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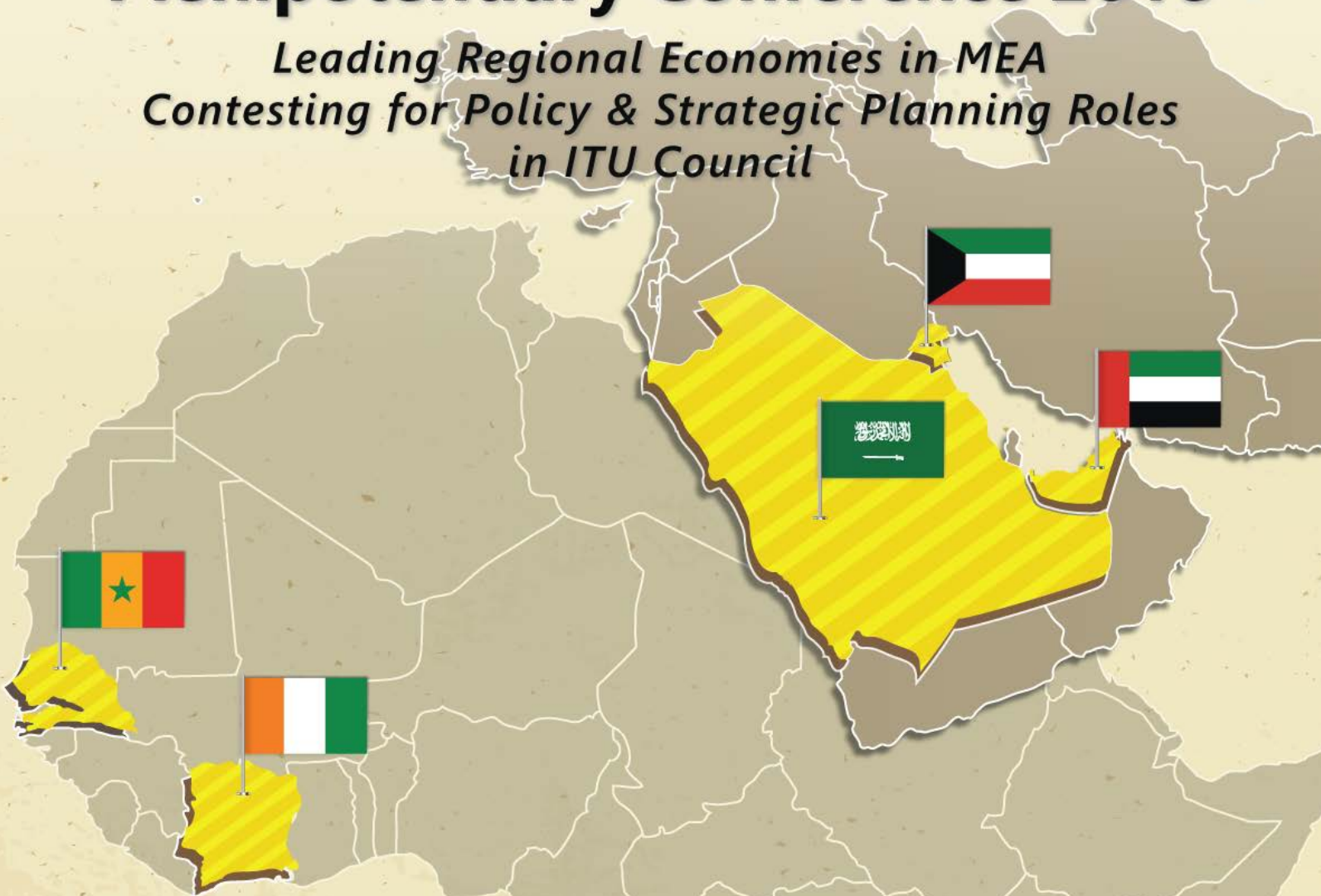
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BUILDING DIGITAL ECONOMIES



Plenipotentiary Conference 2018

*Leading Regional Economies in MEA
Contesting for Policy & Strategic Planning Roles
in ITU Council*



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Advanced Telecom Infrastructure & Cloudification

Being able to decipher the next best, in-demand communications service, solution, or a business differentiator for consumers and customers has typically required heavy investments. It has also been observed that while consumers always want faster services and more for less, this wishlist has direct implications on how much (or how little) Operators can secure from each user as average return.

Given technology and resulting digital transformation trends in view, new requirements of Operators call for entirely new ways of using and optimizing infrastructure. The idea is to create a network environment that is easier to operate and maintain and cheaper to scale. This means, given the plethora and diversity of digital services, there needs to be optimization-driven networks that can support change, thereby enabling an open, productized, supportable virtual infrastructure environment.

Operators have well understood the sustainability challenges presented by mere bandwidth additions using traditional infrastructure investment strategies. Also, existing network infrastructure designs tend to be highly costly and inefficient. Thus, in order to be better equipped to handle and leverage next-gen digital services, and to manage complexities attached to the provisioning of those services, an entirely new capex and opex model needs to be adopted. Doing so ensures that Operators are able to better deliver on the new expectations from consumers, customers, regulatory authorities, and their own shareholders. The ultimate goal, of course, is to ensure sustainability and profitability.

One of the newly discussed and proven ways to achieving these goals, is to virtualize and to cloudify networks. As with any change, such network transformation, is also incremental

and may need regulatory support and an enabling environment. That is, in order to support offerings such as IoT solutions, SaaS or IaaS offerings, the networks have to be (and facilitated to be) stable, supportable, scalable, and sustainable.

Achieving infrastructure advancement is taking the network to a higher level of intelligence and automation, so that the network can think, adopt, adapt, and is able to deliver an optimized digital experience to end-users, while optimizing the network's revenue performance.

A key step that regulators can take to help create an enabling environment for Operators is to understand that Virtualization and cloudification (or cloud computing) are often used interchangeably but they are essentially different concepts. Virtualization increases the utilization of hardware resources, running more software on a given amount of physical infrastructure. The virtualization could be at an operating system level or a network, computing or storage resource level. Whereas, Cloudification refers to the delivery of shared computing resources on demand through the public and private clouds.

The relationship between cloudification and virtualization is that former uses the latter to enable network and service elasticity and achieve economies of scale. Cloudification should increase the efficiency of operations and make telcos more agile in the deployment of new services.

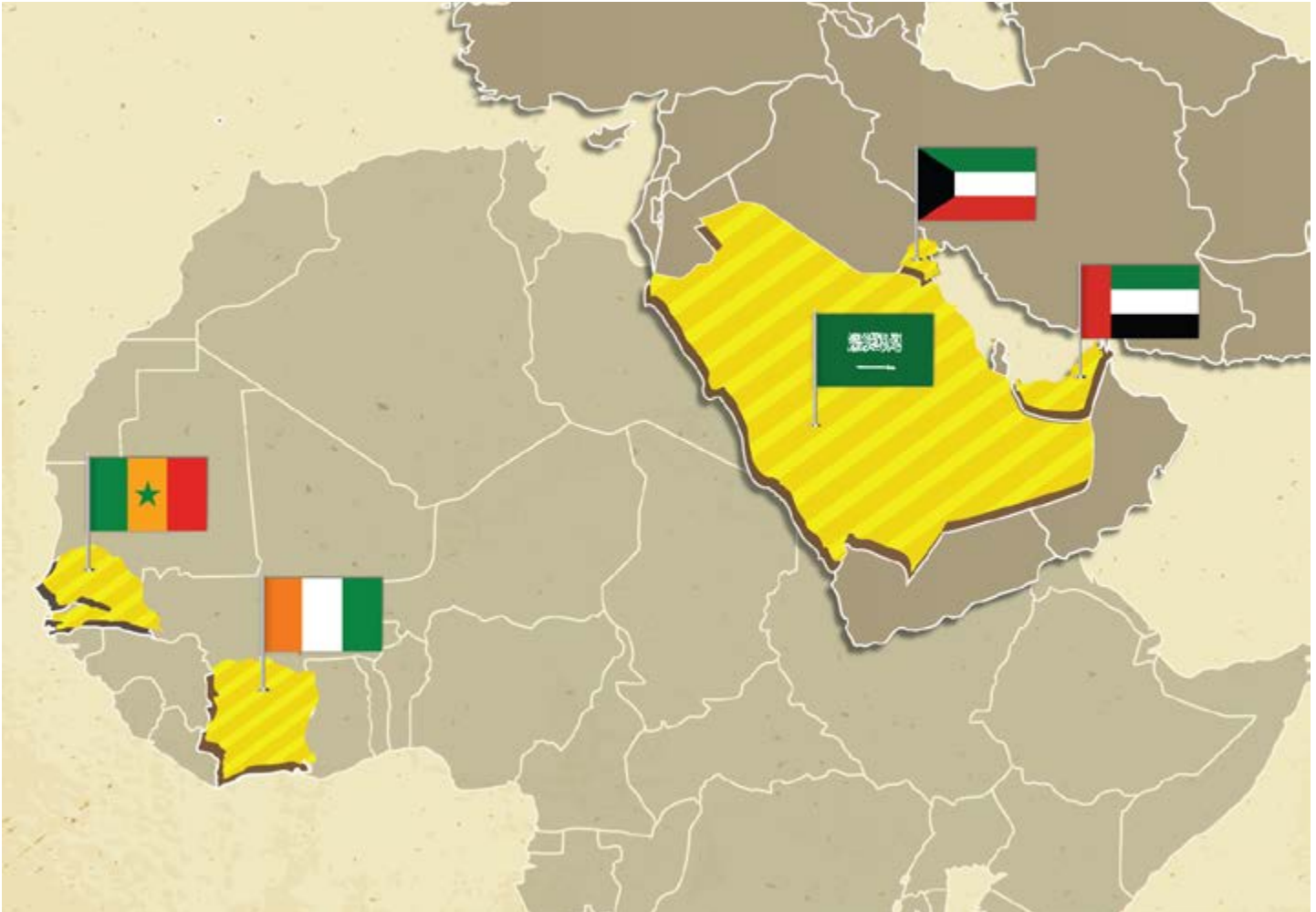
As Operators align their future objectives to not just survive but thrive well in the advanced, highly connected digital environment, cloudification and virtualization will become the norm and Regulators need to be attuned to this transformation, to serve priorities that both private and public sectors now share. 🌱



Bocar A. BA
Chief Executive Officer & Board
Member
SAMENA Telecommunications
Council

Plenipotentiary Conference 2018

ITU Council Elections for the Period 2019-2022



Candidate for ITU Council Seat



United Arab Emirates

The UAE occupies a strategic position in the Middle East and in

the global ICT arena for multiple reasons, including for its strides development and innovative use of digital communications technologies across all walks of life. The Emirates' ICT indicators speak volumes about the progress that the country has made in the region with respect to prioritizing ICT development. The country has been:

- First in highlighting the importance of ICT to government vision
- First in achieving mobile network coverage
- First in government procurement of advanced technologies
- Second in achieving broadband subscriptions per 100 inhabitants
- Second for having the lowest level of government regulations
- Fourth in attracting Foreign Direct Investment and technology transfer

Arguably, the UAE's digital communications sector is the most developed in the SAMENA region, and has a solid connectivity foundation, which includes exceptionally high technology

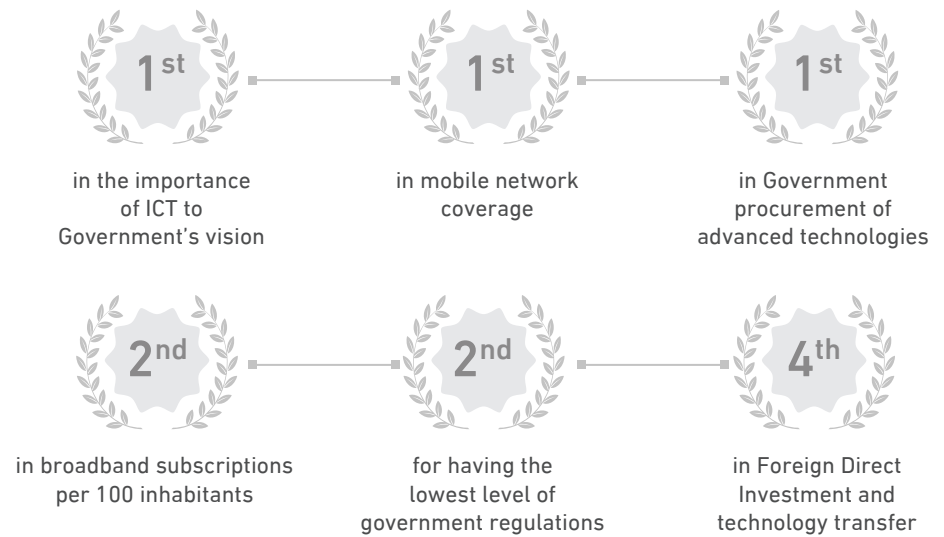
The UAE has set clearly defined objectives, created world-class telecom infrastructure, and the imminent introduction of 5G will significantly further enhance the standard of government service delivery, bringing forth unprecedented value for the industry and the public.



H.E. Hamad Al Mansoori
Director General



UAE ICT Indicators



coverage and service penetration rates, including that of optical fiber. Core strengths of this sector are the government's ICT vision and the creation of a corresponding and desired business environment, and the tech-savvy population. The country ranks first in the Arab World in the Network Readiness Index. Active mobile subscriptions have continued to rise, with a penetration rate

of 209.8%, based on figures reported in the Seventh Annual Sector Review of the UAE Telecommunication Regulatory Authority (TRA). This percentage represents one of the highest mobile penetration rates in the world. Moreover, the UAE has set clearly defined objectives, created world-class telecom infrastructure, and the imminent introduction of 5G will significantly further enhance the standard

of government service delivery, bringing forth unprecedented value for the industry and the public.

The UAE's candidacy for the re-election to the ITU Council for the period 2019 to 2022 further marks the country's latest endeavor toward occupying a well-deserved place in the global decision-making arena.



Candidate for ITU Council Seat



SAUDI ARABIA

Over the recent years, Saudi Arabia has become home to one of the most liberalized telecoms markets within the SAMENA region, having demonstrated a strong will to leverage ICTs to facilitate broader sustainable economic growth. Substantial evidence shows that the Saudi government through the Ministry of Communication and Information Technology (MCIT) and Communication & Information Technology Commission (CITC) with Saudi Telecom Company at the forefront

of communications infrastructure development in the Kingdom, have done much to make connectivity ubiquitous; to raise efficiency levels of services' infrastructure, welcome new competition, and to develop human capacity.

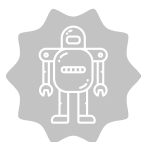
Saudi Arabia is a country where even in 2014, 82 percent of villages, amounting to a population of over 4 million people, had been connected. The market now has more than 180 percent mobile penetration rate, with more than 94 percent household internet access rate, and a 95 percent adult literacy rate. It is a large market where 4G has been active for over five years and where, according to a Google study in 2012, an average user was using 36 apps. Notably, the Kingdom also has the highest per capita usage of YouTube, with 9 out of ten users consuming video

Transforming Saudi Arabia into a knowledge economy is a process that the leaderships of MCIT and CITC are streamlining and fortifying in accordance with the spirit of national transformation plan, Vision 2030.

content on handheld devices and nearly six out of ten doing so at least once a day. Transforming Saudi Arabia into a knowledge economy is a process that the leaderships of MCIT and CITC are streamlining and fortifying in accordance with the spirit of national transformation plan, Vision 2030, which addresses policy needs from socio-economic perspectives

The Kingdom's international ICT ranking

The worldwide ranking of the Kingdom is based on the international reports, including those reports issued by the ITU, UN agencies, and the World Economic Forum (WEF):



The first country in the world to grant its citizenship to a robot



The largest e-commerce market in the Middle East and North Africa



The first country that offered a number portability feature in the MENA region and the Islamic world



The first Arabic domain registrar



The first country that implemented DNSSEC in the MENA region



The first country in the region to use a competitive auction for spectrum awards



Ranked 7 Globally in the percentage of households with Internet access



Ranked 7 Globally in the importance of ICT in the government vision



Ranked 8 Globally in ICT use and government efficiency



Ranked 9 Globally in government's success in ICT promotion

The Kingdom of Saudi Arabia pays special attention to the ICT sector and the Information Society works to harness technology to serve the community and other development sectors.

and provides a long-term direction in which the government of Saudi Arabia wants to steer the country. In a country where both the population and the economy have expanded enormously over the years, combined with the national imperative of reducing reliance on mined natural resources, digital development and digitization are the best, if not the only, way forward.

The Kingdom of Saudi Arabia pays special attention to the ICT sector and the Information Society works to harness such

technology to serve the community and other development sectors; it important and influential role in the develop the individual society and in its government private institutions. The Kingdom of Saudi Arabia is also seeking to strengthen regional and international cooperation and solidarity in this vital area. The Kingdom of Saudi Arabia has made a number of contributions to the different groups of the ITU sectors. It has developed a high degree of consensus with all partners, in the interest of achieving the common objectives. In doing so, it strives to overcome all obstacles that may hinder the course of action in periodic meetings and special meetings. In continuation of these tasks and efforts, the Kingdom of Saudi Arabia has submitted its candidature for membership of the ITU Council for the 2019-2022 Session, whose members will be elected at the Plenipotentiary Conference to be held in Dubai, United Arab Emirates, from 29 October to 16 November 2018.



H.E. Dr. Abdulaziz Salem AlRwais
Governor of CITC
Deputy Chairman of Board



SAUDI ARABIA



Candidate for ITU Council Seat



KUWAIT

Kuwait's mobile accessibility has dramatically transformed the digital market, which includes advanced digital services, financial services, and e-commerce. Kuwait has taken steps toward ensuring cyber-security and protecting government agencies from cyber hazards. This government's step complements existing disaster recovery strategies, including the use of the Kuwait Information Network (KIN) to communicate internally and with neighbors within the GCC region.

In Kuwait, telecom technology companies have helped speed up the evolution to a diversified knowledge-driven economy, and the State's funding has enabled the creation of a new ecosystem, working to boost national efficiency and productivity through a growing range of digital

communication solutions. As a result of such efforts, the ICT sector generated a significant share of non-oil gross domestic product.

The State of Kuwait, driven by CITRA (the Communication Information Technology Regulatory Authority), aims to become the hub of global bandwidth traveling through the country. Kuwait is pursuing a direct stake in international transit traffic, considering only 3% of total global bandwidth currently passes through the Middle East due to the limited routes available. Kuwait aims to receive at least 20% of the traffic moving from Iraq and Iran to Europe as these economies grow and become more globally connected.

