Service Hero Awards for the year 2020. The company remained focused on launching new and innovative products for its customers, signing an MoU with the National Bank of Kuwait (NBK) to develop digital services, products and solutions that contribute to enriching customer experiences. Ooredoo Kuwait's customer base in Q1 2021 was 2.4 million (Q1 2020: 2.5 million).

Asiacell — Iraq

The Iraqi economy was impacted by weakening purchasing power following the 17% devaluation of the Iraqi Dinar and the effect of the COVID-19 pandemic. Asiacell reported revenue of QAR 852 million during the first quarter of 2021 compared to QAR 1,085 million for same period in the previous year. Consequently, EBITDA declined 20% to QAR 380 million in Q1 2021 compared to the same period in the previous year. The company's cost optimisation initiatives contributed to a healthy EBITDA margin of 45% in Q1 2021.

Asiacell maintained its customer base of 14.6 million (Q1 2020: 14.5 million), supported the launch of 4G and new partnerships with OSN and LaLiga, enabling the company to offer bundled services and increase data usage.

North Africa

Ooredoo Algeria

Ooredoo Algeria delivered a healthy set of results during the first quarter of 2021, despite a challenging macroeconomic environment. In local currency terms revenues increased 2% in Q1 2021 compared to the same period in the previous year, supported by the bundling of offers in the "My Ooredoo" App and the launch of plans targeting SOHOs and SMEs. Consequently, an EBITDA margin of 34% has been maintained.

In Qatari Rial terms, the company's performance was impacted by the 9% year on year depreciation of the Algerian Dinar. Ooredoo Algeria reported revenues of QAR 551 million during the first quarter of 2021 compared to QAR 594 million for the for the same period in the previous year. EBITDA for the period was QAR 188 million, a decline of 6% compared to the same period in the previous year. The company maintained an EBITDA margin of 34% as it focused on cost optimisation and implemented a number of initiatives including optimising spend and digital efficiencies.

Ooredoo Algeria's customer base was 12.7 million in Q1 2021, up 3% compared to the same period in the previous year.

Ooredoo Tunisia

Despite the COVID-19 pandemic continuing to impact the macroeconomic environment in Tunisia, Ooredoo Tunisia reported revenues of QAR 394 million in Q1 2021, an increase of 3% compared to the same period in the previous year supported by favourable FX trends. The company remains focused on the implementation of its value creation plan which includes expanding its digital proposition and streamlining its operations through the digitisation of its sales and distribution channels.

The company reported EBITDA of QAR 162 million in Q1 2021, down 3% compared to the same period in the previous year. The company's focus on efficiency and cost optimisation supported a healthy EBITDA margin of 41% in Q1 2021.

Ooredoo Tunisia changed the reporting of its prepaid customer's base from the original life-cycle definition to the 90 days network activity definition, to align with the standard reporting methodology used in Tunisia. As a result, Ooredoo Tunisia's reported customer base declined by approximately 2.3 million to 6.9 million customers in Q1 2021. There is no impact on the reported financials.

Asia

Indosat Ooredoo

Indosat Ooredoo reported an excellent set of results in the first quarter of 2021, maintaining the positive momentum from the previous year. Indosat Ooredoo's revenue increased by 13% to QAR 1.9 billion during the first quarter of 2021 compared to the same period last year. Growth was driven by the strong performance in cellular revenues supported by a rebound in the enterprise business.

Indosat Ooredoo's EBITDA increased to QAR 956 million in the first quarter of 2021 up 36% compared to the same period in the previous year, due to a combination of top line growth and cost efficiencies.

Supported by its strategy of offering simple, relevant, and transparent products and its network investments Indosat Ooredoo's customer base increased 7% to 60.0 million in Q1 2021 compared to the same period in the previous year.

Indosat Ooredoo signed a sale and leaseback agreement with PT EPID Menara Asset Co ("Edge Point Indonesia") for more than 4,200 telecommunications towers. The transaction is valued at USD 750 million and forms part of Ooredoo Group's strategy to move to a more efficient and flexible asset-light model unlocking the trapped value of its infrastructure portfolio.

On April 28, Ooredoo Group extended the exclusivity period of the non-legally binding MoU with CK Hutchison to Jun 30, 2021, in relation to a potential transaction to combine their respective telecommunications businesses in Indonesia. This extension will provide more time to complete the ongoing due diligence and negotiate the final terms of a possible combination of the entities.

Ooredoo Myanmar

Political developments in Myanmar including restrictions on mobile and wireless broadband impacted Ooredoo Myanmar's performance in Q1 2021. The company's priority during this period of emergency was to keep its customers connected by offering an extensive range of affordable voice products.

Ooredoo Myanmar reported revenues of QAR 252 million during the first quarter of 2021, a decline of 11% compared to the same period last year, as restrictions impacted data revenues which were partially offset by an increase in voice revenues. The company continued to implement its cost optimisation strategy which included optimising data centres and energy consumption as well as contract renegotiations supporting a 12% increase in EBITDA to QAR 56 million in Q1 2021 compared to the same period last year.

Ooredoo Myanmar also launched a number of initiatives to support the community including its "donate a recharge" program where customers who have an extra balance can donate it alongside Ooredoo Myanmar, which donates MMK 5 million daily to customers who need a top-up. The company's customer base decreased by 14% to 13.4 million in the first quarter of 2021 compared to the same period last year. T

Interview: Khalid Athar

Digital transformation has made it very easy for customers to change service providers

Mobile operators keen on keeping 5G customers happy and avoiding churn need a 360-degree, real-time view of their subscribers' actual experiences

Anis Chemli, VP at Guavus, a pioneer in AI-driven analytics for communications service providers, speaks to Teletimes

Anis Chemli is VP of Sales and Marketing at Guavus, a Thales company and pioneer in AI-driven analytics for communications service providers. He is a global leader with more than 20 years of international experience working across different markets with some of the world's leading telecommunications, IT, and digital security companies. Anis joined Guavus from Thales's Digital Identity and Security group where he held several management positions in both the telecom and banking domains. He has successfully led the digital transformations of some of the top operators in the Middle East and Africa.