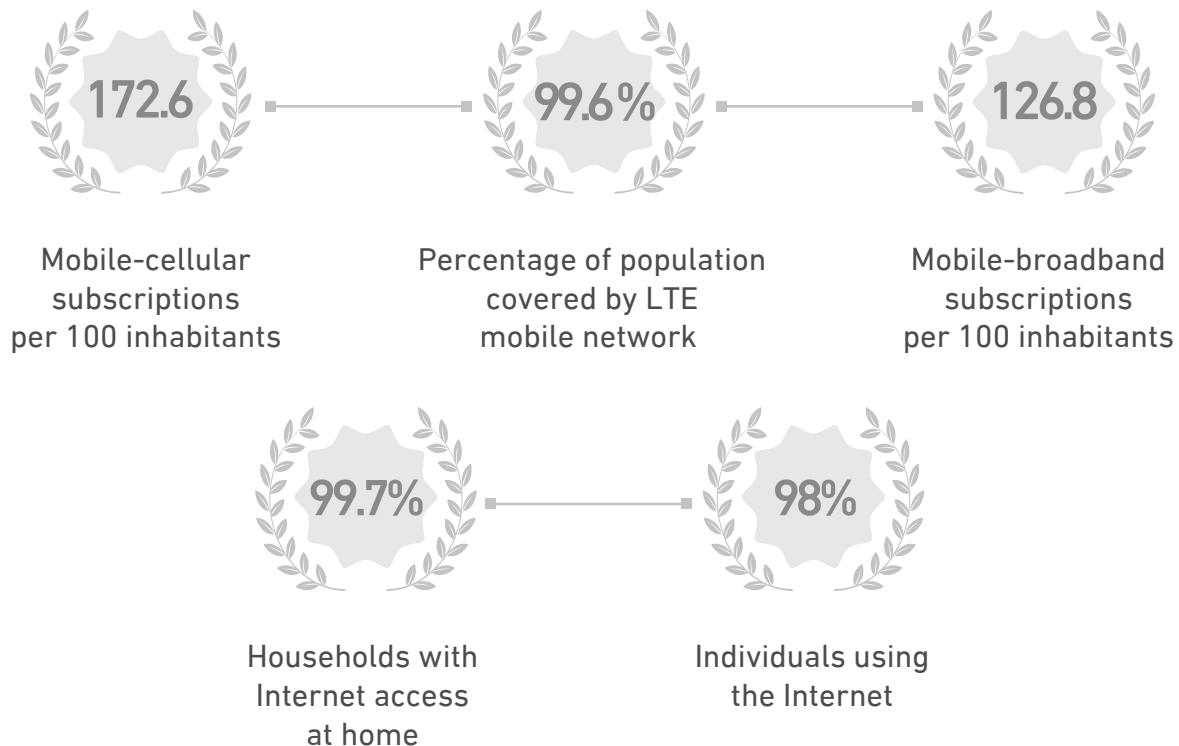
The New Kuwait 2035 development vision is also built on nourishing and utilizing one of the countries most important resources: the growing number of its youth; and the opportunities and challenges that need to be addressed. As the new spearhead of the ICT sector developmental work, CITRA realizes that such youth-centric opportunities have to stretch beyond just the public sector, in which most of the citizens

The State of Kuwait, driven by CITRA (the Communication Information Technology Regulatory Authority), aims to become the hub of global bandwidth traveling through the country.

are currently employed. The rising number of youth will seek and need to be able to find plausible opportunities or growth prospects for personal and career development in ICT-driven and fast-evolving private-sector.

Kuwait possesses strong technology as evidenced by the fact that its mobile penetration, thanks to large network investments and latest network upgrades by its telecom operators, is among the highest in the world and so is the quality of service. It is considered one of the most resilient economies in the region, despite market's disruptions. The country has already made much progress with regard to public-pri-

ICT Indicators of Kuwait



vate partnership (PPP) enablement and has revised the national PPP frameworks to ensure improved participation by the private sector; an imperative that will have long term implications on the timely fulfillment of its national vision. The country has US\$49 billion worth of government projects planned as PPPs, which is the highest in the GCC region.

As the Government of Kuwait seeks to maximize the adoption and benefit of emerging digital technologies, and showed prescience in visualizing the impact of digital technologies on national socio-economics, CITRA was formed to exercise a role previously played by the Ministry of Communications (MoC). Just one year after CITRA's creation, businesses in the sector are feeling optimistic about CITRA's willingness to aid digital transformation in the State, led by predictability, innovation, growth, and public-private collaboration.

Kuwait has attained high ICT indicators taking major strides to transform into a digital economy. The country has been identified as one of the top movers in the

Network Readiness Index advancing 11 ranks in 1 year.

CITRA's Projects:

ICTs are at the heart of the country's "New Kuwait" Vision to transform the country into a digital society and economy to become more efficient and productive, enhance both private and public sectors and attain sustainable development."

To attain the county's New Kuwait Vision, CITRA has put forth a number of mega projects that road map the country's transformation into a regional ICT Hub, starting with the a regional corridor project connecting East to West through a new international cable from Kuwait passing through Iraq to Turkey. Major projects include Regional Corridor Project, National Data Center Project, Internet Exchange Scheme (IXP), and Draft Strategic Plan for Cybersecurity.

60 Years of Giving:

Kuwait joined the International Telecommunication Union (ITU), nearly 60 years ago in 1959. Kuwait was elected in 1982 at the Nairobi Plenipotentiary



H.E. Eng. Salim Muthib Al-Ozainah
Chairman and CEO



Conference for the first time as a member of the ITU Council. To this date, Kuwait is an active and prominent member through its active participation in ITU conferences and meetings.



Candidate for ITU Council Seat



COTE D'IVOIRE

Cote d'Ivoire is among Africa's top 10 most attractive economies and is the top economy in the West Africa

region. A consistent GDP growth rate has been achieved over the past several years, which is a reflection of the Government of Cote d'Ivoire's policies and vision, and a national commitment to returning the country in the World Bank's top rankings. The country, in the recent past, had been recognized by the World Bank among the 10 most reformist countries in the world for 2014 and 2015, and is a recognized sub-regional hub for energy, telecommunications, air transport and financial centre in West African Economic and Monetary Union (UEMOA).

Cote d'Ivoire has focused on multiple aspects of digital implementation. Some notable projects include opening the market for 4G; e-Agriculture project covering 500 rural localities; Establishment of an automated system for controlling the frequency spectrum; existence of digital financial services; establishment of a Public Key Certification (PKC) or identity/digital certificate infrastructure and an electronic signature platform; establishment of a regional

hub for international traffic exchange; deployment of digital terrestrial television; deployment of 5000 km of optical fiber as part of a national backbone project; and dematerialization of 120 public administration services. Furthermore, Cote d'Ivoire is implementing its ICT revolution project called "One-Citizen, One Computer, One Internet Connection", through which the government offers tax-free access to users.

Digital Maturity of Cote d'Ivoire

- Ranked 14th out of 46 African countries in the ITU ICT Development Index
- Ranked 7th in Sub-Saharan Africa in ITU Global Cyber-security Index in 2017
- Ranked 5th in Africa and 18th worldwide in terms of internet accessibility, according to the 2017 Alliance for Affordable Internet agency

The governance of Cote d'Ivoire's digital communications sector rests on the principles of developing and implementing relevant and inclusive regulations; strengthening digital infrastructure; ensuring equitable access to ICT infrastructure; developing local content; digital literacy and capacity-building; and fostering innovation and support for youth entrepreneurship.

Cote d'Ivoire's thriving and digital communications-driven economy, in part can be attributed to the role that the National Agency for the Universal Service of Telecommunications-TIC (ANSUT) has been playing in the country, ever since it

The Ivoirian agency for universal telecommunications services, ANSUT, is ensuring wider access to ICTs for the entire Ivoirian population.



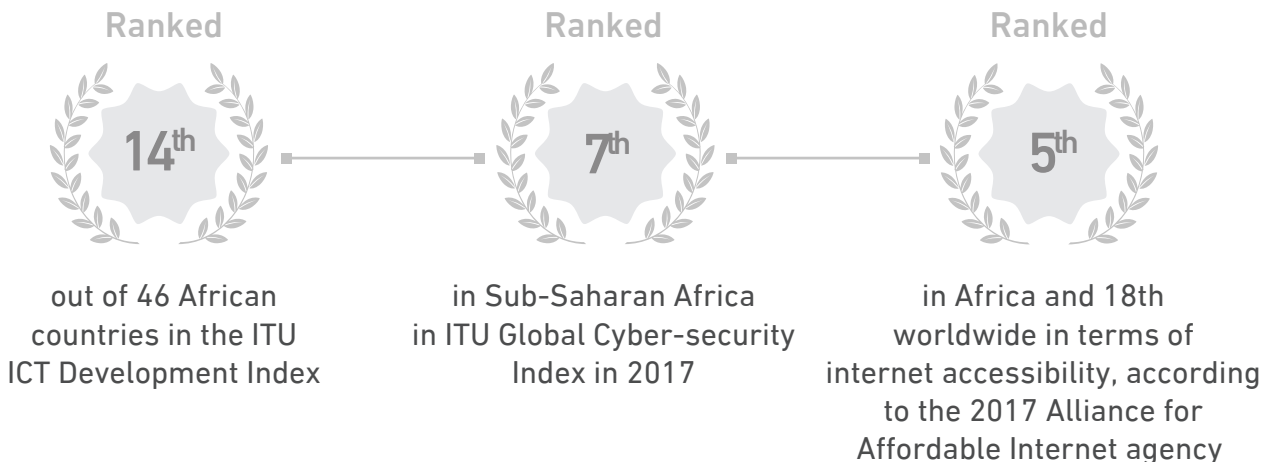
AGENCE NATIONALE DU SERVICE UNIVERSEL DES TÉLÉCOMMUNICATIONS-TIC

was created by the Ivoirian government in March 2012. As a key player in the telecommunications & ICT sector of Cote d'Ivoire, ANSUT is a state-owned company operating under the technical supervision of the Ministry of Communication, Digital Economy and Post. The Ivoirian agency for universal telecommunications services, ANSUT, is ensuring wider access to ICTs for the entire Ivoirian population.

Cote d'Ivoire's current universal service priorities include:

- The provision of emergency telecommunication-ICT services, provision of special services for people with disabilities or with specific social needs,
- The provision of telephony, data transmission and broadband internet services throughout the national territory;
- The installation of public pay

Digital Maturity of Cote d'Ivoire



telephones and / or multimedia telecommunications-ICT centers;

- Free and prioritized routing of telephone calls and other emergency electronic communications from any fixed, mobile and other multimedia terminal;
- An intelligence service;
- A universal directory containing the subscriber's coordinates in printed or electronic form.

There are 4 main programs under implementation, as approved by the Ministry of Post and Information and Communication Technologies. These include National Broadband Network, e-Governance, On Citizen - One Computer - One Internet Connection, and Community e-Centers.

By thinking digital in the digital world, Cote d'Ivoire continues to offer investment opportunities, especially in the implementation of advanced digital services and platforms, which can now be supported by existing as well as new digital infrastructure that ANSUT is developing in collaboration with private-

sector players in Cote d'Ivoire.

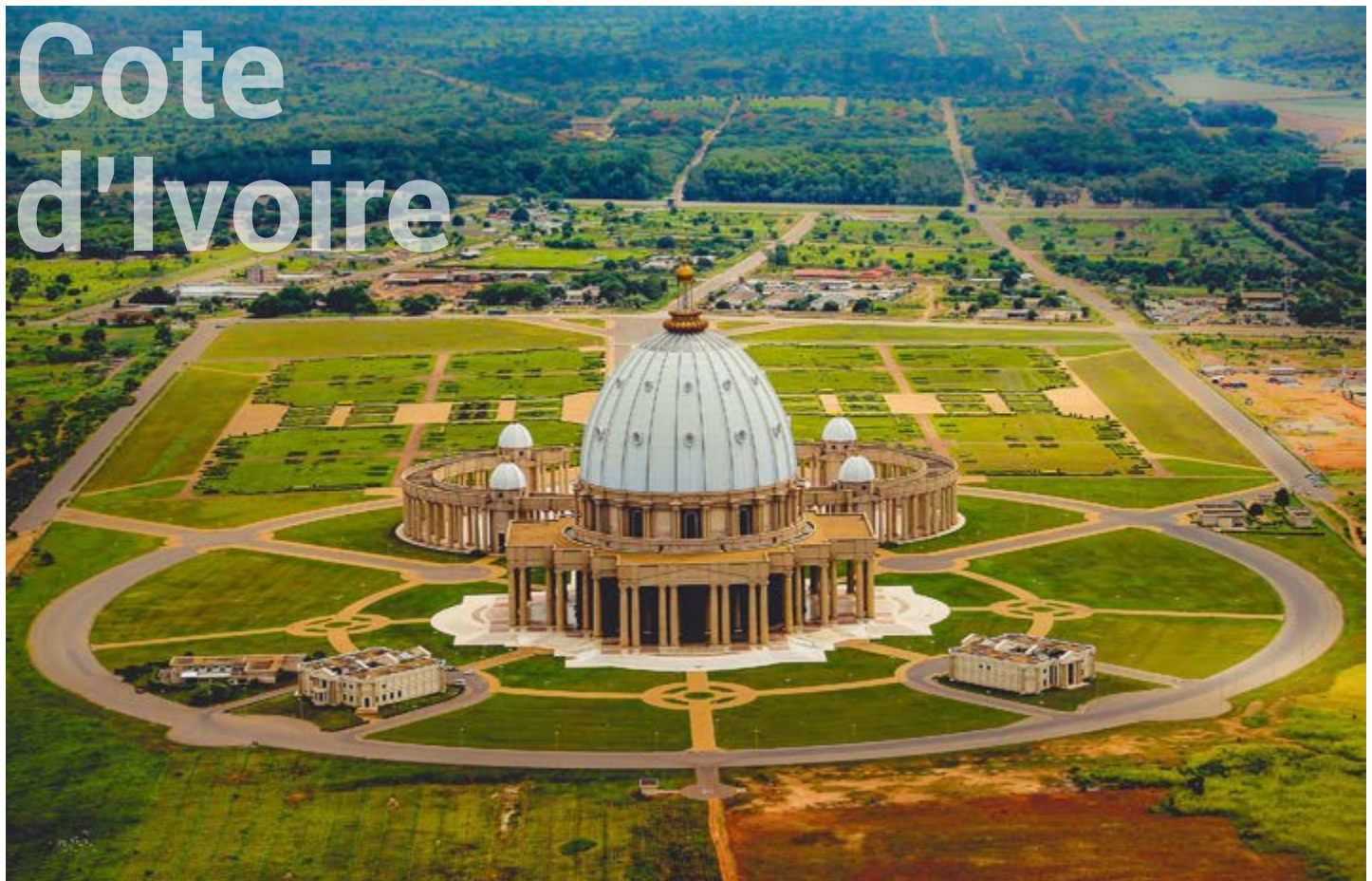
Cote d'Ivoire made the choice to become a member of the emblematic institution, the International Telecommunication Union (ITU) in the early days of its independence in 1960. This affirmed the country's national commitment to making Science and Technology a catalyst for its sustainable socio-economic development in the future. As such, the West African country has remained attached to the successive evolutions of the telecom technology sector, witnessing its several shifts and trends, and its National Development Plan (NDP) has been developed in accordance with developments in the telecom technology sector and with ITU's defined global objectives.

As candidate for a seat at the ITU Council, the government of Cote d'Ivoire expresses its commitment to ITU-led initiatives and to play a participatory role in digitally connecting the world, fulfilling the Sustainable Development Agenda, addressing the private sector's



H.E. Claude Isaac DE
Minister of Digital Economy & Post

needs for investment incentives and internet development issues, building the capacity of the young populations across developing Member States, extending reach of the ITU's stakeholder-inclusion efforts and fortifying the ITU's regional presence, assist in building ITU's improved institutional capacity as a global body, and to participate in all feasible manners in creating new financial and administrative resources for the Union.



Candidate for ITU Council Seat



SENEGAL

The Republic of Senegal is among Africa's leading economies, where foundations for

building the digital economy have already been put in place. The Digital Senegal Plan 2025 is a key part of this foundation, which aims to make the country a hub for digital transformation in the region and beyond. Through this Plan, Senegal has set forth immensely ambitious targets, the likes of which have been set forth by the UN Member States as a part of the Sustainable Development Agenda. These include bringing digital contribution up to 10 percent of Senegal's GDP by 2025; creating 54,000 direct and 162,000 indirect employment opportunities; and make the economy sustainable, overall. Essential regulatios and policy steps already taken by Senegal will also contribute to meeting these defined targets.

Senegal aspires to be a leader in the region in digital transformation and development of digital economy. There is tremendous need for the the cloud and colocation services, especially to support the government-led Plan Senegal Emergent (PSE), apart from the needs of the private-sector. Public-private partnerships are foundational to the Senegal Emergent Plan. The PSE is the country's strategic plan for development and economic growth over the next decade. The West African country has installed power generation capacity exceeding 731 MW, with significant potential for biomass, solar and wind production. Overall, Senegal's national electricity access rate is relatively high at 55%, with the government aiming to achieve universal electricity access by 2025. With a population of 16+ million, Senegal's mobile penetration exceeds 117%, with mobile broadband accounting for more than 98% of all internet access.

Availability of water for cooling, low-cost workforce, landscape, quality of land (especially from REIT perspective), high data traffic, advanced telecom infrastructure (including 4G), international

bandwidth and capacity, an extensive regional submarine cable system, stable policy, regulatory, and business environment, and one of the top two fastest growing economies in Africa are evidence of Senegal's investment readiness in Datacenter operations.

Regulatory frameworks are being updated and sector governance is being enhanced. Moreover, private-sector representation is also being facilitated.

As a signatory to United Nations Sustainable Development Goals (SDGs 2030), Senegal is also ready for "green data centers", which are enterprise class computing facilities entirely built, managed and operated on green computing principles. Senegal is also preparing for 5G.

Despite the progress made, the government of Senegal is well-aware of the challenges that need to be countered,



H.E. Abdoulaye Bibi Baldé
Minister of Communications, Telecommunications, Postal Services and the Digital Economy

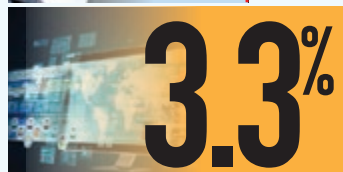
and addressing which has become a priority. Regulatory frameworks are being updated and sector governance is being enhanced. Moreover, private-sector representation is also being facilitated, and the government is taking steps to enable the optimization of the country's 4,000 km-long optical fiber network.

As a country that has set a target of generating 10 percent of its GDP from

Senegal - a reference country in Africa in the field of telecommunications / ICT



1st among the UEMOA countries in terms of ICT development, and prices of fixed, mobile and broadband services



Internet weight in the economy
1st African country

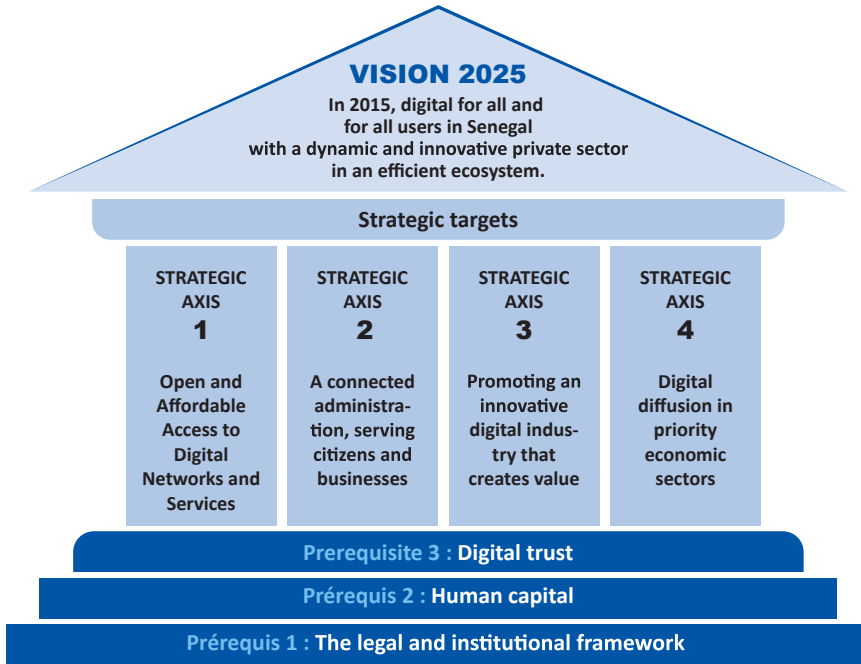


contribution of telecommunications to GDP in 2010
1st world rank



Sector growth for the last 10 years, driven by mobile telephony

The “Sénégal Digital 2025” strategy



Senegal aspires to be a leader in the region in digital transformation and development of digital economy.

- A total liberalization of the telecommunications sector
- A Universal Telecommunication Service Development Fund operational
- A dynamic sector with the recent entry of new players: 3 ISPs and 3 virtual mobile operators – MVNO
- A fully digitized transmission backbone
- Quality telecommunications infrastructure
- 10,972 km of optical fiber in 2017 throughout the national territory
- Good international connectivity with 3 submarine cables (Atlantis 2, SAT3, ACE) with bandwidth of 77.5 Gbps in 2017
- A functional Internet exchange point (SENIX)
- A subregional hub for neighboring countries
- A national strategy for broadband development
- An independent network of public infrastructures for the implementation of e-government
- A Digital Terrestrial Television infrastructure fully implemented

the digital economy by 2025, Senegal ranks among West Africa's leading and transforming economies. Thus, as a candidate for a seat at the ITU Council, with a revamped national focus on playing an international role in digital-led socio-economic development across West Africa and in the whole of Africa, the government of Senegal has reiterated its readiness to support ITU in all its leadership initiatives, and to enhancing the role of ITU in developing global telecommunications.