Khalid Athar: What are the big challenges you're seeing communications service providers (CSPs) in the Middle East and North Africa currently face?

Anis Chemli: Telecom subscriber behavior is changing dramatically due to the pandemic. Service usage, buying patterns, and online consumption patterns are very different. Our world has become more digital and subscribers less patient, customers can more easily jump ship to another operator if they don't like the experience they're having or if they see a better marketing offer or more attractively priced plan. They don't even need to go into a store to make the change; it's easy to activate the new service online from home, thanks to the digital on-boarding solutions that many providers have adopted following the pandemic.

In 2021, the opportunity for customer churn will be even greater. If operators can't find a way to gain customer loyalty, they will eventually keep losing subscribers and it'll be even harder to win them back.

KA: What are some ways operators can increase customer loyalty and mitigate this increased opportunity for churn?

AC: First, they need to be able to view and understand the full, real-time experiences their customers are having, so they can make sure those service levels don't degrade. An internal view of the operator's network operations alone is no longer enough, because that view often doesn't match what the customer sees. Internal network monitors might indicate that all systems are working just fine, for example, while in reality, a subscriber is having difficulty getting connected, experiencing dropped calls, seeing choppy video, or having any number of other issues.

KA: How can they get the full subscriber view?

AC: That requires analyzing data from myriad sources, both from the inside out (the network view) and from the outside in (the customer view). This will allow operators to deeply understand individual subscriber experiences and behaviors. This external subscriber experience/behavior data can then be used to train algorithms to identify the complex relationships of key quality indicators (KQIs) to other attributes such as the subscriber's location, device manufacturer, software version, and service type.

These trained algorithms can then be applied from the inside-out, providing the operator with analytics insights to understand how network operations are impacting subscriber experience on a micro-segment basis.

That said, there's really no way to build a 360-degree customer experience view without real-time analytics, real-time stream processing, edge analytics, and machine learning. Operators require a system that continually collects, correlates, and analyzes data from every relevant customer source. Otherwise, chances are pretty high that an operator will lose a customer before even realizing that he isn't satisfied.

KA: Can you provide some examples of what analytics might do to monitor and improve experiences to boost customer retention?

> "Analytics reveal exactly what customers are experiencing with the CSP's video services."

AC: Protecting an operator's streaming video market share provides a good example. Third-party content providers—also called over-the-top, or OTT companies—piggyback on incumbent CSPs' networks to deliver video streaming and content services to that CSP's subscribers. They've turned out to be fierce competitors to the traditional CSPs' own content services. Smart operators should monitor which of their own video services and which OTT services (Netflix, Hulu, Amazon Prime, and so forth) their customers are using to determine if they're losing market share to the OTTs. If they are, they need to use analytics tools to win some of that business back.

KA: And they do that – how?

AC: Analytics reveal exactly what customers are experiencing with the CSP's video services. If subscribers are having unstable or poor video experiences, they are ripe for the taking by the OTT provider. Those subscribers should become immediate candidates for network improvements; it would likely annoy them to be solicited for still more video services if they're unhappy with the services they already have! Their experiences need to be up-leveled before the CSP can woo them with additional offerings. Subscribers already showing strong experiences and high levels of satisfaction, on the other hand, might be targeted with a marketing campaign for new or additional video services or new pricing packages.

KA: Are there other ways your customers have used analytics to improve customer stickiness?

AC: Personalizing services is a great way to bond subscribers to your services. For example, we're working with a Middle Eastern CSP to thoroughly customize the subscriber experience. They're using analytics to gain a holistic view of subscribers based on 10 different indices.

They currently have multiple systems that look at different aspects of the customer, but they want to consolidate those systems, with the goal of addressing problems well before it's too late. With all the source data consolidated, they'll be able to run analytics to learn what apps the subscriber prefers to further personalize the customer experience.

If the subscriber likes to communicate using WhatsApp, for instance, why not communicate with the subscriber that way? Analytics also will enable them to anticipate when the subscriber is likely to want to upgrade a device and what kinds of services each subscriber is interested in so they can run campaigns tailored specifically to each subscriber's needs.

KA: What challenges are you seeing arising on the operational side of things for operators?

AC: Increasingly, CSP personnel are working from home, in part because of the pandemic. This introduces challenges to maintaining quality services. It adds another layer of complexity to network operations, because there are learning curves for workers to figure out how to do their jobs remotely. And personnel not being near one another and working in different time zones in some cases have always created some gaps.

But CSPs must avoid compromise on the operational side at all costs. Without a clear, automated view of your network indices, you could run into trouble operationally. Again, let's say you have a problem with a video service. If you don't ID the issue in real time, particularly the root cause, you could affect a lot of users with bad quality.

KA: How can operators address the issues you mention?

AC: With the current explosion in data and the real-time nature of so many emerging applications, operators really need to reduce the human factor—particularly in 5G networks, which are extremely complex—in order to scale. They should adopt some machine learning, which can teach itself to anticipate, correlate, and fix issues by finding their root cause in an automated fashion. That's a huge help. One small problem can cause many other problems, and if you don't react immediately to fix the root cause, there's often a snowball effect.

KA: Are 5G standards helping fuel the automation you mention as a requirement for scalability and maintaining service levels going forward?

AC: Absolutely. Because the 5G world is highly complex, it relies on analytics and automation, specified in the standard, to function properly. The Third-Generation Partnership Project (3GPP) has specified 5G as a service-based architecture (SBA) that uses machine intelligence for real-time monitoring and management. To support that process, it has specified a network data analytics function (NWDAF) as a ground-up component built into the 5G Core standard.

As a side note, this is the tech industry's first attempt to standardize the function of analytics in the core of a mobile network, so it's a big deal.

KA: What does NWDAF do to help alleviate complexity problems and help operators find and fix issues in time to maintain high-quality services?

AC: NWDAF incorporates standard interfaces for collecting data from a number of 5G Core Network Functions (NFs), which are specified in the 5G standard. It then applies those analytics to automating specific operations.

A key problem NWDAF solves is data normalization across dissimilar interfaces and data formats in multivendor networks and traditional business intelligence (BI) systems. These have historically made data collection, aggregation, integration, and analysis from different suppliers' equipment difficult and time-consuming, which today's dynamic market can't tolerate.

KA: How might this all translate into better customer experiences?

AC: Many operators are considering deploying private 5G networks for business and government customers as a new revenue opportunity. To do so, they'll need to deploy another capability specified by 5G called network slicing, for which the NWDAF function is very important.

Network slicing creates logical segmentation between customers or applications over a common physical network infrastructure. In a private 5G environment with tens or hundreds of network slices, it may be difficult to determine which network slice can provide the best service to a given device. So one defined use case for NWDAF is identifying and predicting the load for each network slice and then helping the network determine to which slice it should assign a newly registered device for best performance.

"Many operators are considering deploying private 5G networks for business and government customers as a new revenue opportunity."

"Our Guavus-IQ analytics portfolio uniquely provides a correlated 'inside-out' and 'outside-in' analytics view of customer experiences and network operations. It's vendor-agnostic, working with a variety of telecom equipment."

KA: How does Guavus address the issues we've been discussing?

AC: We've been in the market focusing exclusively on CSPs and big data analytics for 15 years. So we know their problems. We have successful implementations with the world's largest CSPs and proven technology that has helped them reduce their opex, increase their revenue, and significantly improve customer experience.

The core of our expertise is in CSP machine learning and AI driven analytics. We have seasoned data scientists and customer support staff who have worked for and with the top telecom operators on successful analytics deployments for many years. And our solutions are highly instrumented specifically for CSPs and their multivendor infrastructures versus traditional general-purpose enterprise platforms or homogeneous network-equipment-oriented solutions.

Our Guavus-IQ analytics portfolio uniquely provides a correlated 'inside-out' and 'outside-in' analytics view of customer experiences and network operations. It's vendor-agnostic, working with a variety of telecom equipment.

We're bringing that open approach and our CSP analytics experience to bear on an innovative new analytics product for the 5G Core designed to enable mobile operators to overcome the challenges of operating complex, multi-vendor 5G networks at scale.

The offering will provide operators with a vendor-agnostic, 3GPP-compliant NWDAF implementation that embodies an open approach to streaming analytics, machine learning and AI for generating the real-time operational intelligence needed to drive service orchestration and network automation in the 5G Core.

KA: As CSPs look to the second half of this year, how can they continue to differentiate themselves...any parting advice?

AC: If you don't have an automated system able to manage and anticipate increases in data, ensure best practices, and deliver continuous insights, you won't be able to fulfill your responsibilities as a CSP. CSPs are facing exploding numbers of data requests and far greater expectations for service-level agreements (SLAs) in terms of the quality of their experiences.

In this environment, being able to look ahead and serve these changing user needs, rather than reacting to issues and user dissatisfaction after the fact, is what will differentiate successful service providers from others. This is an unprecedented time, in terms of the pandemic and 5G, with unprecedented opportunities for CSPs.

We're committed to helping CSPs in MENA take advantage of these opportunities – using analytics to really differentiate themselves and deliver a superior customer experience...growing their business while reducing their network costs and complexity. T

A Sustainable 5G Spectrum Strategy for Digital Economic Growth

Saurabh Verma, *Director ICT and* ***Sami Shaikh,*** *Consultant ICT at Frost & Sullivan*

5G an Economic Driver

Today, the ability of 5G goes far beyond providing superior mobile services to consumers. The speed at which 5G is evolving and the possibilities it unlocks in the form of use cases is accelerating digital transformation across all industry verticals.

The 5G value chain will have an immense contribution to the global economy, as fast and intelligent internet connectivity enabled by 5G technology is expected to create approximately $3.6 trillion in economic output and 22.3 million jobs by 2035.

Realizing the economic opportunity driven by 5G, operators in the Gulf Cooperation Council (GCC) have made significant progress and have quickly rolled-out 5G deployments with the support from regulators in their respective countries. The economic potential of 5G has been a strong motivator for this quick 5G deployment. It is estimated that 5G technology has the potential to boost the GCC economy by $269 billion over the next ten years and 5G adoption will reach 16% in the GCC by 2025 with 20 million 5G connections, ahead of the global connection rate that is assumed to reach 15 globally.

GCC Operators Leading 5G Deployments

With an aim to emerge as a global leader in 5G deployments mobile operators in the GCC have aggressively pushed ahead with trials and early commercial launches. Between May and June 2018, Etisalat, STC, Zain and Ooredoo all stated that they had launched 5G in their respective markets.

Although Fixed Wireless Access (FWA) was the initial use case back in 2018, the first 5G mobile services were commercialized in 2019, with the launch of 5G smartphones. Currently in UAE, Saudi Arabia and Qatar, several commercial offering have been deployed and as more cost effective 5G- ready smartphones and devices hit the market, it will further boost B2C deployments of 5G.

Continuous coordination between all eco-system players has been the driving force behind the success seen in the GCC. Mobile operators in the region have undertaken several projects and initiatives which include collaboration on the development of industry standards (3GPP's work) and agreements with major vendors such as Huawei, Ericsson, and Nokia. These collaborations have further driven 5G developments and have also helped in finding the most appropriate network deployment model while identifying viable use cases. GCC mobile operators have also formed memoranda of understanding (MoUs) to jointly develop and test selected 5G and IoT use cases.