- Law on Cybercrime
- Cryptography Act
- An environment favorable to investments with a competitive tax system

Senegal's performance and assets

- A secure legislative and regulatory framework based on the Community provisions of ECOWAS and UEMOA and favorable to the emergence of a common market in the sub-region
- A regulatory framework that ensures fair and healthy competition for the benefit of users of telecommunications networks and services
- Laws on the information society - Orientation law on the information society
 - Law on the protection of personal data
 - Electronic Transactions Act



Etisalat Surprises Visitors with Revolutionary Technologies and Innovations at GITEX Technology Week 2018



Etisalat successfully concluded its participation at GITEX Technology Week 2018 taking visitors on a journey of the future with a showcase of digital innovations and solutions for consumers and businesses across zones focusing

Etisalat enriches visitors experience with live 5G and showcases for the first time 5G download speeds highlighting speed comparison between 4G & 5G networks

on 5G, retail, healthcare, education, smart living, IoT and a unique 3D showcase of the upcoming 'Expo 2020 Dubai'.

The event also witnessed strategic partnerships of Etisalat with government entities like Ajman Municipality, Fujairah Department of Public Works, Sharjah Municipality, Ras Al Khaimah Municipality, Umm Al Quwain municipality and Shurooq.

Dr Ahmed Bin Ali, Senior Vice President, Corporate Communication, Etisalat Group said: "Etisalat has always enthralled visitors at GITEX Technology Week with the unique global innovations we get on our stand every year. The showcases

were unique as there was something new to learn, experience and witness in every zone. With the theme focused on 'Leading the 5G revolution' our every showcase was about how 5G can make these digital innovations a reality and become part of our lives.

"Our main focus was on highlighting 'Driving the Digital Future to Empower societies' which is why every zone gathered the best in technology to take the visitors on this digital journey. We look forward to bringing more of such innovations and solutions next year and attract more visitors to the event from across the world."

'Making 5G a reality'

The 5G future was about ultra-high speed and low latency, GITEX invitees were able to experience the 'download time' difference between the two technologies by downloading a 4K HD movie/video using 4G and 5G simultaneously.

With live 5G experience, the future of mobility was on showcase with the world's first flying car Pop.Up Next making its first global presence on the Etisalat stand. Visitors were able to download a video (more than 1GB) with download time taking only 13 seconds as opposed to 4G, which takes approximately 2 minutes.

The download progress was displayed on the screen to show the time taken to download the file on each technology. Visitors had a chance to observe the time taken to download a large size file on 4G and 5G concurrently.

Etisalat launches 'Future Now' scale-up program

Etisalat Digital introduced its innovation program, Future Now, at GITEX Future Stars 2018. Future Now introduces new

ways of innovating and collaborating with startups, IoT developers, government entities, enterprises, and their end users. Future Now has four key pillars: Scale-ups program, a Co-creation Lab, an IoT partner ecosystem and an Innovation Center.

World's First flying car & Autonomous transportation

This year at GITEX, Etisalat also had a special showcase on the future of mobility, which is the best use case for 5G. The arrival of 5G technology will allow faster data transmissions and will prove to be game changing for the autonomous industry. The flying car "Pop.Up Next" is for the first time made its presence outside Europe, it is the first fully electric and zero-emission modular system bringing together road mobility and air transport.

It combines the flexibility of a small two-seater ground vehicle with the freedom and speed of a vertical take-off and landing (VTOL) air vehicle, thus bridging the automotive and aerospace domains. This was developed by

Etisalat supports innovation in UAE and launches the Future Now initiative to enhance collaboration in various technologies with emerging companies and IoT developers worldwide

ItalDesign, a first fully electric and zero-emission modular system designed to help resolve traffic congestion in large urban areas. The passenger cabin attached to either a car module (provided by Audi) or a flight module (manufactured by Airbus), can cruise autonomously on the road and lift into the air vertically. Both modules are entirely electric and autonomous.

The Etisalat stand also displayed a self-driving vehicle, the 'Oasis', which is a concept car from Swiss think tank and mobility lab Rinspeed. Designed to demonstrate a less conventional method



Etisalat harnesses technological capabilities to serve people and enhances shopping experience through the world's first 'Robomart' mobile grocery store

of transport for the future, the 'Oasis' has a huge glass windscreen area, fitted with augmented reality technology that lets the driver virtually 'place' displays and objects on the screen. The car has a solar panel on the roof, while the interior offers a new living space complete with armchairs, a sideboard, TV, and a multi-functional steering wheel, emphasising the car's main role as an autonomous vehicle.

Etisalat and Expo 2020 Dubai

Etisalat Digital and Accenture developed an interactive 3D flythrough experience of what the Expo 2020 Dubai site will look like in two year's time called 'Explore 2020' which was unveiled at the Etisalat booth. Unveiled less than a week before Expo's two-years-to-go milestone, the 3D environment, rendered in real time, was displayed across eight curved screens at a resolution of 8640 x 1920. Visitors to GITEX for the first time experienced a 'fly through' and were able to navigate the Expo 2020 Dubai site due to Accenture and Etisalat Digital's design, development and optimization effort.

Etisalat is making its 5G capabilities through the world's first robotics system to contribute to the advancement of healthcare in UAE

Retail zone highlights the future of shopping

GITEX invitees witnessed seamless shopping experience through face recognition, artificial intelligence, image recognition and computer vision technologies. Etisalat joined forces with 12 technology partners for store analytics

and insights, combining its capabilities to connect data and gain practical learnings that they can share with its customers and the retail community.

Some of the unprecedented retail shopping experiences featured at Etisalat's stand included a self-driving grocery store, robotic shopping cart that leads visitors to the grocery isle, a smart dressing room that recommends fashion apparel, a smart vending machine, a state-of-the-art unmanned cash counters and self-checkouts.

This year visitors witnessed world's first self-driving grocery store, 'Robomart' which has taken the idea of grocery delivery to a new level. Just tap a button and the entire store comes to you so that you can shop checkout free for the freshest goods right at your doorstep. 'Robomarts' are fully electric road vehicles engineered with cutting-edge technology, including driverless tech for autonomy, tele-operations for safety, a check-out free system, and a purpose-built refrigeration for cooling.

Etisalat's new autonomous retail solution was also a highlight which used technologies such as AI and computer vision, which can detect products taken or returned to the shelves and keeps track of them in your virtual cart. This was showcased for the first time globally, it has no cash registers, as customers can simply pick out what they fancy and walk out. Shoppers no longer have to wait in line at the till – they enter, take the product that they want and leave.

Future of Healthcare & Pharmacy

RoboPharmacy was a unique showcase of an unmanned, futuristic pharmacy system. It helps the hospital and pharmacy to capture the data to provide convenience to the customer through virtual futuristic technologies.

Another revolutionary showcase is the CAE Vimedix ultrasound simulator, a high-fidelity simulator designed to make learning more engaging and intuitive. The unique system features a mannequin,

several simulated ultrasound probes and an expanding library of cases.

SharpSurgeon, a VR spine surgery simulator and training brought a new perspective to classical medical education methods. Augmented reality showed how medical education can be revolutionised and a human body was brought to life in full 3D in front of you using the AR functionality of Apple iPad.

Visitors also checked out 'Haptic Ultrasound', a robot-based application that represents a potential application in which a sensitive robot can assist a physician.

Etisalat introduces cutting-edge business solutions and use of Artificial Intelligence in retail.

'Classroom Re-imagined'

The future of education was exhibited with Apple's Distinguished Educators and Apple Professional Learning Specialists, visitors were able to use iPads throughout this learning journey at Etisalat stand.

Etisalat Digital also offered an immersive classroom experience in collaboration with CENTURY Tech, a cloud-based education platform. The experience combines AI, cognitive neuroscience theories of how the brain learns and big data showcased in a traditional classroom setting. The methods demonstrated are flipped learning, blended learning, big data insights, AI recommendations and live interventions.

An end-to-end digital transformation solution for any educational entity was highlighted – from infrastructure and connectivity, through devices, learning platforms, high quality digital content right up to teacher training and professional development. Solutions can be provided as a turn-key solution or as a service to reduce complexity and ease implementation. 📍

MEMBERS NEWS



STC's Net Income for Q3 2018 Compared to the Comparable Quarter Last Year and the 2nd Quarter this Year Increased by 2.9% & 8.1% (respectively), and it Distributes SR 1 Per Share Dividends for the 3rd Quarter

Saudi Telecom Company (STC) today announced the company's preliminary financial results for the period ending at 30 September 2018:

- Revenue from Services for 3rd quarter reached SR 13,333m an increase of 5.6% compared to the corresponding quarter last year. For the 9 months period in 2018, the company revenue from services reached SR 38,902m an increase of 1.9%.
- Gross Profit for the for 3rd quarter reached to SR 7,805m an increase of 5.5% compared to the corresponding quarter last year. For the 9 months period in 2018, the Gross Profit increased by 3.2% to reach SR 21,914m.
- Operating Profit for the 3rd quarter reached to SR 3,236m an increase of 11.3% compared to the corresponding quarter last year. For the 9 months period in 2018, the Operating Profit increased by 8.2% to reach SR 8,769m.
- Earnings before Interest, Taxes, Zakat, Depreciation and Amortization (EBITDA) for 3rd quarter reached to SR 5,128m an increase of 8.1% compared to the corresponding quarter last year. For the 9 months period in 2018, the Earnings before Interest, Taxes, Zakat, Depreciation and Amortization (EBITDA) increased by 6.2% to reach SR 14,446m.
- Net Income for the 3rd quarter reached to SR 2,643m an increase of 2.9% compared to the corresponding quarter last year. For the 9 months period in 2018, the Net Income increased by 2.9% to reach SR 7,674m.

In accordance with the approved dividend policy for three years starting from the 4th quarter 2015 which was announced on 11 November 2015, and have been ratified

during the General Assembly Meeting on April 4th 2016, STC will distribute a total of SR 2,000 million in cash dividend for Q3 2018, representing SR 1 per share. The eligibility of dividends shall be for the shareholders at the close of trading on Monday 29/10/2018 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 20/11/2018. The number of shares outstanding for Dividend 2,000 million shares.

Commenting on the financial results, Eng. Nasser S. Alnasser, CEO of Saudi Telecom Company, stated that the net profit growth in the 9 months period of 2018 compared to the same period last year by 2.9%, the net profit growth in Q3 2018 compared to the same period last year and 2nd quarter 2018 by 2.9% and 8.1% (respectively), was a result of the Company's constant efforts to provide best in class information technology services and the growth witnessed in both Enterprise and Wholesale Business Units.

Eng. Al Nasser emphasized that STC will continue its strategy that aims to expand investment in different domains to diversify its source of income from both core and non-core business related activities. Further, the strategy is in line with the NTP 2020 and Visions 2030, which will enable the public and private sectors achieving their digitization plans. As a result, STC has announced the launch of STC Pay, an investment arm specialized in digital payments and the financial technology services (FINTECH) for individuals and institutes. Digital financial services are



one of the new growth paths for STC, especially at this time of rapid change in the telecommunications industry and the digital information revolution, said Eng. Nasser Al Nasser. Adding that STC Pay provides a quality value to the development of Digital Payments services in collaboration with major financial institutions and banks both locally and globally

Referring to the continuation of the company's achievements in serving pilgrims, Al-Nasser stated that the attention of the government leaders and other various sectors in the Kingdom for this year's Hajj was a significant milestone in achieving a new record for STC's network. The company recorded the highest peak hours in the history of the holy places, with a data transmission growth of 34% over the same period last year. In addition, the transfer of data through the 4G network has gone to the highest in history with more than 160% compared to the last year's record on the day of Arafa.

STC Solutions and Microsoft Announced a Strategic Partnership during Gitex 2018

STC Solutions and Microsoft have announced a strategic partnership agreement during Gitex 2018 in Dubai. STC Solutions is the #1 IT Services provider in KSA, and Microsoft is the fastest growing Cloud services provider globally. Partnering with Microsoft is a strategic initiative that aligns with STC Solutions' dynamic growth plan focused on digital, cybersecurity & cloud services in line with Saudi Vision 2030. Eng. Omer Alnomany, CEO STC Solutions said, "This is a very important partnership for us where we share a common understanding and business goals at the highest executive levels of both the organizations. Over the past year, STC Solutions has been the fastest growing Licensing Solution Provider partnering with Microsoft to serve government and private sectors in Saudi Arabia. We continue making the required investments in the partnership to ensure this trend continues for us at a regional level as well". STC Solutions aims to become one of Microsoft's top partners in the next 3 years extending the relationship beyond the traditional ICT system integration to cutting edge cloud, digital and cybersecurity solutions.



STC, F5 Networks Partner for Firewall Services

STC Solutions has partnered with F5 Networks to deliver Web Application Firewall (WAF) services to STC customers in Saudi Arabia. Announced at Gitex Technology Week, the partnership will help STC customers to securely scale operations while coping with an intensifying cybersecurity threat landscape and Saudi Vision 2030 demands. F5's WAFs monitor and block HTTP/S traffic to and from web applications for protection against malicious attempts to compromise systems or exfiltrate data. The solutions encompass attacks such as cross-site scripting, SQL injections, cookie poisoning, Layer 7 DoS, web scraping, brute force and credential stuffing. The announcement follows on from F5 recently being named a Leader in the Forrester Wave: Web Application Firewalls, Q2 2018 report. "Attack surfaces are rapidly expanding as businesses look to scale and take advantage of

cloud-based technologies," said Fahad AlJutaily, vice president, Cybersecurity, STC Solutions. "F5 Networks is a longstanding and trusted partner with an exceptional track record in the WAF space. Together, we can offer a powerful and increasingly vital range of solutions to help safeguard Saudi organisations' futures, as well as elevate their ability pioneer new services. This will be particularly important as we accelerate our support for major digital transformation initiatives associated with Saudi Vision 2030." Key technologies set to make an impact under the agreement include the F5 Silverline Web Application Firewall, which is a cloud-based service featuring 24x7x365 support from highly specialized security experts. The solution is available as a fully managed service for comprehensive and customized app protection, or as an express self-service for rapid deployment of expertly maintained policies. The partnership also entails giving STC customers access to F5's recently launched Advanced WAF (AWAF) service using a variety of consumption and licensing models. The technology helps SecOps better collaborate with modern DevOps and NetOps teams to easily deploy application protection services in any environment. Its holistic approach to application security reduces management complexity, decreases OpEx, and efficiently delivers services to neutralize attacks. "STC Solutions has a hugely impressive history working with organizations to ensure they can securely scale at speed and with optimal freedom to innovate," said Diego Arrabal, VP – Middle East, Turkey & Africa, F5 Networks. "We are delighted to once again partner with STC Solutions to make a genuine difference, and jointly bring to market industry-leading cybersecurity solutions that protect against application exploits, deter bots and, crucially, reduce costs in the cloud."



STC and ConsenSys Announce Blockchain Launch to Accelerate Its Adoption in KSA



Saudi Telecom Company (STC) and ConsenSys, a leader in blockchain technology, announced the launch of blockchain on STC Cloud, a move set to accelerate blockchain adoption in the

Kingdom. It will provide enterprises and governments with a path to enable mass adoption of the technology through dramatically lowering the costs of prototyping and experimentation with blockchain. STC and ConsenSys will be showcasing the new technology during GITEX 2018, the biggest technology show in Middle East and North Africa. This product allows clients to create blockchain nodes in a sandbox environment and build blockchain networks and test use cases without the need for infrastructure investment or heavy development. Riyadh S. Muawad, Vice President of Government Sales & Key Accounts at STC Business added, "Blockchain on is one of several initiatives STC aims to roll out to its customers to pave the way for blockchain adoption. STC is committed to provide its customers with innovative solutions, and Blockchain on is one of many to be provided". Talal AlBakr, Vice President of Cloud Services at STC Solutions added, "Adding blockchain to STC's Cloud Marketplace allows customers to start a private blockchain network with a click of a button. This service is a unique innovative offering on our marketplace that helps organizations to rapidly build and deploy blockchain applications."

Saudi Telecom and Zenoss Join Hands to Offer Cloud-Based Services

Texas-based Zenoss said it will partner with Saudi Telecom Solutions (STCS) to offer cloud-based services to the infrastructure operations management market players in Saudi Arabia. Zenoss said it will work with STCS to deploy a software-defined IT operations platform for the STCS Cloud that delivers software solutions, infrastructure and development platforms as a service. "Zenoss will help STCS provide breakthrough innovation for the kingdom, providing integrated

technology solutions that empower our customers during their IT digital transformation journeys," said James Boyton, senior director of international business development and channels, Zenoss. "Customers in the Kingdom of Saudi Arabia have been demanding a software-defined IT operations solution, and we are pleased to partner with STCS to answer that need." Earlier this month, the firm announced a solution and re-seller partnership with Ixteel in UAE, as part of

its plan to expand presence in the Middle East region. James Boyton, senior Director, Zenoss said, "Customers in UAE have been demanding innovation in IT operations, and we are pleased to partner with Ixteel to answer that need. With the launch of Zenoss Cloud and solutions for modern IoT, NFV, DevOps, Hybrid Cloud, its exactly what Software Defined IT operations is all about, whether you are a telco, enterprise or service provider."

STC and NWC Sign MoU to Support and Develop Water Services Using Smart Digital Solutions

National Water Company (NWC) and Saudi Telecom Company (STC) signed a memorandum of understanding stipulating that the former shall leverage the technologies and services the latter provides in the field of digital solutions and communications and information technology. The event took place during their participation in GITEX 2018 in Dubai, UAE. The memorandum was signed by Abdul Rahman Al-Oweis, Vice President of Shared Services at NWC, and Riyadh Mu'awwad, Vice President of Government Sales and VIP Clients at STC, in the

presence of NWC CEO, Eng. Mohammad bin Ahmad Mowkley, and Dr. Tarig Enaya, Enterprise SVP at STC. The two parties examined developing a strategy that aims to create smart meters, smart readings, as well as the process management for the NWC smart meters, based on STC communication means and ICT services, which are considered an enabler of the network that is supported by trial operation. STC will organize a workshop to present cloud products in the market to NWC, in order to identify the latter's needs. The two parties looked into how to enrich

and support geographical locations and client data content, in addition to studying the collection process methods through call centers, call payments, and the call loyalty program, as well increasing the level of collection performance in a smart manner. The memorandum stipulated that STC designs a study of video conference solutions for the conferences held generally by NWC to identify all its requirements and provide the latest digital solutions. STC will provide special call packages and offers for NWC employees and their families.

STC, Nokia Announce Region-First LTE Air-to-Ground Trial Network at GITEX 2018



During GITEX Technology Week 2018, Nokia and STC Business signed a memorandum of understanding to collaborate on the launch of the air-to-ground pilot network in Saudi Arabia. The two companies have already conducted a successful trial of Nokia's LTE-based air-to-ground solution in a flight from Riyadh to Jeddah in Saudi Arabia. This trial network is the first of its kind in MEA, after the launch of the hybrid satellite and air-to-ground European Aviation Network in February 2018. At GITEX, Nokia is showcasing how air-to-ground technology can significantly improve airline passengers' experiences. Under the scope of the MoU, the two companies have identified key areas of cooperation and are working together to build a commercial strategy to better serve the interests of customers by providing them with superior in-flight connectivity. Nokia and STC will also work together on the network managed services and rollout for the air-to-ground services across the STC Group. For the trial network, Nokia provided

a fully dedicated end-to-end network, including Nokia's LTE air-to-ground radio access network, core infrastructure and applications. Nokia's professional services team deployed specialized air-to-ground sites and carried out extensive testing to ensure a successful trial. Thales, Nokia's technology partner for aviation equipment, provided the onboard equipment for the trial network. Dr. Tarig Enaya, Senior VP of Enterprise Business Unit at STC, said: "We are committed to bringing the best and latest technology to the region and this initiative is a testimony of this. Nokia is the world's only company that has a proven LTE end-to-end solution to provide in-flight broadband, which enables the passengers and the crew to communicate in real-time. We have a longstanding relationship with Nokia, and are delighted to work with them to introduce this LTE-based in-flight technology to significantly improve the experience of the passengers." Mohamed Abdelrehim, head of end-to-end sales solutioning for Nokia MEA, said: "We

are proud to collaborate with STC and showcase the potential of air-to-ground technology at GITEX in Dubai. The air-to-ground technology will enable STC to provide new and revolutionary services for their customers and add new revenue streams. With high-speed and low-latency broadband, airline passengers will be able to communicate with their loved ones or for business without any disruption because of air travel. Also, the airline crew will be able to improve operational efficiency because of better real-time communication between the flight crew and ground staff." Pascal Lesaulnier, Chairman and CEO Thales Saudi Arabia, said: "We are proud to collaborate on the trial with our partners Nokia and STC. We believe this trial, which is a first for this technology type in Saudi Arabia and in the region, will pave way for a regional in-flight high-speed broadband connectivity solution benefiting airline passengers and crew in the region." Nokia's LTE air-to-ground solution is currently the only solution specific to the aviation industry and supports real-time and ultra-broadband communications during a flight. Nokia's air-to-ground solution uses specific spectrum to avoid interference with terrestrial networks. The on-board equipment, including the antenna, is especially designed for this solution. It uses special algorithms developed by Nokia Bell Labs to enable ultra large cells for efficient airspace coverage and connectivity to high speed aircraft. The solution offers passengers "home like connectivity" at high speeds with low latency at lowest cost per bit - allowing more travelers to use the services. Further, low on-board equipment weight and size leads to lower fuel consumption and quick on-board installation time facilitates faster installation.