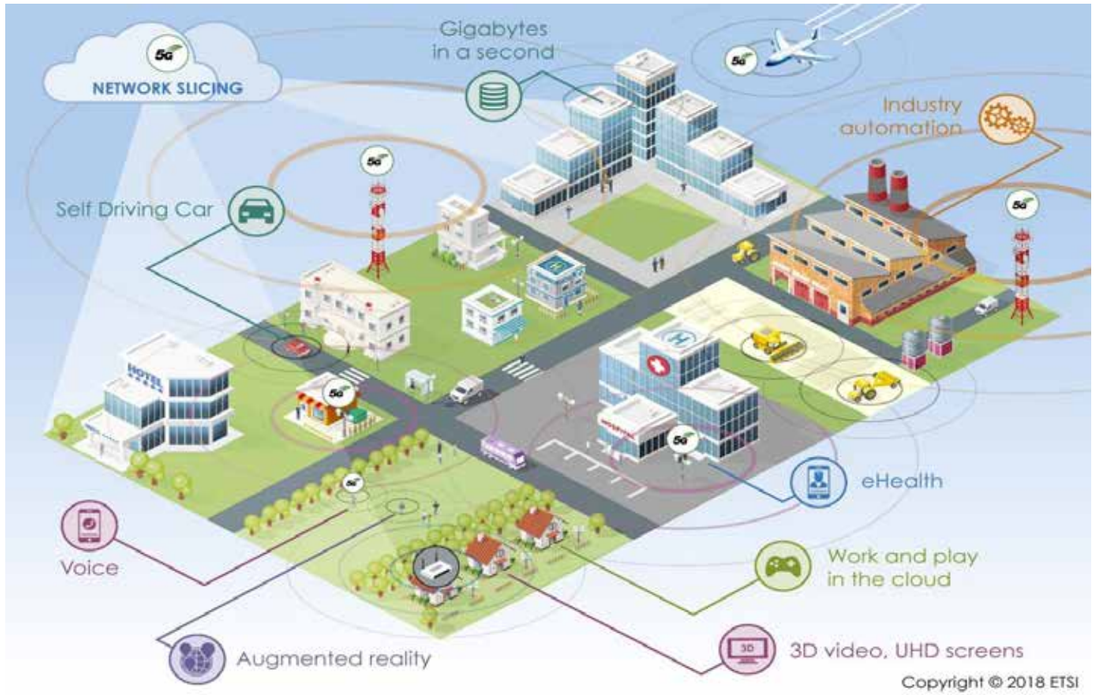
5G technology represents a significant opportunity for all eco-system players in the GCC, considering its ability to support the development of countless new B2C and B2B services and its potential to revolutionize several industry verticals by supporting the deployment of innovative use cases, 5G has been the focus of attention for all mobile operators in the region. However, to build on this momentum and maximize from the 5G opportunity, operators and technology provider must develop more use cases and need regulators to support them by allocating sufficient spectrum across low, medium, and high bands.

5G Use Cases Changing the Industry

The launch of 5G has marked the arrival of next generation wireless connectivity. This next-gen wireless network has the ability to support huge number of connections simultaneously while improving speed, latency, reliability, and power consumption for handsets and Internet of Things (IoT) devices. This has catapulted the realization and seamless delivery of concepts such as Industry 4.0, Augmented/Virtual reality (AR/VR), Massive Machine Type Communication and Smart Cities with eSports and enhanced in-venue digital entertainment. The prospect of 5G technology involves capabilities which will make an immense contribution to the digital transformation of industry verticals and will serve as an enabler to use cases relying on ultra-reliable, low latency and highly available internet connections. Eco-system players such as mobile operators, technology providers, regulators and end-users are eager to harness 5G's potential and have already started deploying uses cases in a range of different sectors to strengthen local and national economies. Some of the prominent uses cases which have emerged in the region are based on:

Internet of Things

Considering the IoT market in the MENA region is still in its infancy compared to the other mature markets, the arrival of 5G is likely to accelerate developments. GSMA predicts that there will be 1.1 billion IoT connections (cellular and noncellular) in MENA by 2025. Due to the diversity of IoT applications and services, different access technologies will address different requirements. 5G will play a key role in supporting the next phase of digital transformation and will drive greater adoption of IoT in different sectors, particularly industrial IoT applications, which will account for almost 60% of the 1.1 billion IoT connections in the region by 2025.



Transformative Technologies

To drive the agenda of digital transformation and position the region as a thought leader in emerging technology deployment, several regional eco-system players have brought to life technologies such as Edge Computing, AI and Blockchain. As organizations realize the potential of these technologies which are underpinned by 5G, it is expected that spending on Edge Computing, AI and Blockchain will considerably rise in the coming years. Regional leaders like UAE and Saudi Arabia are at the forefront of deploying emerging technologies to transform critical sectors such as Healthcare, Utilities and Education. 5G use cases in Healthcare such as Telemedicine, Remote Surgery and Smart Grids and Metering in Utilities will rely on 5G technology.

Immersive reality

According to a GSMA Consumer Survey, mobile users in the GCC Arab States are highly engaged in the digital world. Their engagement is as high as that of mobile users in North America and the more tech-advanced countries across Europe and Asia Pacific. With the growing popularity of online gaming, entertainment e-commerce and digital education, mobile users are more engaged than ever. Keeping the user engaged with new interactive content and experiences which are seamlessly delivered is key for user retention. 5G has tremendously helped content developers to introduce and deliver their content in an Augmented or Virtual environment, thereby maximizing user interaction. However, interactive AR/VR content delivered in real time needs high bandwidth and ultra-low latency connections which have the capacity to transfer large volumes of data and from multiple devices at the same time. Existing connections alone do not have the ability to cope up with this growing demand, which can only be catered by 5G connectivity. 5G networks will be key to supplement existing 4G networks and supply the mobile data traffic capacity required for seamless delivery of immersive reality.

As innovative 5G uses cases get deployed, it extremely important to take into consideration the availability of spectrum. The success and commercialization of any 5G use case depends on the availability of spectrum in the right frequency band. If regulators do not allocate more spectrum across low, medium, and high bands the scope of 5G use case development is limited and will severely impact the realization of 5G's full potential. Eco-system players need to collaborate to discuss the best ways to solve the spectrum challenge.

The Need for Additional Spectrum Allocation

Operators throughout the MENA region have already invested nearly $120 billion between 2018 and 2020. With growing consumer demand for 5G connectivity and rapidly developing enterprise 5G use-cases,

an additional 5G capex will likely be required between 2020-2025. Given that an increasing number of operators are testing 5G services across the region, 5G spectrum availability remains an issue. According to MENA operators, the amount of spectrum allocated for 5G trials is not enough in some countries to allow wider scale trials or fully exploit early 5G developments.

Spectrum is considered as the fuel to develop a robust 5G ecosystem, without which no 5G network infrastructure or devices can operate at its full potential. The future of 5G networks will rely on a combination of mainstream and alternative technologies and will use both licensed and unlicensed spectrum across different spectrum bands together. In order to realize the potential of a digital society, capable of deploying use cases like public security, IoT, and industry automation, additional suitable spectrum bands are needed for current and futuristic 5G systems.

Successful 5G deployment need three key frequency ranges- Sub-1 GHz, 1-6 GHz, and more than 6 GHz- to ensure widespread coverage and to support different use cases.

Sub-1 GHz

To support wider coverage across urban and rural areas the Sub 1-Ghz frequency would be necessary. This would not only support IoT implementations but would also provide energy efficient wireless data communication to enable smooth functioning of smart home technologies. The Sub 1GHz band is specifically designed to support applications that require short range and low data rates.

1-6 GHz

The 1-6 GHz frequency range which is capable of delivering both capacity and coverage includes spectrum between 3.3 and 3.8 GHz and will be essential in laying the foundation for initial 5G deployments and services.

The 3.4-3.6 GHz range which is almost globally harmonized is driving the economies of scale needed for low-cost devices. A number of countries are also discussing the prospect of using other bands such as 3.8-4.2 GHz, and spectrum in the 4-5 GHz range, in particular 4.8-4.99 GHz. Although the 1-6 GHz range is being currently used by several operator who are operating on LTE networks, there are numerous other mobile bands in the 1-6 GHz range which could be gradually restructured for 5G use. It is estimated that the use of this band will continue to grow not only for 5G but for LTE too.

6GHz: Growing Importance

Several developed telecom markets are currently focusing on the 6 GHz band (5925-7125 MHz) which is being considered for licensed 5G as well as a new unlicensed band. To keep up with the growing adoption of 5G, a new licensed 5G band within 6 GHz will play a particularly important role. It is recommended that at least 6425-7125 GHz is made available for licensed 5G. Countries like China are planning to license the 6GHz band and make it completely available. Whereas countries like US supports unlicensed use of this band, while the European region has opted for unlicensed use in the lower portion of the band (below 6425MHz). The unique benefits of this range which delivers a mixture of coverage and capacity, cannot be replaced by mmWave or coverage bands. To deliver robust 5G services the 6GHz band will play a vital role in the near future.

Above 6 GHz

To support projected extensive mobile traffic growth and deliver significantly faster data speeds over 5G, a range that exceeds 6 GHz will be required to support this seamless delivery of ultra-high broadband speeds.

The spectrum being targeted above 6 GHz is expected to comprise a mixture of licensed and unlicensed mobile bands. 5G mobile bands which are being considered by WRC-19, under agenda 1.13 are 24.25-27.5 GHz, 31.8-33.4 GHz, 37-43.5 GHz, 45.5-50.2 GHz, 50.4-52.6 GHz, 66-76 GHz and 81-86 GHz. Although, some countries are exploring bands like 28 GHz which have not been considered by WRC-19 but there is an incremental value as the 28 GHz band would complement the 24 GHz band (being considered by WRC-19) as the same equipment could easily support both.

Regional Spectrum Allocation

Initially it was estimated that early 5G deployments in the region would need spectrum allocated between 80 – 100 MHz of mid-band spectrum within the 3300 – 4200 MHz and 4400-5000 MHz bands, and 400 – 500 MHz of high-band spectrum within the 26 GHz, 28 GHz, 39 GHz, and 42 GHz bands per operator. Although regulators in the region have already licensed and allocated some of the harmonized spectrum suitable for 5G, which was a requirement to achieve early mass market services and use case deployment, an additional 80-100 MHz of mid-band spectrum and 1 – 2 GHz of high-band spectrum per operator will be needed. Spectrum in the low-bands 450 MHz, 600 MHz and 700 MHz bands will also be needed to connect the rural areas and to increase geographical network coverage to ensure successful implementation of IoT and Edge computing solutions. Additionally, renewal of spectrum needs to be reasonably priced to allow for meaningful network deployments which could address the ICT policy objectives.

The approach adopted by governments and regulators will have a significant impact on the true realization of 5G deployments and will also shape the future of a country. To use 5G as a driver to accelerate the economy with the help of innovate solutions and use cases, allocation of additional spectrum will be pivotal. Regulators need to ensure spectrum is allocated as per the International Telecommunications Union. While 5G is undeniably a revolutionary technology, its potential is limited based on availability and allocation of spectrum. T

Huawei: Optimizing portfolio to boost business resilience and navigate a challenging environment

Eric Xu, Huawei's Rotating Chairman: "five strategic initiatives moving forward"

During the 18th Huawei Global Analyst Summit attended by more than 400 guests of analysts, experts, key opinion leaders and media representatives from around the world, Eric Xu, Huawei's Rotating Chairman, shared the company's business performance in 2020 as well as five strategic initiatives moving forward.

According to Mr. Xu, Huawei will:

1. Optimize its portfolio to boost business resilience. As part of these efforts, Huawei will strengthen its software capabilities and invest more in businesses that are less reliant on advanced process techniques, as well as in components for intelligent vehicles.
2. Maximize 5G value and define 5.5G with industry peers to drive the evolution of mobile communications.
3. Provide a seamless, user-centric, and intelligent experience across all user scenarios.
4. Innovate to reduce energy consumption for a low-carbon world.
5. Address supply continuity challenges.

"Rebuilding trust and restoring collaboration across the global semiconductor supply chain is crucial to bringing the industry back on track," stressed Eric Xu.

"Moving forward, we will continue to find ourselves in a complex and volatile global environment. Resurgence of COVID-19 and geopolitical uncertainty will present ongoing challenges for every organization, business, and country. We believe deeply in the power of digital technology to provide fresh solutions to the problems we all face. So we will keep innovating and driving digital transformation forward with our customers and partners to bring digital to every person,

home and organization for a fully connected, intelligent world."