STC Launches the First In-Flight Video Call in MENA on a 30,000 Feet-High

Saudi Telecom Co (STC) inaugurated its latest innovation in in-flight call technology through a live call made on a 30,000 feet-high on board of a plane heading to Jeddah from Riyadh, with the video call being directly transmitted to the GITEX Technology in Dubai. The service allows for in-flight video calls by equipping airplanes with mobile data and broadband through signals from LTE ground-based stations which boast many features compared to older technologies which rely on satellites. This will enable airlines and other stakeholders to provide better services than currently-adopted older standards at a lower cost per mb, higher data transfer rate of up to 75 mb/s, and a lower delay time. In this context, Senior Vice President of Enterprise Business at STC, Dr. Tareq Enaya said that, "in-flight call technology is one of many other examples that illustrate the way STC is working with its partners and customers to provide the latest products and services and thus improve services offered to airlines and service providers. The new in-flight call service offers state-of-the-art features, including stable connection and high-speed connectivity. This makes it indeed the next generation of transmission technology, which will open new horizons in terms of products and services." He further pointed out to all the areas which could benefit from this new technology, including airlines, media and entertainment, natural resource exploration, safety and security, and telecommunications. In this sense STC addressed its potential customers at GITEX with expectations that demand will be high on this new product. On another hand, Crown Prince of Dubai Sheikh Hamdan bin Mohammed bin Rashid Al Maktoum visited the company's stand at GITEX 2018 Dubai and was received

by Dr. Tareq Enaya, Senior Vice President of Enterprise Business at STC. His Highness reviewed the latest services and solutions launched by the company in telecom and IT in line with its role as a driver for digital services and transformation in Saudi Arabia as per Saudi Vision 2030. STC is currently working with various stakeholders and partners to enrich this new technology, including Nokia for LTE phone devices, Thales for on-board equipment, EAD for supplementary technical certification, AMAC for maintenance, repairs, and operation for on-board installation, and Sky Prime, a private charter airline on whose planes the technology is being tested directly.



du Showcases Nokia's Digital Experience Technology at GITEX

UAE-based telecommunications service provider du from the Emirates Integrated Telecommunications Company is showcasing Nokia's high-tech Autonomous Customer Care software solution to depict how it aims to enhance the overall digital experience for its over 9 million fixed, mobile, IP and broadband customers. At GITEX Technology Week 2018 in Dubai, du is demonstrating Nokia's technologies as part of the operator's ambition to harness the best in-class technologies that empower its staff to better serve their customers. du is collaborating with Nokia on various elements of the Nokia Autonomous Customer Care solution, providing new levels of intelligence and automation to its workforce. With Autonomous Customer Care, du's customer care agents have a single view of end-user issues across various lines of business including mobile, fixed, broadband, IPTV and IP. This single view is paired with machine learning-powered action recommendations to deliver faster troubleshooting, helping to reduce OPEX, boost first call resolution and increase customer satisfaction. Anthony Shiner, Chief Digital Lifestyle and Innovation Officer at du, said: "As an ICT service provider,

we are at the forefront of latest technologies such as Artificial Intelligence. We are excited about the future potential of how this can be integrated across our organization - which, we believe, can be a valuable differentiator and a key service enabler. We are collaborating with Nokia, given the breadth and depth of their solutions, and their deep understanding of our unique needs. In days to come, with further advancements in machine learning capabilities, we will make huge strides in our ambition of being the unrivalled benchmark in staff engagement and customer advocacy in this region." Rima Manna, head of the du customer team at Nokia, said: "Service providers need the ability to engage with subscribers in 'digital time' - delivering the right service or solving problems through the right channel when they need it. Our Digital Experience portfolio provides powerful tools that deliver deep, real-time insights into subscriber needs and preferences, allowing du to offer autonomous customer care solutions that are sophisticated and timely. We look forward to working with du to transform its customer experience and continually delight subscribers."

DHA and du Sign MoU to Support Smart Health Services

The Dubai Health Authority (DHA) and du signed a Memorandum of Understanding (MoU) during GITEX Technology Week to provide DHA with virtual solutions on Dubai Pulse. As part of the five-year partnership agreement du will be providing the authority with virtual solutions to cater to web, application, database and shared services on Smart Dubai Offices' Dubai Pulse. Du will also host the DHA's disease surveillance and management program HASANA. The MoU was signed during Gitex Technology Week 2018 by H.E Humaid Al Qutami, Director General of the DHA and Osman Sultan, du, EITC. The solutions will be provided on the Dubai Pulse cloud platform based on VMware and OpenStack technologies. Commenting on the MoU, Al Qutami said the authority is keen to utilise the latest data and information technologies in the world to benefit from smart solutions that enable it to improve its services and achieve the highest levels of customer satisfaction. He added that the Authority has a world-class technical infrastructure that will help it implement smart transformations in line with Dubai's vision and strategy. He also said the authority is keen to build strong partnerships with specialized agencies to acquire the latest technologies and adapt them to better serve its developmental goals. Al Qutami commended du, which he said has made notable achievements



in telecommunications adding that this MoU reaffirms the cooperation between the two entities. Osman Sultan, du, EITC said: "We are pleased that our digital offerings have received a clean bill of health. This new relationship really reiterates the recognition of the Dubai Pulse platform as a sustainable network and digital infrastructure. Moreover, as the strategic partner of the Smart Dubai platform, working with the DHA to achieve supreme efficiency and agility in the digital sphere will further enhance the UAE's digital economy." Through its Smart Dubai

strategic partnership, du is able to offer bespoke data solutions to key industries across the UAE, from government to finance to healthcare, thus enabling data possibilities every day. As part of the agreement, du will provide computer, network, storage, applications and databases for production, development and testing environments. This will ensure final production quality and fulfill all current DHA requirements. Furthermore, the cloud platform will provide on demand infrastructure resources to meet and future requirements for the HASANA project.

du to Promote Telecom Transformation

du, from Emirates Integrated Telecommunications Company (EITC), will showcase how its digital transformation strategies and initiatives to evolve conventional telecommunication services at the upcoming GITEX Technology Week. By aligning with the UAE Vision 2021 and UAE Centennial 2071 national development plans announced by Sheikh Mohammad Bin Rashid Al Maktoum, Vice-President and Prime Minister of the UAE and Ruler of Dubai, the telco will outline its targeted approach to usher in a new wave of innovation. Osman Sultan, Chief Executive Officer, du – Emirates Integrated

Telecommunications Company said, "In support of the UAE government's vision and long-term connectivity goals, du is expending its resources and expertise to immerse the country in technologies of the future. All our services and solutions aim to enable UAE residents to make a positive impact through technology. GITEX will allow us to exhibit our digital transformation in terms of adopting next-generation technologies such as 5G, IoT, AI and blockchain, and our transition to futuristic digital services." du will highlight solutions that are helping it pioneer a data-driven economy of the future and

transform its technological ecosystem to further drive the smart city agenda as a strategic partner for Dubai government's Smart Dubai initiative to integrate technologies like ICT and IoT into its infrastructure. Since its inception in 2006, du has cemented its position as the UAE's leading digital communications company by playing a strategic role in transforming its technological landscape. The telco is committed to taking the country to the digital age's new echelons through an innovative portfolio of products, services and mobile applications supported by major retail and business footprint.

du Collaborates with Cisco to Offer New Software Defined Networking Solution for Business Customers

On the sidelines of the GITEX Technology Week 2018, du, an UAE-based telecommunications service provider from Emirates Integrated Telecommunications Company (EITC), in collaboration with Cisco announced the launch of software defined Intelligent Connectivity solution. The launch further expands du's business offerings, to now include SD-WAN Software defined Intelligent Connectivity Service (SD-WAN) provides business customers with a clear visibility of their WAN, allowing them to dynamically optimize traffic and bandwidth to match business and seasonality demands while balancing performance, operational simplicity and cost. Today's announcement comes just months after the two companies announced a joint white paper outlining du's technology roadmap for digital transformation. The new services launch further strengthens du's strategic collaboration with Cisco and marks a key milestone in du's execution on its 2021 technology vision. "As we drive our digital transformation agenda to spur expansion into new growth areas with ICT solutions, we have been working diligently towards introducing disruptive technologies and services to our customers," said Farid Faraidooni, Deputy CEO – Enterprise Solutions, Emirates Integrated Telecommunications Company. "We are collaborating with Cisco to offer a new breed of Intelligent Connectivity solutions and Managed branch office services. We are excited about the opportunities this will bring to our customers and in enriching the UAE's ICT ecosystem." du's key strategic pillars in driving change include the provision of a seamless customer experience across channels, innovative services and solutions, and agility in operations. Cisco provides the foundation for digital transformation through its comprehensive product and services portfolio that brings together networking, security, automation,



and analytics. "ICT landscape around the world is witnessing immense disruption, which necessitates transformational change from Service Providers. As a technology leader, Cisco is collaborating with du in support of du's transformation and to help evolve their offerings beyond traditional connectivity services to incorporate a wider gamut of intelligent and cloud managed enterprise offerings," said Ali Amer, Managing Director, Global Service Provider Sales, Cisco Middle East and Africa. "du is offering a rich portfolio of Cisco based SD-WAN, built on Viptela technology.. This is a great example of how disruptive technology such as intent-based networking is fundamentally changing the blueprint for networking, offering Service Providers faster time to market and immense benefits to business customers such as agility and cost efficiencies. " added Ali Amer.

du and Nokia Demonstrate New 5G Use Case with Virtual Reality Football Game at GITEX 2018



UAE telecommunications service provider - du, from Emirates Integrated Telecommunications Company, and Nokia successfully demonstrate 5G capabilities through a virtual reality (VR) game at GITEX Technology Week 2018 in Dubai.

Visitors at the event are able to experience the high speed and low latency of 5G through a football-related VR game. The demo showcases the difference in data throughput and latency of a 5G network in comparison with a 4G network. A user wearing VR goggles gets to take a penalty against a virtual football goalkeeper. In 4G mode - with higher latency - the shot is slower and thus easier for the keeper to catch the ball. When the mode is switched to faster 5G with lower latency, the user can score. Nokia and du are working together to introduce more exciting 5G use cases to thrill customers, keeping with the spirit of the UAE government's "Customer Happiness Index" for residents and guests in the country. 5G is the new generation of

radio systems and network architecture delivering extreme broadband, ultra-robust low-latency connectivity, and massive networking to support many different use cases and business models. It also connects billions of IoT devices enabling smart cities and improve the quality of life of citizens. Saleem AlBlooshi, Chief

Infrastructure Officer, Emirates Integrated Telecommunications Company (EITC), said: "As a technology pioneer, we are excited to collaborate with Nokia to delight our customers by introducing them to a range of entertaining and productive 5G use cases such as virtual reality." Bernard Najm, head of the Middle East Market

Unit at Nokia, said: "We have been closely working with du for the past few years. This successful VR demo is just one of the many innovative use cases enabled by 5G. New use cases provide an opportunity to add new revenue streams for telcos like du, and also help them enhance the happiness of their subscribers."

Smart Dubai, du and Community Development Authority to Deliver Dubai Pulse Solutions

du, from Emirates Integrated Telecommunications Company (EITC), has announced it will partner with the Community Development Authority (CDA) to assist in the creation of Multi-tile dashboards to provide slick, quick and accurate insights for the CDA's business activities. The CDA's team needed to develop a Multi-tile dashboard to facilitate quick decision-making. One of the main concerns for the CDA was to have precise and relevant information published via dashboards to assist in important business functions. Ahmed Abdul Karim Julfar, Director General, CDA: "Investing resources to build effective partnerships is at the core of the CDA's mission to develop social services aligned with the Dubai Government's goals of attaining sustainable development and a cohesive, happy society. By implementing the Dubai Pulse dashboard solutions, the CDA's ability to enhance community engagement will improve immensely." Osman Sultan, CEO, EITC said: "We are delighted to collaborate with the CDA for the implementation of an efficient, seamless, safe and impactful Smart City experience. The Dubai Pulse dashboard solutions we have provided are world-class and will be more than sufficient in delivering key metrics and insights for consideration toward the CDA's key business functions. Our next-level knowhow and collaboration has combined to augment the efficiencies such data manipulation can provide." Seeking to address their dashboard requirements with the utmost care and priority, the CDA approached du and Dubai Pulse's solution team who

determined that the Dubai Pulse Business Intelligence Platform would best-serve the CDA's digital requirements for a better UAE community. A dedicated instance of Dubai Pulse BI platform was carved out of the existing one and was hosted in the high performance IaaS cube dedicated to the CDA. This ensured a low cost and high performing platform for BI activities within Dubai Pulse's highly-secure environment. Through its Smart Dubai strategic partnership, du is able to offer bespoke data solutions to key industries across the UAE, from government to finance to healthcare, in order to grow data possibilities every day.



Etisalat, Fujairah Ink Deal to Boost Smart e-Government Initiatives

Etisalat and Fujairah Department of Public Works and Agriculture signed a Memorandum of Understanding to further enhance smart e-government initiatives by providing the department with innovative digital, ICT and smart solutions. Under the terms of the partnership, both parties will jointly develop and establish a long-term strategic collaboration, with Etisalat appointed as the department's digital, ICT and smart solutions provider. Etisalat and Fujairah Department of Public Works and

Agriculture will work together to develop business engagement and enhance both current and future business and technical requirements. Etisalat will provide the public works and agriculture department with the required support in various areas, namely smart solutions, IT networking, technical support, best practices and digital schemes. This partnership will also consolidate Etisalat's position as the region's most forward-looking telecommunications and ICT service

provider, as it continues to lead innovative developments in the ICT industry and seek to shape the technology and communications market of the future. The MoU was signed at the GITEX Technology Week 2108 currently being held from 14-18 October at the Dubai World Trade Center by Abdel Aziz Hamad Taryam, General Manager, Northern Emirates at Etisalat, and Salim Mohamed Ali Al Mukasah, General Manager, Fujairah Department of Public Works and Agriculture.

Etisalat Group Reports a 3% Increase in Consolidated Revenues for the First Nine Months of 2018 to AED 39.4 Billion



Etisalat Group today announced its consolidated financial statement for the nine months ending 30th September 2018.

Financial Highlights and Key Developments

- Nine month consolidated revenues reached to AED 39.4 billion, an increase of 3% compared to same period last year.
- Nine month consolidated net profit after Federal Royalty amounted to AED 6.6 billion an increase of 2% compared to same period last year.
- Aggregate subscriber base reached 144 million; representing Year over Year increase of 3%.
- Etisalat Group was granted the approval of the Securities and Commodities Authority on the share buyback program.
- Etisalat Group's board of directors recommends lifting restrictions on foreign shareholders voting rights.
- Etisalat Misr and Telecom Egypt signed the first MoU for virtual fixed voice services.
- Etisalat Misr launched Egypt's First Voice Over LTE (VoLTE) services.
- Expo 2020 Dubai becomes first 5G major commercial customer in MEASA through partnership with Etisalat.
- Etisalat launched innovation program 'Future Now' featuring a scale-up program, co-creation lab, innovation center & IoT ecosystem.
- Etisalat partners with UAE Paralympics at Asian Para Games.
- Etisalat brings iPhone XS, iPhone XS Max, Apple Watch Series 4 (GPS + Cellular) to UAE.

- Etisalat introduces free 'Talking Bill' service for People of Determination.
- Etisalat launches first 'Annual Add-on' data packs in the UAE
- Microsoft and Etisalat UAE to bring GCC's first mobile carrier payment option to Xbox gamers.

CEO's Message

Eng. Saleh Abdullah Al Abdooli, CEO, Etisalat Group said: "Etisalat Group continues to deliver a solid performance in the third quarter thanks to our continued focus and effort in the digitalisation of services and solutions. As we move into the 5G era, our network and talented teams are well equipped to lead the ever-changing requirements of our consumers and the telecom industry. "In keeping the momentum of our success and focusing on adding value to our customers and shareholders, we remain committed to bring innovative solutions and provide value propositions for the digital age. Our efforts have helped build a dynamic ecosystem that will drive future growth and pave the way for our digital ambitions and implementation of futuristic technologies.

"Etisalat is confidently moving forward and progressing positively in enabling societies

across its operations. We will continue to focus on creating innovative services, capitalizing on opportunities for new revenue streams and enhancing overall customer experience while delivering long-term value for all our stakeholders."

"Etisalat is thankful to the vision of the wise leadership of UAE in positioning the country among the most digitally advanced globally, inspiring us to deliver world class networks and innovative services. We also extend appreciation to our shareholders and loyal customers, to whom we owe more success and greater achievements."

Q3 - Subscribers

In the UAE, the subscriber base reached to 12.5 million subscribers, while Etisalat Group aggregate subscribers reached 144 million subscribers representing a year on year increase of 3%.

Q3 – Revenue & Net profit

Etisalat Group's consolidated revenue for the third quarter of 2018 amounted to AED 13.2 billion with growth of 2% in comparison to the same period last year, Consolidated net profit after Federal Royalty amounted to AED 2.3 billion resulting in a net profit margin of 17%.



Etisalat Partners with Shurooq to Boost Digital Services

Etisalat and Sharjah Investment and Development Authority (Shurooq) signed a Memorandum of Understanding to boost Shurooq's digital services as well as digital master planning of its existing and new projects. The MoU was signed by Abdul Aziz Hamad Taryam, CEO Advisor and General Manager, Northern Emirates at Etisalat and Marwan Jassim Al Serkkal, Executive Chairman, Shurooq at the GITEX Technology Week 2108 currently being held from 14-18 October at the Dubai World Trade Center. Marwan Jassim Al Serkkal, Executive Chairman, Shurooq said: "Today's partnership will help us achieve our digital ambitions and is in line with the country's overall objective and positioning as the most digitally advanced in the Arab region. We are proud to partner with Etisalat and looking forward to working with team in making this digital dream a reality." Abdul Aziz Hamad Taryam, CEO Advisor and General Manager, Northern Emirates said: "As part of our overall strategy and objective of 'Driving a Digital future to Empower Societies' we are working closely

with the public and private sector to enable digital technologies and solutions to help boost their digital services." Both parties have agreed to form working groups to engage in workshops to assess, discuss, and identify various business propositions. As the digital service provider, Etisalat will provide Shurooq with

a wide array of smart solutions related to smart cities, smart malls and smart retail, smart entertainment and culture, and smart hotels and hospitality. Etisalat will also provide Shurooq with telecom and ICT solutions, including managed services, data center consolidation, hosting and cloud, and managed security services.



Etisalat Digital Launches 'Future Now' at GITEX Future Stars 2018

Etisalat Digital introduced its innovation program, Future Now, at GITEX Future Stars 2018. Future Now introduces new ways of innovating and collaborating with startups, IoT developers, government entities, enterprises, and their end users. Future Now has four key pillars: Scale-ups program, a Co-creation Lab, an IoT partner ecosystem and an Innovation Center. Francisco Salcedo, SVP, Etisalat Digital, said: "The future is taking shape from our actions today, and we believe that the best way forward is to collaborate and innovate in the way we work with our partners and clients. 'Future Now' by Etisalat Digital will open doors for these collaborations to happen, and with Etisalat's digital platforms and wide reach, we are committed to supporting innovators to bring their disruptive technologies to reality." The Scale-ups program of Future Now opens doors to tech startups and

companies from across the globe to accelerate their business in the UAE and partner with Etisalat to bring new solutions to the market. Start-ups will get access to workshops and mentorship sessions, opportunities in the UAE market, in addition to co-working spaces where they can work closely with key stakeholders from Etisalat. For the first time Future Now presents in GITEX Future Stars, its startups' innovative solutions related to Blockchain, Artificial Intelligence, Augmented and Virtual Reality as well as Digital Healthcare, Digital Security solutions. The Future Now Co-creation Lab enables customers to "co-construct" feasible and viable solutions using a sharpened design thinking process and human centered approach to generate fresh ideas for solving complex problems to enhance business results. Future Now includes as well an IoT partnerships ecosystem, where it invites developers and

innovators ranging from IoT companies to talented university students, to build, test, and integrate their applications utilizing Etisalat digital solutions and platforms. With developers being part of Etisalat's IoT ecosystem, they will have access to hands-on IoT workshops, hackathons, and events. The fourth pillar is Etisalat's state-of-the-art Innovation Center, showcasing its latest technology breakthroughs allowing customers to experience how Etisalat Digital can transform their businesses. Future Now empowers Etisalat's network of clients, partners, incubators, accelerators and other stakeholders to collaborate in shaping the future of technology. GITEX visitors are invited to come join us at Zabeel Hall 4, Stand B5 in the Dubai World Trade Center from October 14-18 to experience, first-hand, how Etisalat Digital is collaborating and innovating to shape the digital future through Future Now.

Etisalat Presents Future of Delivering Healthcare at GITEX Technology Week 2018

Etisalat makes a major digital showcase in healthcare, bringing a wide array of smart solutions and concepts in the spotlight at GITEX Technology Week 2018. This is in line with Etisalat's objective to support the national agenda to achieve a world-class healthcare system. Dr. Ahmed bin Ali, Group Senior Vice President, Corporate Communications, Etisalat, said: "We are at the forefront of the innovation in digital health. Etisalat's solutions are aimed at creating a more efficient and reliable healthcare system and transforming the healthcare of tomorrow. "Our solutions can sequence one's whole genome and find out a patient's future conditions, the likelihood of developing certain diseases, while bringing in solutions that train surgeons better before getting inside the operating theater through immersive reality. We, at Etisalat, envision creating telemedicine networks where caregivers can collaborate and patients can have easy access to the best care possible regardless where they live." This week Etisalat unveils RoboPharmacy, a showcase of an unmanned, futuristic pharmacy system. It will be the first hands-on experience of Etisalat's 5G technology believed to change people's lives. It uses the 5G connection between the hospital, pharmacy, and capturing the data to provide convenience to the customer through virtual futuristic technologies. Another revolutionary showcase is the CAE Vimedix ultrasound simulator, a high-fidelity simulator designed to make learning more engaging and intuitive. The unique system features a mannequin, several simulated ultrasound probes and an expanding library of cases. SharpSurgeon, a VR spine surgery simulator and training, brings a new perspective to classical medical education methods. This solution allows resident doctors to train while conducting complex surgeries. It provides a repeatable and standard tutoring environment and an add-on to any government current training curriculum while offering highly realistic hand-based interactions in an immersive training environment that reflects the modern operating room. At



Etisalat's stand, discover how augmented reality is revolutionizing medical education. See a beating human body to life in full 3D in front of you using the AR functionality of Apple iPad. 3D4Medical's interactive anatomy learning platform 'Complete Anatomy' brings the human body to life in a stunning 3D, with incredible interactive functionality and learning content presented through augmented and mixed reality. Visitors can also check out 'Haptic Ultrasound', a robot-based application that represents a potential application in which a sensitive robot can assist a physician. In the future, lightweight robots designed to be particularly collaborative will take on an increasing number of assistance tasks in the field of healthcare. The solution gives access to the healthcare experts enabling them to perform an ultrasound remotely via 5G and diagnose the patient. Home care takes a leap into the future with virtual clinic care, a system offering travelling clinicians and nurses the ability to carry out medical exams while connected to the specialists of a health facility streaming all vitals and images through a virtual clinical encounter. At GITEX, Etisalat is also delivering patient engagement software solutions that seamlessly integrates healthcare IT systems and clinical applications. Patients can stay entertained by watching eLife TV, on demand movies, playing games and video chat with friends. The system allows patients to order food and even control the lights and the room temperature. Made of Genes, a scale up under the Dubai Future Accelerator Program, was chosen by Etisalat Digital bringing a high-performing computational platform to improve health and wellness through personal genomics and P4 medicine: preventive, personalized, predictive and participatory. Such a partnership is a testimony to our commitment to deliver solutions to the healthcare industry by providing analytical tools and providing data to access risks related to developing certain diseases and personalize individual treatments.



Dubai Ruler Visits Etisalat Stand to Experience the 'Future of Mobility' at GITEX Technology Week 2018

Etisalat is presenting a major digital showcase in 'Future of Mobility', bringing global leaders in autonomous transport to Dubai and providing an insight into the future at this year's GITEX Technology Week. This is in line with Etisalat's objective to highlight its role in the 'Dubai Autonomous Transportation Strategy' that aims to transform 25 percent of the total transportation in Dubai to autonomous mode by 2030. Dr. Ahmed bin Ali, Group Senior Vice President, Corporate Communications, Etisalat, said: "We are pleased to be partnering with top leaders of the car industry to showcase some of the latest strides they have been making in

car connectivity and autonomous driving. "Etisalat's objective is to drive the digital future by taking the lead in innovation to bring futuristic technologies from around the world to UAE and the region. We, at Etisalat, are committed to support the nation's long-term strategy in promoting digitization initiatives and developing the connected ecosystem of the UAE, particularly transportation." Taking off at Etisalat's stand is ItalDesign's Pop. Up Next, the first fully electric and zero-emission modular system designed to help resolve traffic congestion in large urban areas. The ultra-light, two-seater passenger cabin, which can be attached to

either a car module (provided by Audi) or a flight module (manufactured by Airbus), can cruise autonomously on the road and lift into the air vertically. Both modules are entirely electric and autonomous. The interior of the cabin boasts of a TV-like 49-inch screen that relays information back to the passengers. Interaction between humans and the machine is performed by speech and face recognition, while additional control can be achieved via eye-tracking technology and touching the screen. The Etisalat stand is also displaying a self-driving vehicle, the 'Oasis', which is a concept car from Swiss think tank and mobility lab Rinspeed. Designed to demonstrate a less conventional method of transport for the future, the 'Oasis' has a huge glass windscreen area, fitted with augmented reality technology that lets the driver virtually 'place' displays and objects on the screen. The car has a solar panel on the roof, while the interior offers a new living space complete with armchairs, a sideboard, TV, and a multi-functional steering wheel, emphasizing the car's main role as an autonomous vehicle. Etisalat is present at stand Z1-A20 in Zabeel Hall at GITEX Technology Week 2018, at the Dubai World Trade Centre with product showcases, live demonstrations of telecom technologies for individuals and businesses as well as Etisalat business solutions for industry verticals such as future mobility, smart retail, smart health and digital education.



Etisalat Digital and Accenture to Unveil Innovative Digital Experiences through 'Explore 2020'

Accenture (NYSE: ACN) and Etisalat Digital are playing a key role in making Expo 2020 Dubai one of the fastest, smartest, and best-connected places on Earth by collaborating to bring innovative digital experiences to attendees. The joint Digital Services Premier Partners have developed an interactive 3D flythrough experience of what the Expo 2020 Dubai site will look like in two years' time. Called Explore 2020, it will be unveiled at the Etisalat booth at GITEX Technology Week. Unveiled less

than a week before Expo's two-years-to-go milestone, the 3D environment, rendered in real time, will be displayed across eight curved screens at a resolution of 8640 x 1920. To develop a scale replica of the Expo site, Accenture transformed a complex architectural model, containing over 122 million polygons, into an optimized 3D model containing just 6 million polygons – a reduction of more than 95% - whilst ensuring absolute quality and precision in the visual representation and texturing.

Visitors to GITEX can, for the first time, 'fly through' and navigate the Expo 2020 Dubai site at will, as a result of Accenture and Etisalat Digital's design, development and optimization effort. Francisco Salcedo, Senior Vice President, Etisalat Digital said: "With Etisalat's focus this year at GITEX Technology Week on 'Leading the 5G Revolution' and 'Driving the Digital Future to Empower Societies', this spectacular showcase is built on our vision to provide digital innovation and futuristic solutions

that will have a fundamental impact on people's lives. "We are excited to bring this unique 3D experience of 'Explore 2020' that will take our visitors on a special journey of the Expo 2020 Dubai site. As a digital services premier partner, this joint project with Accenture will give all visitors an insight of Expo 2020 Dubai and take them through all the highlights of this global event including behind the scene highlight of Etisalat contribution to the site such as 5G capabilities launched earlier this year." Mohammed ALHashmi, Senior Vice President of Innovation and Future Technology at Expo 2020 Dubai said: "Two years from now, Expo 2020 will open its doors to the world for a six-month festival of human ingenuity. Our partnerships with Accenture and Etisalat Digital are integral to the creation of Expo's 'smart site', which will enrich the visitor experience by digitally connecting people with their surroundings and optimizing their interactions. "In 2020 millions of visitors will enjoy an incredible journey around the Expo site, which will be one of the smartest, fastest and best-connected places on the planet. I'm delighted that visitors to GITEX today can have a special preview of this experience, thanks to Accenture and Etisalat Digital." "Expo 2020 Dubai is an event that will connect both minds and people together, by generating innovative ideas and



solutions for a brighter and better future," said Gerardo Canta, managing director and Accenture's Communications, Media & Technology lead for the Middle East & Turkey. "We are happy to partner with Etisalat Digital and offer a preview of the upcoming Expo 2020 site. With Explore 2020, visitors can expect to see an exclusive preview of Expo 2020 Dubai, and to imagine the endless possibilities of digital services and technologies such as 5G, machine learning, data analytics, artificial intelligence, extended reality, and more." Visitors to the Etisalat stand will notice several interactive elements including people, cars, and drones roaming the sky, with renowned Dubai skyline on

the horizon. Moreover, visitors can use a purpose-built 3D space-mouse to zoom, rotate and fly across the site, whilst discovering the story of Expo 2020 Dubai. Interactive animations will be triggered by location proximity, revealing an additional layer of context, visualization and understating of the behind-the-scenes technology powering one of the fastest, smartest, and best-connected places on earth. Together, Accenture and Etisalat Digital are designing, building and running innovative solutions aimed at providing a memorable experience for Expo 2020, both before and during the event. Explore 2020 is a practical example of how this partnership can bring innovation to life.



Omantel, Unicef Hold Workshop on Sustainable Development Goals

Omantel, the first and leading provider of integrated telecommunications services in the sultanate, recently organized a Sustainable Development Goals (SDGs) workshop. The workshop, titled 'E-Government, achieving the SDGs, and digital equity', was held at Omantel's HQ in Mawaleh as part of the cooperation between Omantel and Unicef that was announced recently. Attended by a number of Omantel's senior management, the workshop briefed the audience on SDGs and showcased examples of how countries have effectively implemented technology to achieve sustainable development in a number of areas. Moreover, the event had seen a group discussion on the

IT landscape of Oman and how it can intervene and contribute to the SDGs in the country. Muna al Mamari, caretaker of Senior Manager Corporate Affairs at Omantel, said, "As a company nurtured on strong values, Omantel has been building bridges towards the sustainability of the country's society since its inception, through the introduction of technologies that make life easier, secure and efficient. Furthermore, Omantel capitalizes on its well-established and integrated telecom infrastructure in addition to its partnership with global IT companies, enabling the company to offer advanced smart solutions for data that helps developing projects and achieving its goals." She added, "Looking

at other countries' experiences, we can tell that there is a lot of scope for greater integration of technology in different aspects of our lives." Muna affirmed Omantel's commitment to keep up with the fast-paced changes in telecom and ICT globally. She said, "We are taking steady steps in leading the digital transformation in the sultanate and keeping our country on track to adopt the latest innovations. We believe that advanced technologies can have a huge impact on various sectors, and we look forward to continue our role as the strategic partner by choice for the public and private sectors in Oman and make our best endeavors to help the society in maximizing the benefits of technology."



Vice President of Orange Foundation Stresses on the Importance of Supporting Social Development Projects

Senior Executive Vice-President of CSR, Diversity, Partnerships and Philanthropy/Deputy Chair of the Orange Foundation, Christine Albanel affirmed the importance of Orange Jordan's support of social responsibility projects in the Kingdom, pointing out the company's active role in adopting many initiatives across all governorates and sectors. At the end of her visit to Jordan, Albanel talked about the different initiatives and programs implemented by the active parties and institutions in the Kingdom, affirming that Orange Foundation will continue supporting Jordan with an aim to positively contribute to helping the underprivileged segments in society, especially programs that focus on women empowerment and the youth segment. Albanel praised Orange

Jordan's efforts which helped implement many local initiatives and is in line with the key objectives of the company's five-year corporate strategy "Essentials 2020" which aims to support the local community, thanking all the partners in the Kingdom who collaborated with the foundation and company, and gave them the opportunity to play an active role in the Jordanian community, within Orange Group's corporate social responsibility plan. During her visit, Albanel and in the presence of the Executive Director at the Jordanian Hashemite Fund for Human Development (JOHUD), Farah Daghistani, inaugurated the Women's Digital Center, which is affiliated with and supported by Orange Foundation at The Queen Zein Al Sharaf Institute for Development (ZENID), and is one of the five centers of JOHUD offering courses in digital training and entrepreneurship for underprivileged women in the Kingdom. She also met with officials at the Crown Prince Foundation (CPF) and discussed the strategies undertaken at the Orange Foundation, CPF, and possible future cooperation between both entities. Albanel visited the "Makani" center supported by Orange Foundation in 2015, through offering digital educational kits to students attending the center, including tablets that contain the official school curriculum for students who are unable to receive any form of formal education. Throughout her tour, she also visited the BIG platform; Orange Jordan's growth-mode accelerator program, where she spoke with female entrepreneurs who joined BIG's previous seasons such as "360 Moms", "Sittat Byout", "Masmou3", Co-De, and Waragami, and listened to their future strategies, and ways of support and partnership.



SUDATEL is Officially AICTO Associate Member

In collaboration with Sudatel Telecom Group as strategic partner, The Arab Information & Communication Technologies Organization (AICTO), has organized the First Interregional Smart Agriculture Forum (ISAF©) under the high patronage of the Presidency of the Republic of Sudan, in partnership with the Arab Authority for Agricultural Investment & Development (AAID), in Khartoum, Sudan during the period 24-26 September 2018. This high level forum, was the first step towards Sustainable Agricultural Development by Introducing IoT and New Technology Trends. ISAF 2018 has gathered about 1000 participants from both the Agricultural and the technological fields coming from the Arab and African regions including: Ministers, deputy Ministers, high level governmental officials, regional and international experts, academics, In marge of this event, AICTO has signed a MoU with Sudatel Telecom Group as a new Strategic partner to join its associate members. Sudatel Telecom Group (STG) is one of the leading telecom companies in the region, serving the

needs of customers in Sudan and Africa. Since its foundation on 7th March 1993, STG has grown steadily from local to regional markets, setting a good example for privatization policy. STG is the bridge for telecommunication movement between the Arab world, Africa and the rest of the world.





Telecom Egypt Reveals Motives behind EISCC Acquisition

Egypt Telecom said that acquiring a stake in the Egyptian International Submarine Cables Company (EISCC) aims at a complete acquisition in the Middle East and North Africa Submarine Cable Company (MENA-SCS), according to the company's Investor Relations Director. Sarah Shabayek told

that the deal valued at \$15 million aims at completing the acquisition of MENA-SCS. Telecom Egypt does not currently plan any more acquisitions in the field of submarine cables. In mid-September, Telecom Egypt had revealed that EISCC had completed the acquisition of Middle East and North

Africa Submarine Cable "MENA Cable" from Orascom Investment Holding "OIH" with a total cost of \$90 million. For the first half of 2018, the state-owned landline monopoly's net profit fell 18.2% to EGP 2.06 billion, from EGP 2.52 billion in H1-17.

Telecom Egypt, TMG Holding Ink Digital Transformation Deal

Telecom Egypt (TE) has signed an agreement with Talaat Moustafa Group Holding (TMG Holding) to launch new

services for smart cities and digital communities. Upon the deal, both firms will provide current and future smart

cities with the latest technologies in the telecommunication and information technology, the telecom firm said in a filing to the Egyptian Exchange (EGX). This step comes within the framework of TE's strategy to achieve digital transformation and turn Egypt into a regional hub for data and a main internet platform for smart solutions, according to the filing. In September, TE announced that its board approved the acquisition of 50% of its subsidiary Egyptian International Submarine Cable Company "EISCC" at a value of \$15 million. In August, the state's landline monopoly said it entered a strategic partnership with India's market leader Bharti Airtel for global submarine cable systems. The deal would allow the Indian telecom firm the indefeasible right of use (IRU) on Middle East North Africa Submarine Cable (MENA Cable) and TE North Cable Systems.



VIVA Participates in 38th GITEX Technology Week in Dubai

VIVA, Kuwait's fastest-growing and most developed telecom operator, announced its participation in the 38th GITEX Technology where its professional team featured latest range of products and services. The International GITEX Technology Week 2018 taking place from 14 – 18 October 2018 in Dubai at the Dubai International Convention and Exhibition Centre. On this occasion, Eng. Salman Bin Abdulaziz Al-Badran, VIVA's CEO, said: "We are honored

to take part in GITEX for the seventh year in a row. It is an exciting experience for VIVA to participate in one of the world's most anticipated IT and technology exhibitions". He added, "Our participation in the GITEX Technology Week 2018 comes in line with our corporate strategy to extend and present our services not only locally, but on a regional scale. We strive to provide smart solutions for both enterprises and individuals that keep them abreast to

global development." Alongside VIVA, Saudi Telecommunication Company (STC) showcased its latest products and services through team of professionals. GITEX Technology Week is the largest event in the Middle East, Africa and South Asia, where all technology leaders participate and identify the most important global trends in the technology industry in the modern sectors, and reveal the latest advanced products and services.



Zain Kuwait Partners with Cisco Meraki to Deliver Cloud-Based Solutions to Enterprises in Kuwait

Zain Kuwait, the leading digital service provider in the country, announced a strategic partnership with Cisco to deliver secure, cloud-based, managed network solutions to enterprises of all sizes in Kuwait. This partnership aims at empowering a more efficient enterprise sector in Kuwait in alignment with the country's National Development Plan (New Kuwait 2035). Zain will provide enterprise customers in Kuwait innovative and smart solutions, powered by Cisco Meraki that can deliver secure, high-performance network experiences. The solutions cater to businesses of all sizes, allowing them to manage their IT infrastructure from the cloud through an intuitive, web-based dashboard. The solutions also promise faster time to market and better end-user experience, while helping to reduce operational costs and create new revenue streams through Wi-Fi and network monetization. Eaman Al Roudhan, Chief Executive Officer of Zain Kuwait, commented: "At Zain, we are committed to further expanding our partnership ecosystem with global technology leaders like Cisco to empower a more efficient enterprise sector in Kuwait. Enterprises are the backbone that drives Kuwait's economic progress, and our partnership to offer them Cisco Meraki's smart solutions comes in line with our capabilities as an active partner in achieving the goals of the Kuwait National Development Plan (New Kuwait 2035). Zain's strategy is centered around digital transformation leadership and, by signing this partnership, we reaffirm our commitment to meet our enterprise customers' aspirations, and deliver on our promise of unlocking opportunities and offering unrivalled services and latest technologies." Stephen Koza, Head of Service Provider Worldwide Sales, Cisco stated: "Cisco Meraki is proud to partner with Zain Kuwait on their mission to be a leader on the path to digital transformation in Kuwait. With Meraki's innovative network infrastructure, built around simplicity and managed through Meraki's web-based dashboard, we know this partnership will allow Zain to deliver their customers a secure and high-performing network experience. We are excited to help deliver a solution



that will allow Zain's customers to scale and accelerate their growth in Kuwait and beyond. "As Kuwait accelerates its digital transformation initiatives, the proliferation of mobile devices and heightening user expectations are forcing businesses to rethink their network requirements, especially for Wi-Fi. Cisco Meraki's simplified, powerful cloud-managed technology will allow Zain to fulfil the wireless requirements of SMBs and enterprises in Kuwait, and offer them the intelligence to help grow their businesses. With this innovative, wireless, cloud-managed network solution, Zain will be able to solve networking and business enablement challenges for their customers," concluded Ali Amer, Managing Director, Global Service Provider Sales, Cisco Middle East and Africa. For instance, The Wi-Fi solution has a feature-rich, easy-to-use dashboard that allows customers to centrally manage their Wi-Fi infrastructure at multiple locations and gain visibility into network users, devices and applications. Armed with rich, location-based analytics, administrators will be able to quickly create access control and application usage policies, optimizing both the end-user experience and network security, all from a single portal.