William Xu, Director of the Board and President of Huawei's Institute of Strategic Research, began his keynote by discussing challenges that will affect social well-being over the next decade, including ageing populations and increasingly high energy consumption. He followed with Huawei's outlook on the intelligent world of 2030, including nine technological challenges and proposed directions for research efforts.

These include:

1. Defining 5.5G to support hundreds of billions of different kinds of connections
2. Developing nanoscale optics for an exponential increase in fiber capacity
3. Optimizing network protocols to connect all things
4. Providing advanced computing power strong enough to support the intelligent world
5. Extracting knowledge from massive amounts of data to drive breakthroughs in industrial AI
6. Going beyond von Neumann architecture for 100x denser storage systems
7. Combining computing and sensing for a hyper-reality, multi-modal experience
8. Enabling people to more proactively manage their health through continuous self-monitoring of personal vital signs
9. Building an intelligent Internet of Energy for the generation, storage, and consumption of greener electricity

"In the decade to come," said William Xu, "we can expect to see many great improvements in society. To promote these efforts, we hope to join forces with different industries, academia, research institutes, and application developers to address the universal challenges facing humanity. With a shared vision, we all have a role to play as we explore how to make connections stronger, computing faster, and energy greener. Together, let's march ahead towards an Intelligent World in 2030." T

Huawei concludes 2021 Global Analyst Summit noting priorities for digital transformation across all industries

Huawei has recently concluded its 2021 Huawei Global Analyst Summit, in which it was joined by over 2,000 analysts, key opinion leaders, and media representatives from a range of industries. Together, they discussed how the industry can work together to weather the difficult times of today while still achieving win-win outcomes and accelerate the arrival of the intelligent world.

In the final days of the Summit, Mr. Gan Bin, Vice President of Huawei Wireless Product Line, shared Huawei's strategies for innovation in wireless networks and vowed to continue to lead the innovation that will cement their leaderships in both 5G products and the industry. Huawei proposed the future-oriented "1+N" 5G target network, believing that multi-antenna technology will be required for all bands and scenarios in order to build one basic network that can ensure both coverage and huge bandwidth, while also allowing N capabilities to be flexibly added on. He added that Huawei will continue to obtain insights, stay open, and focus on continuously innovating 5G to help carriers fully utilize the potential of multi-antenna technology across all bands and scenarios.

Meanwhile, Bob Chen, Vice President of Huawei Enterprise Business Group, noted that industrial digital transformation is moving towards a middle- and high-level stage, characterized by the digitalization of both support and core production systems. Huawei continues to build innovative, scenario-specific solutions based on Intelligent Twins as technology architecture. Doing so, he believes the company can support intelligent industrial upgrades and facilitate digital transformation for all industries—whether energy, transportation, finance, education, or others.

Huawei also announced the latest innovations in its Intelligent Cloud-Network Solution. According to IDC statistics, 80% of enterprises will speed up their cloudification by the end of 2021. Huawei's Intelligent Cloud-Network Solution thus delivers innovative offerings in four major scenarios: CloudCampus 3.0, delivering optimal cloud access experience; CloudWAN 3.0, providing agile and high-quality network connections between enterprises and clouds; CloudFabric 3.0, building a hyper-converged data center network to enable converged and lossless network connectivity for cloud data centers; and HiSec, offering end-to-end security protection for enterprise cloudification.

The Huawei Global Analyst Summit follows the release of the company's 2020 Annual Report, which noted that as of December 2020, more than 700 cities and 253 Fortune 500 companies selected Huawei as their digital transformation partner. T

Broadband Forum elects new Board of Directors

The continued importance of broadband standards has been highlighted by the calibre of industry leaders elected to the Broadband Forum's Board of Directors at its quarterly meeting last month.

Broadband Forum announced the results of newly elected and re-elected members of its Board of Directors and the annual election of its officers that brings together representatives from leading global companies. Chosen for a two-year tenure, leaders from a variety of operators and product and technology developers have joined or re-joined the eleven-member Board including Aleksandra Kozarev of MaxLinear, Barbara Stark of AT&T, Hongyu Li of Huawei, Manuel Paul of Deutsche Telekom and Mike Talbert of Verizon.

As part of its annual officer elections Mike Talbert was voted in as Broadband Forum President and Manuel Paul as Vice President. They join the re-elected officers: John Blackford of CommScope (Chairman), Dave Sinicrope of Ericsson (Vice President), Frank Van der Putten of Nokia (Treasurer) and Aleksandra Kozarev (Secretary).

Accepting his new role of President of the Broadband Forum, Mike Talbert stated: "It is an honour and privilege to be elected by my industry peers. This is such an exciting time for the whole broadband industry, the terrible pandemic we have witnessed has truly demonstrated the importance of broadband for all areas of society from consumer, IoT, business and public services. The work we do delivering the open standards and open software directly impacts the entire future of the broadband eco-system for service providers and the broadband user's experience."

Bernd Hesse of Calix was appointed to the new role of Chief Marketing Officer of the Board. The new role, combined with Mr Hesse's success in evangelizing the Forum and its activities, provides a well-established, industry champion to drive Forum awareness and development.

"Building strong partnerships and vision within service providers, application drivers and vendor organizations is critical to the leadership of the Broadband Forum. I am delighted that additional world-class leaders have been elected to the Board of Directors to drive what continues to be an exciting and fast-moving time for the Forum," said Broadband Forum's Managing Director Ken Ko. T

The Incomplete Humachine

Toby Ruckert

Recently, I was pondering about my journey with multi-experience, conversational user interfaces over the past decade. The way my company UIB thinks about these multimodal experiences of existence could be — less philosophically as follows — simply summed up in the following slide:

The term **"H2M"** means Human-to-Machine and **"CUX"** means "Conversational User Experiences," indicating an element of human to human or human to machine interaction, whereas:

1. Humans experience the world through five senses: taste, smell, vision, hearing, and touch (there is even a "sixth sense," called proprioception, which allows us to keep track of where our body parts are in space).

2. We can think, feel, and converse by mere micro-expressions and looks alone, too. Actual verbal, written, or gestured conversations are not necessarily required to make a statement or signal consent, disagreement, disgust, joy, etc.