Zain Concludes Strategic Partnership of the Challenge Competition

Zain, the leading telecommunications company in Kuwait, concluded its strategic partnership of The Challenge competition organized by Engineers Without Borders. The conclusion ceremony was held at Holiday Inn Hotel under the patronage and presence of HE Minister of Social Affairs and Labor and Minister of State for Economic Affairs Hind Al Sabeeh. Zain's support to the competition came in line with its Corporate Sustainability and Social Responsibility strategy, which closely focuses on contributing to the development of the youth sector and the encouragement of various student activities. The company

partners with many organizations, including student bodies, to invest in education, which is considered an essential element of the further progress of national economy. The Challenge competition, which was organized by Engineers Without Borders and lasted for 10 months, included a series of events and academic activities aimed at engineering students from the College of Engineering and Petroleum. The top 3 winning teams were announced during the competition's closing ceremony in which 25 teams competed for designing the best sustainable housing unit to be applied in refugee camps in Kenya. Zain's support

springs from the company's core Corporate Sustainability and Social Responsibility strategy. The company believes that supporting initiatives such as this one provides young people with skills and tools necessary to help them highlight and develop their skills, ultimately contributing to the further progress of national economy. As a leading national company, Zain firmly believes in the importance of contributing to the progress of the youth sector, and looks to empower and prepare the nation's youth for the important roles they will play in the further progress of the country.

Zain Drone Services Launched in Kuwait

Zain Group, the leading mobile telecom operator in eight markets across the Middle East and Africa, announced the launch of its pioneering Zain Drone service in Kuwait, with the plan to expand its operation to other markets across the Zain footprint in due course. The launch was announced at a showcasing ceremony held in the Zain booth on the second day of GITEX Exhibition and Technology week held in Dubai, attended by Zain Group and Zain Kuwait executive management, many distinguished Kuwaiti ministry officials and economic identities as well as Kuwait and regional media. Zain Drone as-a-Service (DaaS) is set to unlock opportunities in various industries to fast-track growth and exploit the Internet of Things (IoT) in an efficient, safer and faster way. It will offer state-of-the-art bespoke drone solutions and provide advanced analytics for governments and businesses. Zain Drone will offer multiple solutions across core industries such as Oil and Gas (Flare Inspections), Utilities (Power Line Inspections), Construction (BIM), Infrastructure (Asset Inspections), Security, Real Estate, Telecom Infrastructure, Agriculture and other similar type industries. The service will facilitate the gathering of image data concerning work advancement through measurement of key parameters, assessing image data to evaluated compliance with original designs, and performing automated stock-taking along with reducing accidents and human errors. Zain has created a corporate entity to focus on the delivery of the drone-powered solutions, building upon its pioneering position in digital innovation across all markets in which it operates. Zain Drone is investing heavily to build the required capabilities in drone operations and is positioning itself to become the leading strategic partner in the fast-developing markets for unmanned data acquisition. Zain Group Vice-Chairman and CEO, Bader Al-Kharafi commented, "The disruptive power of drone solutions will bolster efficiency for many businesses and government entities across the MENA region. This technology is maturing and growing exponentially across Europe and US, and we are confident that the MENA region will embrace drone powered solutions."



Al-Kharafi added, "As a leading innovator we shall continue to invest heavily in Zain Drone services, positioning ourselves favorably to maximize the many valuable opportunities in the area, while at the same time fulfilling our digital transformation strategy of offering unique and business enhancing services." Zain enjoys solid in-house expertise in drone technology, drawing from international experts, and enjoys unparalleled knowledge of the enterprise market in Kuwait and across the region. Given Zain's long history in the region, the company also possesses solid relationships with government entities, having deep experience in collecting, transferring, storing and processing huge quantities of data in a reliable and trusted manner. Furthermore, Zain has the distinct advantage of offering reliable connectivity with an extensive network of towers across its regional footprint (22,000+), and enjoys vast experience in cloud infrastructure, system integration and data analytics. With its range of complementary services and integrated reporting leveraging data from drone, Zain Drone will be able to offer additional services including unified communications, fleet management, control rooms, and managed services. Additional use cases for Zain Drone -as-a-Service also exist in drone border security, offering aerial control over state borders by providing high-resolution

image data from high-altitude fixed-wing drones. Sensors providing visual and thermal video footage for traffic and event identification can also be implemented. Zain Drone has application in mass control environments and emergency situations, as well as in media services with respect to live and high-resolution streaming. Zain Drone will also offer Artificial Intelligence-enabled autonomous drone systems that will improve business decisions with its access to high accuracy data, while reducing manpower costs by requiring minimal human interaction. AI drones are capable of self-diagnostics, self-charging, and autonomous navigation utilizing a set of sophisticated sensors and high accuracy data. Another application powered by Zain Drone will be a suite of Anti-Drone solutions to assist governments and security forces to identify and passively monitor unauthorized drones that threaten safety, security and privacy. This is achieved by using a combination of proprietary multi-sensor detection technologies, an enterprise-grade network, real-time alerts and the collection of digital evidence. The power of Drones in quick deployment and capturing precision data at various altitudes is extremely beneficial for business planning and decision making. Drones are simply faster, more reliable and cost efficient.

Zain Uses Its Technological Capabilities to Achieve New Kuwait Vision at GITEX

Zain Kuwait inaugurated its dedicated booth at the Gulf Information Technology Exhibition. The international event is hosted in Dubai until Oct 18, where technology leaders and pioneers gather under one roof for five days to showcase the latest tech applications that will enrich the digital world's revolution. The opening ceremony witnessed the visit of Sheikh Hamdan bin Mohammed bin Rashid Al-Maktoum, Crown Prince of Dubai and Chairman of the Executive Council of Dubai, where he was welcomed by Zain Group's Vice Chairman and Group CEO Bader Nasser Al-Kharafi and Zain Kuwait's Chief Executive Officer Eaman Al-Roudhan, with the attendance of Kuwait's General Consul in Dubai Thiab Al-Rashidi as well as Zain's executive management and Zain's strategic partners from global firms. During his tour at Zain's booth, Sheikh Hamdan expressed his admiration of the leading role Zain plays in transforming the telecom sector in the Middle East, as well as the company's efforts in advancing innovation within the enterprise sector that witnesses constant leaps of change in the region's markets. Zain's participation in this global event, organized by the Dubai World Trade Center and featuring the biggest global companies, organizations and entities from the telecom and IT industry, came to stress the importance of this event within

the telecom sector, as it is considered one of the biggest events in the industry around the world. Zain's participation highlights its efforts to achieve its strategy to enrich its transformation into a fully-integrated digital service provider. Zain started its digital transformation journey by launching many smart services and solutions to both consumers and businesses throughout the past two years. Zain is participating as the only telecom company that represents Kuwait in this leading global and regional event amongst the presence of international firms. Through its participation at GITEX Technology Week, Zain aims to showcase its capabilities as an active partner in achieving the goals of the Kuwait National Development Plan (New Kuwait 2035) that stems from HH the Amir Sheikh Sabah Al-Ahmad Al-Jaber Al-Sabah's conceptualized vision of a new Kuwait by 2035, which is based on five expected outcomes and seven key pillars. Through its booth at GITEX, Zain provides the technologies required under each of the 7 Pillars to achieve the goals of the Kuwait National Development Plan. At GITEX, Zain offers its latest innovative solutions for empowering a smart life, a safe community, and an efficient business sector based on the 7 Pillars of the Kuwait National Development Plan, which are Smart Security, Smart Education, Smart

Health, Smart Mobility, Smart Living, Smart Economy, and Smart Infrastructure. The smart solutions Zain showcases at GITEX includes solutions for Smart Security, like access control, identity management, mass notification, video surveillance, intercampus communications, and business intelligence. Solutions for Smart Education include connected classrooms and virtual classrooms. Solutions for Smart Healthcare include remote chronic illness management, remote medical collaboration solutions, healthcare cloud services, and more. Zain's smart solutions also feature solutions for Smart Mobility, including smart parking, remote monitoring, and smart public signage. Solutions for Smart Living include smart districts, energy management, facility management, smart metering, smart lighting, smart benches, digital signage, and smart waste bins. Smart Economy solutions include the smart investment platform, E-Wallet, payment platform, and smart retail. Finally, Smart Infrastructure solutions include the integrated DNX Platform, which enables all individual services to run in a cohesive environment, and synergizes across applications by fusing data and analysis to provide a 360-degree platform view for digital service development, management, and operations. During GITEX, Zain also greatly focuses on showcasing the full capabilities of the integrated 5G technology that it started investing in last June, which represents a quantum leap in the operational efficiency of Zain's network in Kuwait, and makes Zain one of the first companies in Kuwait and the region to adopt this solution to meet the ever-growing needs of its individual and enterprise customers, as well as support the expansion of digital transformation applications. Zain's participation at GITEX will also include the showcasing of the company's artificial intelligence (AI) and Internet of Things (IoT) solutions, which extend to serve numerous essential sectors and industries. The company designed these solutions specifically to enrich its leadership as an active partner in creating the future of smart life in Kuwait. In addition, NXN, Zain's smart



city arm, is also present at GITEX to offer strategies and innovative smart solutions that achieve the New Kuwait vision goals, especially in relation to increasing the efficiency of the infrastructures of the various government entities in the country, as well as developing areas of education, health, security, community safety, and economic progress. Zain affirmed that it is committed to expand in smart life and digital transformation applications

to participate with the public sector in executing the seven pillars of the New Kuwait 2035 vision to enrich economic development and digital diversity, along with its strategic partners. Zain's strategy is centered on digital transformation leadership and empowering the community to enjoy a smarter portable lifestyle, as well as using advanced technology and Zain's long experience to enable an easier and more flexible life. The company places itself

as an active partner in creating the future of smart life in Kuwait. Zain's participation at GITEX Technology Week contributes to prove the company's full potential in triggering the digital community, and will enrich its collaborations in Telecom and IT areas with its strategic partners on multiple levels. The company's participation in such global events will motivate its efforts to becoming a fully integrated digital lifestyle provider.

Zain Kuwait, Samsung and Al Babtain Turnkey Solutions Sign MOU to Fast-Track Enterprise Digital Transformation with IoT

Zain Kuwait, the leading digital service provider in the country, announces a strategic partnership with Samsung and Al Babtain Turnkey Solutions to employ Internet of Things (IoT) solutions to accelerate the nation's digital transformation. This collaboration will facilitate the development of smart education, smart health, smart security and smart mobility solutions in line with Kuwait National Development Plan's smart government goals. The Memorandum of Understanding (MoU) was signed during GITEX Technology Week 2018, in which Zain Kuwait participated showcasing its B2B and Smart City offerings. Under the terms of the MOU, Samsung, as a global leader in innovation, will support Zain Kuwait in driving transformative and beneficial IoT innovation to create exciting opportunities for consumers and enterprises alike. Present at the signing ceremony were Chung Lyung Lee, President at Samsung Gulf Electronics, Mohammed Gharaibeh, Samsung's Regional Director, Enterprise Business Group, Eaman Al Roudhan, Chief Executive Officer of Zain Kuwait, Hamad Al Marzouq, Chief Enterprise Business Officer of Zain Kuwait and Mohammad AbdulAziz Al Babtain, Vice President of Al Babtain Turnkey Solutions Chung Lyong Lee, President at Samsung Gulf Electronics, said: "Some of the most exciting IoT innovations in the region have occurred within the business sector, where companies have been able to streamline business processes, increase productivity, and develop cutting-edge products and services. We have embarked on a digital journey with Zain Kuwait to transform its IoT initiatives - in line with its strategic road map to facilitate Kuwait

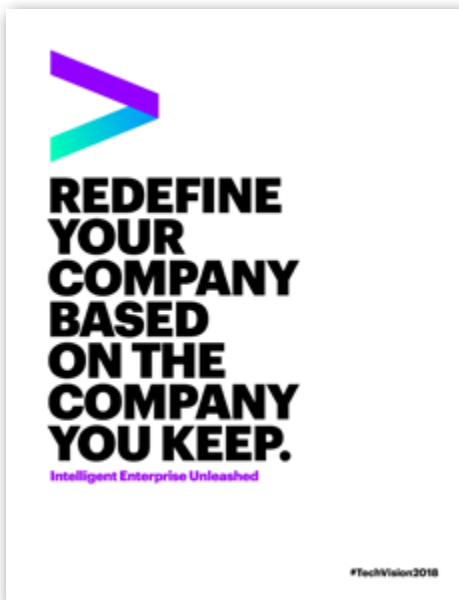


Vision 2035." Mohammed Gharaibeh, Samsung Gulf Electronics Regional Director, Enterprise Business Group, said: "Enterprise IoT is poised for strong growth because of its ability to improve the customer experience, boost productivity, and support the development of innovative products. Our collaboration with Zain Kuwait is aimed at developing IoT-enabled services that will potentially transform its business model and help it support Kuwait's innovation agenda." Eaman Al Roudhan, Chief Executive Officer of Zain Kuwait, said: "We are pleased to expand our partnership ecosystem with global technology companies like Samsung to enhance our IoT capabilities. We have started launching our first waves of digital products within our Zain Life brand that we launched in April this year to promote the digital lifestyle of our consumers. We have also set the foundation to empower the achievement of our country's vision (New Kuwait 2035), and this MoU will definitely

be used to support it". Hamad Al Marzouq, Chief Enterprise Business Officer of Zain Kuwait, said: "IoT is also taking a leading role in today's digital revolution with a wide variety of business applications around the world. Through this MoU with Samsung to exchange global best practices in IoT and promote a 360-degree view of technologies, we will make our services more valuable and efficient enabling us to further drive Kuwait's digital transformation." Mohammad AbdulAziz Al Babtain, Vice President of Al Babtain Turnkey Solutions said: "With the potential to address future challenges, there is great promise in the role of digital. Zain Kuwait's collaboration with Samsung to use IoT to facilitate enterprise digital transformation shows its commitment towards investing in pioneering solutions to not only enhance its business operations and support Kuwait's innovation agenda, but also ensure value and convenience for consumers in Kuwait."



Accenture: UAE Companies Must Make Strategic Shifts to Unleash the Intelligent Enterprise



Rapid advances in artificial intelligence (AI) and other technologies are accelerating the creation of intelligent enterprises and enabling companies to integrate themselves into people's lives, according to Accenture Technology Vision 2018. The annual technology report from Accenture (NYSE: ACN) forecasts key technology trends likely to disrupt business over the next three years. However, capitalizing on growth opportunities while also having a positive impact on society requires a new era of leadership that prioritizes trust and greater responsibility. As part of the Technology Vision, Accenture surveyed more than 6,400 business and IT executives worldwide. Four in five respondents in UAE (80 percent) agree that through technology, companies are weaving themselves seamlessly into the fabric of how people live today. This year's report, "Intelligent Enterprise Unleashed: Redefine Your Company Based on the Company You Keep," lays emphasis on the way rapid advancements in five specific technologies are enabling companies to not just create innovative products and services but change the way people work and live. As a result, this is changing companies' relationships with their customers and business partners. "The UAE continues to witness the exponential speed at which technology is disrupting industries; and as a future-focused country,

is fortunate to have the mindset required to leverage these technology advancements. This year, our Technology Vision 2018 aims to help companies succeed and grow their digital transformation to realize the potential of their intelligent enterprise." said Alexis Lecanuet, Regional Managing Director Accenture Middle East & Turkey. "To do so, it requires the creation of reliable principles that focus on establishing trust with clients and business partners. As a result, companies' commitments to such partnerships enable them to invent new products and services that meet customers goals. Inevitably, this is what will allow for further growth and differentiation." The Technology Vision identifies five emerging technology trends that companies must address if they are to build the partnerships needed to succeed in today's digital economy:

Citizen AI: Raising AI to Benefit Business and Society. As artificial intelligence (AI) grows in its capabilities, so does its impact on people's lives. Businesses looking to capitalize on AI's potential must acknowledge this impact, "raising" AI to act as responsible representatives of their business. Results have concluded that 77 percent of UAE executives agree that AI is advancing faster than their organization's pace of adoption. Leaders have also responded that AI will work side by side with humans in the coming years as a co-workers, collaborators, and trusted advisors (74 percent). However, when it comes to understanding the extent of which employees understand the general principles (data, criteria, etc.) used to make AI-based within an organization, 12 percent of UAE executives reported their employees have a full understanding on the process.

Extended Reality (XR): The End of Distance. Virtual and augmented reality technologies are transforming the ways people live and work by removing the distance to people, information and experiences. In the UAE, 86 percent have reported it will be important to leverage XR solutions to close the physical gap when engaging with employees or citizens, while 85 percent claimed it is important for their organiza-

tions to be a pioneer in XR solutions, especially in the customer service and product development industries.

Data Veracity: The Importance of Trust. By transforming themselves to run on data, businesses now face a new kind of vulnerability: inaccurate, manipulated and biased data that leads to corrupted business insights and skewed decisions. To address this challenge, companies must follow a dual mandate to maximize veracity and minimize incentives for data manipulation. Case in point: While 75 percent of UAE executives agree their organizations are using data at unprecedented scale for critical and automated decision making, only 59 percent report frequent validation of data from ecosystem partners

Frictionless Business: Built to Partner at Scale. Businesses depend on technology-based partnerships for growth, but their own legacy systems aren't designed to support partnerships at scale. To fully power the connected Intelligent Enterprise, companies must first re-design themselves. Moreover, 60 percent of UAE IT executives have reported an increase in the use of microservices over the next year, while 69 percent expect to integrate blockchain in their organizations' systems within the next three years.

Internet of Thinking: Creating Intelligent Distributed Systems. Businesses are making big bets on intelligent environments via robotics, AI and immersive experiences, but bringing these intelligent environments to life will require not only adding key skills and workforce capabilities, but also modernizing current enterprise technology infrastructures. In fact, 71 percent of the UAE's executives agree the next generation of intelligent solutions are moving into physical environments; while 85 percent agree that to support real-time insights and actions, organizations need a renewed focus on custom hardware and hardware accelerators. For nearly 18 years, Accenture has taken a systematic look across the enterprise landscape to identify emerging technology trends that hold the greatest potential to disrupt businesses and industries.

Nabta Startup Wins First Place at Accenture Innovation Awards during GITEX Technology Week

Accenture has recognized leading startups at its second Accenture Innovation Awards held during GITEX Technology Week 2018. The initiative, in partnership with Expo 2020 Dubai, Fintech Hive at DIFC and Etisalat Digital, recognizes up-and-coming start-ups that play a major role in changing and improving aspects of people's lives. The awards are part of the company's vision to support emerging talent and identify forward-focused ideas that use technology to solve tomorrow's challenges. Startups from around the world have applied for the Awards, and shortlisted participants had the chance to present their ideas in front of a jury comprising of senior executives from Accenture, Expo 2020 Dubai, Fintech Hive at DIFC and Etisalat Digital. Winners were chosen across three categories: Artificial Intelligence, Fintech and Social Impact. The overall winner of the all-expenses paid trip to Silicon Valley, with Accenture assisting them in investor relation meetings: "Nabta" for their healthcare app that empowers women to manage their own health by seamlessly integrating traditional forms of care with the latest technologies. The winner of the Fintech category with an automatic placement at the Fintech Hive Investor Day in November 2018: "Slidr" for their e-commerce marketplace which uses a dynamic pricing technology that analyses consumer behavior patterns and decides price reductions accordingly. The winner of the Social Impact category with a fast-track to the live presentation stage of Expo Live Innovation Impact Grant Program in March 2019: "Tareeqi" for their smart navigation app for both passengers and drivers that does not require GPS. The winner of the Artificial Intelligence category that will have the opportunity to participate in Future Now by Etisalat Digital, the Open Innovation program of Etisalat Digital that includes mentoring, training sessions, access to co-working spaces and the network of clients of Etisalat: "Nabta" for their healthcare app for women that empowers women to manage their own health by seamlessly integrating traditional forms of care with the latest technologies. "There is an incredible pool of talent in the region. Through Accenture's Innovation Awards, we are truly making a commitment to help startups grow within the ecosystem." said Xavier Anglada, managing director and Accenture Digital lead in the Middle East & Turkey. "We look for startups that will propel change and redefine the way things are done. Last year's awards presented a plethora of innovation. This year, we have seen innovation at a prominent level, as well as the readiness to innovate. The talent presented has been impressive, and we are proud to be able to recognize the startups and celebrate their success with them." Yousuf Cairas, Vice President of Expo Live – Expo 2020 Dubai, said: "As Expo 2020's innovation and partnership program, we share Accenture's enthusiasm and its vision to encourage the use of technology to positively impact society. As the proud supporters of 70 Global Innovators from 42 countries, we are constantly inspired by the impact that these creative solutions to global problems are having. "We believe that innovation can come from anyone, to anywhere,



and we are especially excited to see more social innovators from the region participating in the current cycle of our Innovation Impact Grant Program. They can apply at www.expo2020dubai.com/expo-live/Innovation#how-to-apply," he added. Francisco Salcedo, SVP, Etisalat Digital said: "We support the ecosystem of innovation by providing the tools that accelerate the growth of companies with Etisalat. That's why we have launched Future Now in GITEX 2018. We look forward to working with the winners of 'Accenture Innovation Awards', by giving access to our robust network and digital platforms to build viable products and new revenue streams. Raja Al Mazrouei, Executive Vice President of FinTech Hive at DIFC, said: "We are thrilled with the quality of the ideas presented by the startups during this competition. It's our pleasure to partner with the Accenture Innovation Awards that represent a great platform to recognize the startups' innovations. FinTech Hive at DIFC will give the winner a chance to showcase its solutions in front of potential investors and partners from the region's financial industry at the Investor Day. We look forward to see these smart and innovative ideas come to life."



5G Could to Generate US\$270 Billion for Regional ICT Sector. Analysys Mason



5G could generate almost \$270 billion for the regional ICT sector in the next decade, according to new research conducted by ICT leader Huawei in partnership with Analysys Mason, a global consulting and research firm. Titled "Unlocking Digital Opportunities with 5G", the White Paper takes a deep look at the impact 5G will have in the GCC, comparing the country readiness of five different markets with key international benchmarks, and makes recommendations on how operators and governments can capitalize on the technology. The data leaves no doubt that investing in 5G is worthwhile: in the GCC alone, 5G will provide a cumulative new revenue opportunity over ten years totaling \$269 billion, with about 50 per cent of this addressable by operators, and the rest by other ICT players. To arrive at this sum, Analysis Mason and Huawei identified the top fifty use cases for 5G, splitting them into short-term and long-term. For the first phase, enhanced Mobile Broadband (eMBB), connected health, connected cars and smart city applications were the most common sectors to be at the center of the 5G business plan. After that, robotics and drones, VR and transportation move into the top priorities, along with continued enhancement of MBB. Overall, VR for on-demand video streaming and VR for 4K/8K live video streaming use cases

have the most potential to profit operators in the region. Given 5G's wide-ranging applicability, the Whitepaper makes the case that a digital, sliceable platform is critical to 5G success, as it offers agility and adaptability. Flexibility to address new use cases, even unforeseen ones, as they emerge, quickly and cost-effectively, is critical to commercial success in the 5G era. In line with this necessity, the paper advises regulators to promote policy neutrality and open spectrum to accelerate commercial deployment. The research finds that the GCC is well poised to deploy 5G, with the UAE in particular being the most 5G-ready country in the region. In order to strengthen this position, the Whitepaper calls for collaboration between operators and vertical industries. Those operators which develop close relationships with the industry sectors, such as enterprise and healthcare to trial projects, will be first to unlock profit from 5G. The paper was unveiled at the 5G Ecosystem Conference hosted by Huawei on the sidelines of the 3rd annual Middle East Innovation Day in Dubai, UAE. Under the theme "5G is Now, Sailing to New eMBB Horizons," the conference promoted a 5G Ecosystem in the Middle East by bringing together operators, regulatory agencies, industry leaders and other stakeholders to discuss 5G from a business, policy, and industry perspective. Opening the conference, Mr. Bocar BA, CEO, SAMENA Telecommunications Council said: "SAMENA Council is engaged and working closely with Huawei, telecom operators, governments' regulatory authorities and international organizations to create the enabling environment for the development of the 5G ecosystem. "Today's conference by Huawei has been a successful effort toward this objective, and it will bear positive impact on our industry's pace of 5G development and launch. 5G is highly important for the region's digital economy and, being so, will carry tremendous ramifications for socioeconomic progress in the region, for fostering improved understanding and collaboration among the stakeholders, and

for enabling the fulfilment of the global sustainable agenda." Tariq Al Awadhi, executive director Spectrum Affairs, UAE TRA, said: "Our stakeholders have been the key success. They have brought the knowledge and the expertise together to help us succeed in our endeavors." During the event, Huawei organized live trials of the most cutting-edge 5G uses cases. These included drone taxis, a Virtual Room (VR) showroom, and tele-operated driving. Huawei also signed memorandums of understanding (MoU), with key partners to strengthen the 5G Ecosystem, including with Media Pro, Orange Business Service, and TPCast. Certificates were awarded to Internet of Things (IoT) organizations who have demonstrated outstanding value in the field of IoT. An Jian, President of Carrier Network Business Group, Huawei Middle East, said: "5G's impact will be far-reaching, profiting not only operators but also enterprises, consumers, and society through digital transformation." "Investing in 5G is thus an economic and social imperative. Today's 5G Ecosystem Conference is part of our effort to map out the industry blueprint for a fully connected, intelligent world driven by ICT. Our goal at Huawei is to provide strategic insight – and foresight – to our partners in both the public and private sectors, so that together we can navigate the Digital Transformation journey seamlessly, in an integrated and profitable manner. "As a major telecommunication solutions supplier, Huawei has setup strategic partnership in 5G areas with carriers, and signed six 5G commercial contracts in the Middle East out of 18 globally. In 2018, Huawei has formed a series of strategic partnerships with telecommunication operators in Kuwait, and has accomplished some significant 5G progress in the country," he added. In addition, a panel discussion titled "Promoting the growth of 5G Industry and Ecosystem in ME" was held to discuss the acceleration of the release of new spectrums for 5G deployment, the current regional 5G policies, the advantages of forming a 5G ecosystem, and the role of carriers in 5G enabling vertical industries.



Cisco Showcases the Power of AI at GITEX Technology Week 2018



At GITEX, Cisco unveiled its latest suite of technologies to support the Middle East's path to digital transformation. At a time of increasing pressure to embrace digitization, these innovations aim to help enable both public and private providers in the region to adopt cloud based solutions. Cisco will showcase its technologies under the theme of 'Secure, Intelligent Platform for Digital Business,' at GITEX 2018, from October 14 – 18, 2018, at the Dubai World Trade Centre. "Recent technological advances have significantly improved the capabilities of machine learning and artificial intelligence (ML/AI) systems. As a broad category of techniques and solutions, ML/AI has found many appealing applications: from chat-bots in customer service to personalized advertising in smart stores, to self-driving cars in smart transportation," said Shukri Eid, Managing Director – East Region, Cisco Middle East. "Cisco is providing the foundation for digitization. Through our unique and broad understanding of data, we have the opportunity to fully unleash the power of the network, gain actionable insights, protect our customers, and accelerate innovation. ML/AI technologies are already playing a critical role in delivering the secure intelligent platform for digital business," Shukri Eid concluded. The research firm Markets and Markets estimates the AI market will be worth \$5.05 billion by 2020. From data centers to blockchain, AI, IoT and big data, the world

is undergoing a paradigm shift to digitization. Underpinning this digital transformation are ICT solutions with cloud and enterprise computing at the core. At GITEX, Cisco will take customers through a connected journey based on its secure, intelligent platform for digital business where digital innovations will be brought to life through five pillars which include:

- **Reinventing the network:** Due to digitization, networks are more important than ever before, but have never been under so much pressure. The network industry is facing a new era because of the introduction of networks driven by intent. ML gives us the ability to analyze huge amounts of network data, from telemetry to traffic patterns, and understand what an anomaly is and what an optimal network configuration is. This results in intent-based networking, which is always learning, adapting and protecting. The network will redirect traffic on its own and heal itself from internal shocks, like device malfunctions, and external shocks, like cyber-attacks. Cisco's intent-based network is the result of years of research and development to reinvent networking for the future.
- **Powering a multi-cloud world:** Cisco brings together networking, security, analytics, and management and delivers cloud solutions that span a multicloud world. Whether it's a private, hybrid, or public cloud, or any combination of these, Cisco enables customers to embrace a multicloud world by simplifying how customers connect and protect their clouds. With the help of ML, we aspire to deliver a single user experience across clouds, including one policy and one instance of security by learning user preferences and application performance across private and public cloud platforms, for smooth, seamless operation.
- **Unlocking the power of data:** Cisco provides visibility to data from the network and is focused on delivering data and insights to support use cases ranging from infrastructure optimization to security threat intelligence. We give our customers the ability to derive value from data that's running across their network at the point in time it has most value.
- **Enabling employee and customer experience:** Cisco's collaboration technologies have the ability to connect people, teams and customers. AI is embedded in our collaboration portfolio and our employee and customer experiences through simplicity, automation and optimization with full contextual awareness of what is happening on the network.
- **Embedding security into the fabric of the network:** Security is foundational to everything we do... from the cloud to the endpoint to the network. The more variables we can see, the more correlations we can draw through ML, and the faster we can spot something unusual happening, investigate, and quarantine bad actors, applications or devices.

We look forward to showcasing our latest technology solutions alongside our strategic partners Intel, Alpha Data, NABS Integrated Technical Services and CNS Middle East who will be participating as sponsors to Cisco's GITEX stand.



Eutelsat, Intelsat, SES and Telesat Launch C-Band Alliance

Leading global satellite operators – Intelsat (NYSE: I), SES (Euronext Paris: SESE), Eutelsat (Euronext Paris: ETL) and Telesat announced today the creation of a consortium called the C-Band Alliance, or CBA, in a move that could accelerate making mid band spectrum available for 5G services. The CBA is designed to act as a facilitator as described in a recent U.S. Federal Communications Commission (FCC) proceeding featuring the companies' market-based proposal to clear a portion of C-band spectrum in the United States. The formation of the CBA is a significant achievement and demonstrates the industry alignment necessary to make

this mid-band spectrum available quickly, thus supporting the U.S. objective of winning the race to introduce terrestrial 5G services. The market-based proposal was developed in response to a proceeding initiated by the FCC in August 2017, which led to the Notice of Proposed Rulemaking (NPRM) that was formally approved by the FCC on July 12, 2018 and published in the Federal Register of August 30, 2018. The proposal reflects the unique U.S. telecommunications environment and aims to protect the quality and reliability of the extensive services provided by satellite operators in the C-band spectrum to U.S. broadcasters, media, and data

companies. The proposal establishes a commercial and technical framework that would enable terrestrial mobile operators to quickly access spectrum in a portion of the 3,700 to 4,200 MHz frequency band in the U.S., speeding the deployment of next-generation 5G services. The proposal specifies the use of a consortium, now known as the CBA, to undertake the technical and commercial implementation of the spectrum clearing process. This process is necessary to repurpose the C-band spectrum for use in a 5G environment. The CBA will be led, effective immediately, by Bill Tolpegin, currently CEO of OTA Broadcasting, who will serve as Chief Executive Officer of CBA. Media sector veteran Preston Padden will serve as Head of Advocacy and Government Relations. A significant milestone in the progression of the proposal, the establishment of the CBA signifies that the satellite operators delivering the vast majority of satellite C-band services in the U.S. have agreed upon the key technical and commercial steps necessary to enable commercial implementation of the spectrum clearing process. The CBA also ensures that customer services are protected from potential interference as new wireless services are introduced into the cleared portion of the spectrum.



Facebook and Airtel Uganda Team Up to Improve Rural Connectivity

Airtel Uganda is partnering with Facebook and East African wholesale network operator Bandwidth and Cloud Services Group (BCS) to improve connectivity in underserved parts of northern Uganda. According to a report from PML Daily, the partners will roll out 800km of new fibre infrastructure in areas such as Gulu, Adjumani, Arua, Koboko, Nebbi and Kamdini. The project aims to provide backhaul networks covering more than three million people and enable future cross-border connectivity to neighboring countries. 'This will help improve performance and support upgrades to 3G and 4G in areas where operators are bandwidth-constrained,' said Airtel's Managing Director, Anwar Soussa.



Facebook Unveils Oculus Quest Standalone VR Headset

Facebook unveiled at the Oculus Connect 5 event its latest Oculus device, saying it is the company's first all-in-one VR headset with positional tracking on both the headset and the touch controllers. This

will allow people to look around in any direction and walk through virtual space as in the physical world. The Oculus Quest will cost USD 399 and start shipping in spring 2019.



Google Launches Home Hub for Full Smart Home Control

The Home Hub uses the AI powered Google Assistant, allowing users to access the company's YouTube, Search, Photos, Calendar and Maps app from its seven inch screen. Consumers can control more than 10,000 products, such as lights, home heating, smart TVs, from more than 1,000 manufacturers via a single interface. Previously consumers had to control devices through their dedicated apps. It said it deliberately eschewed a camera on the device to take account of recent privacy concerns surrounding digital companies. The Home Hub has been initially launched in the United States priced \$149 and the announcement coincides with Google revealing an updated version of its Pixel handset. The smartphone has a improved smartphone, screen and the ability to avoid spam calls by screening who is calling a device. Rick Osterloh, SVP of Hardware at Google, said: "There's a clear line from the technology we were working on 20 years ago [when Google launched] to the technology we're developing today—and the big breakthroughs come at the intersection of AI, software and hardware, working together." Earlier this week, Facebook chose to launch a new Portal range of video communication

devices regardless of a series of fears over privacy violations and negative publicity surrounding how the site is being used. The devices are available in 10 inch and 15 inch models and uses AI to power a smart camera feature that tracks callers around a room. Smart Sound also reduces the sound of background noise. Facebook announced last week that the personal

information of 50 million users had been exposed, its largest privacy breach to date. However, it said its Portal devices would include the ability to disable their cameras and microphones by a single tap. The devices also come with a camera cover and can be locked with a passcode. Facebook also said it does not listen to view or archive the contents of Portal calls.



Google's Abtal AI Internet to Protect Children



"We want children to learn how to protect their personal information online, avoid inappropriate content, hackers and spammers, while exploring the Internet with confidence," stated Tarek Abdalla, regional head of marketing at Google Middle East and North Africa, during the launch of one of Google's online free programs, 'Abtal AI Internet', which translated into English means 'Internet Heroes'. The multifaceted program that was opened to the public

at the end of September focuses on teaching children the fundamentals of digital citizenship and safety in Arabic. The program could be used readily by teachers, parents, and kids and is sure-shot help for all of them. For example, teachers will be able to download available classroom curriculum and lesson plans online that bring the fundamental Internet safety lessons to life. Abdalla explained that the company always encourage families to spend more time with their kids to teach them the fundamentals of digital safety. Through "Abtal AI Internet" program, children can learn how to protect their personal information, prevent themselves from online harassment – hackers or spammers – and be able to spot inappropriate content. "We believe in technology's power to unlock creativity and create opportunities for everyone including children. At the same time, we need to make sure children are informed, engaged and safe online to enjoy the opportunities that come from being connected in the digital age. We also conducted a survey with teachers in the Arab world to learn about their concerns," he said. Abdalla mentioned

that the result of the survey showed that the majority of teachers believe children should start learning about online safety at home, and 98 percent of teachers believe that online safety should be part of the school's curriculum. He explained that the program will equip educators and parents with resources to teach digital safety and citizenship through an impressive, fun, and unforgettable experience for children in the Arab world. This way, they can enable them to enjoy the opportunities that come from being connected in the digital age. When he was asked about how can families protect their children from the many disadvantages that the Internet brings? He answered that families play a pivotal role in protecting their kids on the web. That's why it's important to create an environment where kids are encouraged to speak up and discuss their concerns freely with their parents. "Parents are also encouraged to start teaching their kids the fundamentals of Internet safety at home. This topic shouldn't be scary, but rather, a challenge that can be solved," he added.





Huawei Launches the Atlas Intelligent Computing Platform

Huawei brought its Atlas intelligent computing platform to the Middle East at GITEX 2018. The Atlas intelligent computing platform is powered by the Huawei Ascend AI processor and mainstream heterogeneous computing components and integrates various forms of products, such as modules, cards, boards, edge stations, and appliances, to build an all-scenario AI infrastructure covering the end, edge, and cloud. As an important part of Huawei's full-stack AI solution, the Atlas intelligent computing platform unlocks supreme compute power to help customers embrace an AI-driven future and expedite the Middle East's intelligent transformation journey. The Middle East is one of the first regions worldwide to import Huawei's recently-unveiled revolutionary AI products and solutions. AI is a central aspect of national development plans and visions in the region to become diversified, knowledge-based economies; as AI becomes more advanced, it is becoming an all-purpose technology which will drive the development of all industries, creating new venues of innovation and growth. Huawei launched the Atlas intelligent computing platform in the Middle East to fuel the region's digital transformation. The Atlas intelligent computing platform is an evolution of the Atlas intelligent cloud hardware platform released in 2017. The new Atlas includes the terminal-facing Atlas 200 AI acceleration module, the DC-facing Atlas 300 AI acceleration card, the edge-oriented Atlas 500 AI edge station,

and the one-stop AI platform: Atlas 800 AI appliance, positioned for enterprises. Atlas 200 acceleration module: Packaged in a form factor half the size of a credit card, it supports 16-channel real-time HD video analytics. Deployed on devices such as cameras and drones, Atlas 200 consumes only about 10 W of power. Atlas 300 AI acceleration card: It comes in a half-height half-length PCIe standard card form factor, and is positioned for data center and edge server scenarios. The Atlas 300 acceleration card supports multiple data precisions, and delivers up to 64 TOPS INT8 by a single card. It provides superior compute power for deep learning and inference. Atlas 500 AI edge station: The industry-leading edge product integrates AI processing capabilities, and supports 16-channel HD video processing in the size of a set-top box, delivering a 4x performance over existing products in the marketplace. The AI edge station is well suited for a broad range of applications, such as transportation, nursing and care, unattended retail, and smart manufacturing. Atlas 800 AI appliance: Based on the standard framework and programming environment, it provides an optimized AI environment and pre-installed software library of the definition layer, and is ready to work 2 hours out of the box. In addition, the AI appliance integrates management software for cluster management and job scheduling, and system-level performance monitoring capabilities, greatly reducing the entry

requirements for enterprise AI application. To accelerate AI implementation, Huawei also released its AI Developer Enablement Program. The program will help Huawei collaborate with developers, partners, universities, and research institutions. Huawei will use the program to build a better development ecosystem that can support AI resources, platforms, courses, and joint solutions. Taha Farooque Tungekar from Huawei said, "Huawei recently launched the world's first AI IP and chip series designed for a full range of scenarios, and we are eager to work with our customers and partners in the Middle East to customize our AI products and solutions to meet local business challenges and uplift Middle East organizations to the next level of efficiency and profitability. We are excited to launch the Atlas Intelligent Computing Platform here at GITEX as it brings us a step closer to creating an AI ecosystem to drive forward the region's digital transformation." The Huawei IT Product Line has been pursuing the philosophy of "Intelligent IT Inspires Digital Future", and strives to infuse intelligent technologies into IT infrastructure, leveraging innovative technologies such as AI, chip technology, and architecture breakthroughs to help customers accelerate the digital and intelligent transformation. Up to now, Huawei's intelligent computing products have served more than 5000 customers worldwide. According to Gartner's report, Huawei servers ranked No. 4 by global shipments in the first quarter of 2018.