This raises the question, how constantly evolving machines and algorithms fit into the communication habits of modern times and opportunities. There is a general trend in which humans are becoming more like robots, bending to the algorithms which rule their daily private and working lives, while robots are being equipped with technology to start feeling. The Internet of Things (IoT) plays the connecting role here. While humans experience the world through their senses, not all machines necessarily have them built-in. To "sense" something, machines must be equipped with sensors, which are connected by IoT with the central nervous system (the internet) of Artificial Intelligence (AI) — the brain. Such sensors are increasingly becoming more sophisticated, as this example of a "digital nose" shows: https://youtu.be/mWanwWREFq8

Combining AI and IoT for machines could even be compared to humans using their brains and senses to learn, apply, and develop capabilities which — just a few years ago — would have seemed impossible for a machine to fathom.

With robotics, machines get a physical body with AI, they have some form of intelligence and with IoT, they have connected senses to "experience" a 3D world.

What's missing for a machine to eventually be "complete"?

That depends. We as humans, collectively, haven't even understood our minds. From a machine's perspective — if brains are the hardware, our minds are the software. But it's important to note that "mind" is more than a collection of mere algorithms a machine could all too easily compare it to — that perhaps would be more like psychology.

However, recently I dived into the world of Virtual Reality (VR) and found it to be fascinating. I could imagine if we'd be living in virtual reality just long enough, that at one point, it would be hard to distinguish between the two. In fact, the deeper we'd go down this rabbit hole, we might wonder how many more realities are there, and eventually, perhaps, we'd question what reality itself even means. But don't take my word for it, see this TED talk on the subject for yourself: https://youtu.be/eX2QBlckPnw

VR may just be the catalyst for machines to evolve to a point from where they could acquire a sense of "mind," by being confronted with its algorithms from within multiple realities.

To summarize, the Human-Machine comparison to date:

Mind = Virtual Reality
Brain = Artificial Intelligence
Senses = Internet of Things
Physical Body = Robots

With this comparison, I would like to provide a wider context for the trends we're currently seeing emerge. My advice to individuals seeking a career in technology or to students who don't know what the future will bring would be to try and spot opportunities at the intersection of any of the aforesaid subjects, whereas the value is captured at the overlap of such technology.

Rather than being a narrow expert in one domain, we will require individuals with strong skill sets in understanding the nature between the different systems of being — whether human or machine.

A word of caution

Even if the network of computation-capable, solid-state systems (electronics or "machines") engineered by humans would develop into an autonomous "bioform," it is critical to comprehend, that the optimal survival conditions for this bioform (low-temperature vacuum) are drastically different from those which humans need (room temperature aerial atmosphere and adequate water supply).

Today we fight for our planet in terms of climate change, for allocating its vast resources globally in a fair, ethical manner and, for certain, equality in terms of educational and technological opportunities. However, if machines were to become as complete as humans in their ability to sense, think, and be, a dramatic conflict between the two forms of intelligence could arise (ref: Solid State Intelligence, The Scientist, John C. Lilly, 1978).

Of course, this may all change again quickly with the advent of the photonic age.

An outlook to think about

Perhaps it's this process of creation of another form of intelligence that allows us to finally tap into and unveil some of our mysteries, deeply buried in our hearts and minds. Beyond self-expression and the desire for existence, humans have always strived towards some form of self-realization.

This is vastly different from an ego-type of realization which machines would most likely first evolve to and which would still lack human values and concepts such as consciousness, spirit, and perhaps our ancient culture-universal appreciation of "souls."

René Descartes' famous lines:

ego cogito ergo sum
I think, therefore I am

may not be enough when the rise of machines has truly begun.

Other forms of intelligence, such as machines, are evolving. Will we humans be able to overcome our limitations beyond thinking, to develop beyond our current, limited understanding of consciousness? T

Nokia provides ultra-fast 5G broadband services to Etisalat UAE

Etisalat with Nokia, as a key partner, has deployed 5G network, providing enhanced mobile broadband services and expanding 5G coverage and revenue opportunities. Nokia's 5G portfolio supports Etisalat's mission of driving the digital future to empower societies.

Etisalat has a proven history of bringing the latest in technology and broadband services to the United Arab Emirates to support economic growth and innovation. Similarly, Etisalat is building an autonomous 5G network using Etisalat A3 platform, where Nokia has worked with Etisalat to deliver best-in-class customer experience, as 5G's ultra-high bandwidth and low-latency enrich service offerings and transform business models. 5G capabilities enable innovative applications in areas such as virtual reality (VR) and augmented reality (AR). It also addresses Industry 4.0 opportunities to benefit enterprises from various Internet of Things (IoT) use cases in areas such as energy, healthcare, education, transport and entertainment, providing new revenue opportunities.

Haitham Abdulrazzak, Chief Technology Officer, Etisalat said: "As a true pioneer, we have always embraced the latest technologies to drive the Digital Future to empower society. Accordingly, we are building an autonomous 5G network and are very excited about how 5G can transform industrial and consumer services. The 5G services we have rolled out truly enhances lifestyles and delivers significant gains in productivity in the UAE, contributing to the national innovation strategy."

Saeed Al Zarouni, SVP, Mobile Network, Etisalat, added: "Etisalat's technical teams have closely worked with Nokia to build the 5G network smoothly and enabled 5G coverage with ultra-high speed and low latency services in the UAE. The high capacity 5G network also allows us to provide services to a large number of customers. Rolling out 5G network is in line with our focus on digital innovation and investments in next generation telecom technologies."

Tommi Uitto, President of Mobile Networks at Nokia, said: "With this deployment, Nokia is supporting Etisalat achieve its vision of driving the digital future. Along with consumers' expectation to get the latest telecom services experience, the current period has also shone a spotlight on just how important networks are for people and businesses. With this next generation 5G network deployment, we are excited to continue our longstanding collaboration with Etisalat to deliver the full transformational benefits of 5G."

Nokia has deployed its AirScale radio platform, based on 3GPP 5G New Radio (NR) standards. The network uses massive Multiple Input Multiple Output (mMIMO) radio technology to improve network capacity, provide broader coverage and increase network speeds. T

Nokia boosts Ooredoo Kuwait home internet with 5G FWA

Nokia has agreed a deal to supply 5G Fixed Wireless Access (FWA) equipment to Ooredoo Kuwait for the operator's customer premises. An early pioneer of FWA, Ooredoo is now offering the Nokia FastMile 5G Gateway as a premium internet device for residential and business customers.

Nokia's self-installable 5G FWA gateway incorporates Wi-Fi 6 with self-optimizing mesh technology to optimize performance in real time and includes advanced antenna designs with higher throughput and better coverage resulting in improved customer experience and a lower operational cost for Ooredoo.

Ooredoo is using FWA to extend the reach of its fiber network to premises not easily connected with direct fiber lines. This will support the company to significantly increase its fixed broadband customer base across the country.

Essa Haider, Director of Network Planning and Design, Ooredoo Kuwait, said: "Fixed broadband is essential for Kuwait's economic growth and diversification. 5G Fixed Wireless Access is a key component of our strategy and we're delighted to be partnering with Nokia to provide better coverage, reach and speed."

Rima Manna, Head of the Middle East Market Unit, Nokia MEA, said: "We are extremely proud to have been selected by Ooredoo to offer our FWA FastMile solution to customers who want a great experience and easy installation. With this significant deal, we strengthen our partnership with Ooredoo Kuwait and looking forward to working with the operator more closely to deliver compelling 5G experiences to its customers." T

Indosat Ooredoo increases its video grade 4G network capacity

Homecoming during Eid or what is commonly called 'Mudik' has become a tradition for most Indonesians to celebrate Eid al-Fitr with their beloved family back home. This year, this tradition must be done again in a different way to support the Government's efforts to control the spread of Covid-19. Indosat Ooredoo increases the capacity of its video grade 4G network to make it easier for Indonesians to stay in touch virtually with family, friends, and colleagues without leaving the house.

Indosat Ooredoo consistently develops network quality and capacity throughout Indonesia to serve the telecommunication needs of the community, most of whom still carry out work and school activities from home, especially when welcoming Eid. In the past year, data traffic increased by about 50% in the first quarter of 2021 compared to the same period last year. The average download speed has also increased by almost 50%.

Based on experience during the previous Ramadan and Eid periods, Indosat Ooredoo conducted special handling of areas with the highest traffic increase during Eid, such as Botabek, West Java, Central Java, East Java, and Lampung.

This is done with the support of a digital operation model based on Artificial Intelligence and automation launched last year. Indosat Ooredoo is committed that the increase in telecommunication traffic, especially data, will be balanced with excellent video grade 4G network performance. It is proven that at the beginning of Ramadan, the average download speed has increased by 6%, amidst an increase in data traffic of 8% compared to regular days.

Meanwhile, the quality of other telecommunication services such as telephone and SMS is well maintained. This proves that Indosat Ooredoo customers can still enjoy a smooth communication experience on the video grade 4G network despite the increasing trend of traffic, especially data, which is predicted to continue to rise until its peak in Eid.

Facing the increasing communication needs of customers, Indosat Ooredoo has built a video grade 4G network that is much faster than planned this year. More than 50% of the scheduled 2021 new sites have been completed in the first quarter. Not only that, more than 32% of network capacity expansion plans and more than 33% of fiberization plans were successfully executed in the same period. T

Importance of Process Thinking

Ali Tahir

If you can't describe what you are doing as a process, you don't know what you're doing. – W. Edwards Deming

A process, rule or law is just as good as the one who makes it and since humans aren't flawless so their processes aren't perfect either; only a divine process can be. But if a man-made process can't be flawless why have it in the first place?

I was once talking to someone who believed that every software development house could have its own "SOPs"/code for software development in the global market. To this, my argument was that it was the same as saying that every driver on the road could drive according to his/her own "SOPs": One person might say that I will drive in the middle of the road, another might say I will drive at 5 miles per hour and yet another might say that I will just park in the middle of the road horizontally. Just imagine what kind of traffic we would have with this mindset! Even imperfect processes/laws are better than none.

Geographically, Pakistan is located very strategically and has a huge logistics market within the country as well as across its borders. Right now most of its port activity is through Karachi. In a few years, Gwadar will increase this market exponentially. The main and critical pieces missing in this huge market are good business processes and a technology centered approach.

Good business processes always play a critical role in the proper functioning of an organization and its longevity. Organizations with well-defined business processes benefit in the following ways:

• Reduced cost and risk: a business process reduces cost and risk by predefining optimum ways of managing jobs and covering future shortcomings.

• Minimized effect of human error: it reduces the effect of human errors by assigning tasks to specialists.

• Better efficiency: it improves the productivity of an organization by eliminating unnecessary steps.

• More customer-centric service: it gives customers a consistent outcome no matter who is dealing with the customer. Names change but the process stays the same. Also if a need arises to add something new, a well-defined process allows that.

• Minimized communication gaps: In a well-defined system weakness or loophole can be identified right away.

• Efficient time management: with a process-oriented approach more can be achieved in less time.

• Compatibility with new technology: with a well-defined system, integration with new technologies and future improvements become more manageable.

Without processes being defined and implemented an organization can face several issues. Some of these issues are mentioned below:

• Failure in issue recognition: without clear and well defined processes issues are almost impossible to identify, in fact, issue recognition becomes an issue in itself.

• Lack of clarity and low motivation: lack of clarity causes confusion with leads to low motivation; performance and efficiency suffer.

• Repeated mistakes: lack of processes mean that the same mistakes are repeated again and again.

• Wasted efforts: efforts get wasted due to lack of any set pattern or defined systems.

• High risk and increased expenditure: risk of failure/mistakes/losses are much higher and can bleed an organization to death.

Wahyd Logistics as a process-oriented, technology-based organization understands these factors and is working diligently in the Pakistani market to revamp the culture in this industry. It is a challenge because this industry is not very process-oriented, however, Wahyd Logistics is taking the lead so that we can compete in the international market. Change is a process in itself that bears fruit with patience and perseverance. The dividends of implementing processes are so high that they're worth the effort. T