Huawei Jumps Fully into AI, Offers New Energy Friendly Network Range

Huawei has launched a new series of AI chips that it said could power future network infrastructure and devices, as well as announced new energy efficient hardware. The Ascend 910 and 310 chips that were announced yesterday (9 October) are aimed at delivering maximum computing power at data centers as well as enabling energy efficiency. The new products form part of a wider AI portfolio which spans chipsets for operator oriented neural networks, software for device, edge and cloud computing, as well as AI for industrial IoT. Huawei Rotating Chairman Eric Xu said: "Huawei's AI strategy is to invest in basic research and talent

development, build a full-stack, all-scenario AI portfolio, and foster an open global ecosystem." The vendor said its next steps are to invest further in AI research, build a new full-stack portfolio and strengthen its existing range, develop an open ecosystem and drive operational efficiencies at the company by using artificial intelligence. In a separate announcement, Huawei said it is launching new energy efficient network infrastructure products to reduce the capex required for site modernizations. It cited internal research that suggested 70 percent of operator sites would have insufficient power for 5G networks. It is positioning its new 5G Power range as a

means of overcoming these challenges, improving energy efficiency and reducing capex. The range uses peak shaving, linked voltage boosting and energy slicing technology across its hardware. Tao Hongming, President of Huawei Telecom Energy Business, said: "Based on deep understanding of pain points carriers are facing in the progress of network evolving, Huawei 5G Power Solution achieves end-to-end synergy from wireless network to telecom energy, which will further enable carriers to build networks quickly, reduce site energy consumption, and maximize their investment value."

Huawei Collaborates With HEC to Launch ICT Competition Pakistan 2018-19

Huawei has collaborated with Higher Education Commission in launching its 3rd ICT Competition in Pakistan. Together with HEC, Huawei has launched the Huawei Authorized Information and Network Academy (HAINA) program as well. There are 14 academies for now, but the plan is to take the number to 30 academies in a year's time. This program provides opportunities to promote studies of advanced technologies through R&D and adopt Huawei's globally renowned university-enterprise cooperation model. The ICT Competition will help enhance the quality of future ICT professionals in

Pakistan, along with increasing national ICT competitiveness and supporting local students across Pakistan. In 2018, the 3rd ICT competition aims to motivate more students into registering for the competition and elevate their ICT talent. Huawei is focusing on holding awareness seminars, workshops and preliminary rounds of this year's competition at Pakistan's 14 running HAINAs starting from this month. Huawei is also visiting universities for road shows. The roadshows play an imperative role. They help to attract more students to participate in the Huawei ICT Competition, which will also bring more of them to

take Huawei Certification exam. These also promote a deepened cooperation and partnership between Huawei and its partners like HALPs and Huawei ICT Academies. Till now more than 10,000 students from reputable universities have registered. 5,000+ students will take the preliminary test, out of which 500 students will appear for the e-learning test. The top 100 students will take the lab test. The most competitive 6 students will be selected for the international round which will be held in Huawei headquarters in Shenzhen, China.

Kuwait National SMEs Fund, Huawei Sign MoU

Kuwait National Fund for Small and Medium Enterprise Development (SMEs) signed a memorandum of understanding (MoU) with Huawei, which aims to encourage and develop small and medium enterprises. National SMEs fund said in a press release that the MoU is designed to boost development of small and medium establishments, their competitive capacities in Kuwait, in addition to enhancing companies' advanced services in information technology and communications, as part of Kuwait 2035 vision. It added that promoting partnerships with global companies contribute to transference of knowledge, experience, boosting training and consultation in the IT sector. General Director of the National SMEs Fund Abdullah Al-Jouan and Huawei's executives were presented at the MoU signing ceremony. Also attending was Kuwait Minister of Commerce and Industry Khaled Al-Roudhan and China's Ambassador to Kuwait Wang Di.



Huawei Hosts Innovation Day to Discuss AI Strategies and Upcoming Opportunities

Huawei, a leading global provider of information and communications technology (ICT) infrastructure and smart devices, held an Artificial Intelligence (AI) conference at their third annual Innovation Day on the sidelines of GITEX 2018. The event attracted industry experts and government leaders, including the guest of honor and keynote speaker, Mothanna Hamdan Gharaibeh, Jordan Minister of ICT, to strategize on the best path forward to bringing AI to the Middle East. Huawei organized the conference to foster a discussion on how the Middle East can best position itself to benefit from the imminent arrival of AI. The development of a national AI strategy must become a priority, as AI is a central aspect of national development plans and visions in the region to become diversified, knowledge-based economies. As AI becomes more advanced, it is becoming an all-purpose technology which will drive the development of all industries, creating new venues of innovation and growth. Mothanna Gharaibeh, ICT Minister Jordan said: "Investing in AI is an investment in the future. AI has the potential to solve many intractable challenges we are facing across industries today, by transforming the way we approach problems, and completing tasks more effectively and

efficiently than humans can. It will also free people from spending our labor on tedious and repetitive tasks, allowing us to use our minds to engage in high-level activities. Investing in Jordan ICT is not only valuable, it is also smart; Jordan is perfectly poised to benefit from the opportunities of AI – we have at our disposal a population of talented and innovative entrepreneurs. By continuing to invest in progressing the ICT industry, and its next evolution in the form of AI, we will open new venues of innovation and economic growth for organizations, and uplift the Kingdom to new heights of prosperity." Anwaar Al Shimmari, Chief Innovation Officer, Ministry of Infrastructure Development, UAE, gave a keynote about the benefits of AI in meeting global infrastructure demands and the ability of robots to deliver information faster, reduce costs and risks. She said: "Robots will use building facility management and asset management concepts to monitor and control infrastructure assets". The Middle East is one of the first regions worldwide to import Huawei's recently-unveiled revolutionary AI products and solutions. The AI conference was held just a week after Huawei Rotating Chairman Eric Xu announced the global launch of Huawei's AI strategy, as well as its full-stack, all-scenario AI portfolio. Huawei's

AI portfolio includes its new Ascend series of AI chips – the world's first AI IP and chip series designed for a full range of scenarios. The portfolio also includes new products and cloud services that are built on Ascend chip capabilities. With its full-stack AI portfolio, Huawei aims to provide pervasive intelligence to help drive industry development and build a fully connected, intelligent world.

Ten future changes: Driving Huawei's AI strategy

Huawei predicts that by 2025, the world will see upwards of 40 billion personal smart devices, and 90% of device users will have a smart digital assistant. Data utilization will reach 86% and AI services will be readily available, as prevalent as the air we breathe. According to Huawei, AI has become a new general purpose technology and will change all industries and organizations on earth. Proactive change is the first step towards a better future in AI. Huawei has defined ten changes that will help pave the way. They include:

- Faster model training
- Abundant and affordable computing power
- AI deployment and user privacy
- New algorithms
- AI automation



- Practical application
- Real-time, closed-loop system
- Multi-tech synergy
- Platform support
- Talent availability

These ten changes are not only Huawei's hope for the AI industry; they are the inspiration behind its AI strategy.

Huawei's AI strategy has five areas of focus:

Invest in AI research: Develop fundamental capabilities for machine learning in domains like computer vision, natural language processing, and decision/inference, etc. Huawei places special emphasis on machine learning that is:

- data and power-efficient (i.e., less data, computing, and power needed)
- secure and trusted

- automated/autonomous
- Build a full-stack AI portfolio:
- Deliver abundant and affordable computing power
- Provide an efficient and easy-to-use AI platform with full-pipeline services
- Make the portfolio adaptive to all scenarios, both standalone and cooperative scenarios between cloud, edge, and device

Develop an open ecosystem and talent: Collaborate widely with global academia, industries, and partners.

Strengthen existing portfolio: Introduce an AI mindset and techniques into existing products and solutions to create greater value and enhance competitive strengths.

Drive operational efficiency at Huawei: Apply AI to massive volumes of routine

business activities for better efficiency and quality.

Alaa ElShimy Managing Director and Vice President at Huawei Enterprise Business Group, said, "AI is on the verge of transforming industries and organizations across the world, and we are committed to helping our customers and partners make the most of the technology's potential to unlock innovation and economic growth. Right now the priority is for industry and government leaders to discuss which challenges and opportunities AI can most immediately address, to convert this cutting-edge technology into profitability for organizations. This AI conference will help us, and regional governments, succeed in our mission to position the Middle East for success in the age of AI."

Huawei Releases the AI Developer Enablement Program

Huawei, the leading global information and communications technology (ICT) solutions provider, has launched a series of all-new AI offering with the capabilities to drive industry development and intelligence and accelerate digital transformation. Huawei also released its AI Developer Enablement Program, which will help build an affordable, effective, reliable, and inclusive AI ecosystem. These announcements took place at HUAWEI CONNECT 2018 in Shanghai. Under the theme 'Activate Intelligence', the conference focused heavily on the challenges, opportunities, innovations, and practices of AI. Huawei's recently-launched portfolio includes a new Ascend series of AI chips – the world's first AP IP and chip series designed for a full range of scenarios. Huawei predicts that by 2025, the world will see upwards of 40 billion personal smart devices, and 90% of device users will have a smart digital assistant. Data utilization will reach 86%, and AI services will be readily available. Huawei states that AI has recently become a new 'general purpose' technology and will fundamentally change all industries and organizations on earth.

Unlocking Cloud Intelligence

During the event, Huawei also introduced the Huawei Cloud EI Intelligent Twins for cities – an upgrade of the Huawei Cloud Enterprise Intelligence services, which is powered by the latest Huawei AI chips.



Since its inception in 2017, the Huawei Cloud EI has explored more than 200 projects across eight industries, covering cities, manufacturing, and logistics. During this time, Huawei found that AI dramatically helps IT support systems evolve to production systems. "Combining AI with industry insight is difficult; and computing power is a major barrier to AI application," Jia Yongli, General Manager of the EI Product Department of Huawei Cloud BU, noted. Its cloud business unit also held a side-summit named The Innovative Path to Intelligent Cloud Data Centers, fronted by Hou Jinlong, President of Huawei's IT Product Line. The summit saw the release of Huawei's full-stack private cloud solution FusionCloud 6.5, and introduction of its new-generation, mission-critical cloud storage FusionStorage. These solutions add new capabilities to Huawei's substantial array of cloud and storage support, laying the foundations for building an intelligent world.

Intelligent Connected Vehicles

Huawei has also introduced Audi and unveiled their future plans together in the field of intelligent connected vehicles (ICV), featuring a demonstration from the new Audi Q7. As a leader in the field of vehicle technology, Audi is the ideal partner for Huawei, paving the way for the most intelligent and automated driving functions and experiences in the world. William Xu, Director of the Board and Chief Strategy Marketing Officer of Huawei, commented. "As cars get smarter, we take advantage of our leading ICT technologies with Audi – one of the world's most successful premium car brands – to lead automatic driving into the fast lane. Very soon, consumers will enjoy more secure, comfortable, convenient, and intelligent self-driving services."

Accelerating IoT with Bosch

Introducing more major global partnerships, Huawei invited leading technology supplier Bosch on stage at the

event to outline their plans for accelerating the development of Internet of Things (IoT) in China. "We are pleased to have the opportunity to collaborate with Huawei Cloud to offer cloud-based IoT services, providing various functions needed to connect devices and businesses," said Stefan Ferber, CEO of Bosch Software innovations. Bosch's software platform being utilized in the agreement connects web-enabled objects to facilitate data sharing across a multitude of digital services and business models. For example, one of the first services being made commercially available to Chinese consumers through the Huawei Cloud will be the Bosch IoT Remote Manager – a service that manages gateways, sensors, and devices.

Announcement of Global Industry Cooperation Plan

A Global Industry Organization (GIO) Roundtable was also held where Huawei promoted the digital transformation of industries, and discussed collaboratively building an intelligent world for the future. It also released a global industry cooperation

plan to promote collaboration across industries and fields of technology, digital transformation and AI democratization. As industry continues to integrate with information and communications technology (ICT), an intelligent society is on the horizon. Huawei is committed to bringing digital to every person, home and organization for a fully connected, intelligent world.

Updating Intent-Driven Network

Huawei also announced the update of its industry-oriented Intent-Driven Network solution. The solution helps to build a complete network system that enables digital transformation and maximum business value. The architecture of the system has three major benefits: service-centricity, E2E SLA guarantees, and open digital platforms. With the rise of AI and big data in enterprise networks forcing change across industries, this IDN will help enterprise customers build user experience-centric intelligent networks that bind the best of automation, big data and AI for the foreseeable future.

The AI Enablement Program

One of Huawei's final announcements was the release of its AI Developer Enablement Program. The program will help Huawei collaborate with developers, partners, universities, and research institutions. Huawei will use the program to build a better development ecosystem that can support AI resources, platforms, courses, and joint solutions. According to Zheng Yelai, vice president of Huawei and president of Huawei Cloud BU, Huawei's AI Developer Enablement Program offers a platform for technical communication, talent training, and innovation to developers, tutors, and Huawei partners. Huawei aims to build a sustainable ecosystem by focusing on a customer-centric strategy that yields mutually beneficial results for its members. By continuing to allocate resources and investments to the development of industry alliances, business alliances, open source communities and developer platforms, Huawei is looking to ramp up its efforts to facilitate the digital transformation of entire industries, while creating a symbiotic and vibrant community to support this shift.

Huawei Helps Monaco Telecom Open 5G in the Principality of Monaco

Only three weeks after the partnership with Huawei, Monaco Telecom unveiled its nationwide 5G mobile network at the Monaco Yacht Show. Monaco Telecom and Huawei finalized the agreement early September, in Beijing, in the framework of the State visit of H.S.H. Prince Albert II to China. On September 27, A 5G-connected UAV (Unmanned aerial vehicle) flying over the world's first yachting market broadcasted live 360 ° High Definition footage to a virtual reality headset. The first antennas are already installed in the pilot area of Port Hercule. The network will be completed in the coming months on 100% of the territory. It will be ready to welcome the first smartphones able to support this new technology running in 2019. The agreement was signed by Martin Péronnet, CEO of Monaco Telecom and Shi Weiliang CEO of Huawei France and Monaco. Frédéric Genta, Country Chief Digital Officer was also present to support this collaboration, aiming to give Monaco full 5G coverage. This will contribute to the rapid implementation of the Principality's Smart City projects, it will offer incomparable performance in Internet usage and it will advance the country's economic development. Areas as diverse as the automobile (autonomous cars), smart cities, health (3D imaging and holograms), gaming (interactive games) or communication (assisted translation) will take full advantage thanks to the 5G. Martin Péronnet, CEO of Monaco Telecom said: "This collaboration aims to shape the face of Monaco's digital future. The 5G network will be a key driver for digital economy and for the development of the smart-city. This partnership will facilitate and accelerate the process of offering Monaco, the

best quality of life in the world via digital technology". Added Shi Weiliang, CEO of Huawei France and Monaco: "It marks a new step in our collaboration which began more than five years ago, confirming the position of the Principality of Monaco as a world leader in terms of telecommunications networks. It is going to pave the way for a more rapid development of new "Smart Nation" type services for our citizens". Frédéric Genta, Country Chief Digital Officer, was delighted by partnership: "The launch of the 5G network underscores our ambition and our position as forerunners in the domain of connectivity, prior to the digital transition. At the same time, this proves that the digital transition of the Principality and the strategic plan of Monaco Telecom can only be achieved through close collaboration."



Huawei and Standard Chartered Partner to Develop Internet of Things Solution to Expand Ecosystem Lending

Huawei and Standard Chartered have announced that they are developing an Internet of Things (IoT) powered solution that could revolutionize the way corporates communicate with banks for financing or payments. Rather than corporates having to manually initiate these transactions through paper-based or emailed instructions, corporates' and banks systems will be able to 'speak' to each other in real-time, triggering financing or payment instructions through Application Programming Interfaces (APIs). The solution, unveiled during Huawei Connected 2018 in Shanghai last week, combines IoT and cloud capabilities so the bank will be able to track the movement of goods on a real-time basis, reducing operational risks and providing reliable data that can be used in financing decisions. Availability of real-time data enables straight-through processing for a wider class of use cases and can significantly reduce turn-around times, opening up possibilities for a broader range of financing solutions for manufacturers and their distributors. The IoT solution uses Huawei's OceanConnect, an open platform built on IoT, cloud computing, and Big Data technologies. With a cloud-based unified IoT device management capability as its core, it links up with connected devices and collects real-time data through a series of agents while providing user-friendly open APIs to application developers to design and orchestrate the business process. Commenting on

the partnership with Huawei, Dr Michael Gorriz, Group CIO of Standard Chartered said: "We are committed to delivering financial solutions to our clients across our diverse footprint and to bank businesses of all sizes. Technology can change the fundamental way we do banking. We found in Huawei a strong partner who shares our passion to transform the way we would like to support our clients and make banking seamless and effortless for them through the application of cutting-edge Internet of Things technology. We look forward to piloting the solution with clients and working with Huawei and other technology partners to explore new use cases." Qiu Lei, Vice President of Marketing and Product Solution Sales of Huawei Enterprise Business Group, said: "It is Huawei's mission to help create a fully connected, intelligent world as

more industries adopt IoT and embark on their digital transformation journey. In the face of the challenges within the journey, technology is often only part of the solution. Determination and vision are equally critical. We partner with Standard Chartered for their strong determination and great vision from the very top echelon of the company to support their clients when it comes to digital transformation." Standard Chartered has been actively working with tech companies to co-develop solutions to improve client experience and increase efficiency. Earlier this year, Standard Chartered set up SC Ventures, a business unit to catalyze intrapreneurship and innovation, invest in fintechs, and set up disruptive ventures. SC Studios, in Silicon Valley, allows them to connect with the latest technologies, tech companies, fintech and investor communities.

Joint Announcement of IoT Solution for ecosystem lending Standard Chartered Bank & Huawei



Huawei and Orange Spain Jointly Released 5G-Oriented "1+1" Full-Scenario Antenna Solutions

Orange Spain and Huawei recently joined forces to hold the 7th Global Antenna Technology & Industry Forum in Madrid and release a series of 5G-oriented "1+1" full-scenario antenna solutions. In the 5G era, one passive antenna is required to incorporate functions of all antennas on the live network, release antenna space to deploy a Massive MIMO antenna, and satisfy future evolution requirements through one-off deployment. With the

advent of the 5G era, the deployment of new frequency bands and sharp increase in capacity requirements pose the biggest challenge to 5G antenna deployment since the antenna space is quite limited. Huawei believes that "1+1" antenna solutions in the 5G era involve the following three scenarios:

- "1+1 SBS": passive and Massive MIMO antennas deployed on two poles (SBS stands for side-by-side.)

- "1+1 Stack": passive and Massive MIMO antennas deployed on a single pole (in stack mode)
- "1+1=1": integrated deployment on a single pole

"1+1 SBS" is a typical scenario where two antennas (passive and Massive MIMO) are deployed on two horizontally parallel poles. The passive antenna incorporates functions of all antennas on the live network and implements 4T4R on sub-3

GHz bands. The Massive MIMO antenna expertly helps to meet the strict capacity requirements of ultra-heavy-traffic hotspots. In the "1+1 Stack" scenario, two antennas are installed at the upper and lower ends of the same pole. The height of the passive antenna (deployed at the lower end) must be less than 2 meters, which is a conscious design decision to reserve available space for the Massive MIMO antenna. The "1+1=1" scenario requires a single antenna to support 4T4R on sub-3 GHz bands as well as Massive MIMO/8T8R deployment in the C-band. This appropriate counter measure to the largest extent helps resolve the often challenging issue of insufficient space. Now, Huawei has developed a full range of diverse antenna solutions that support the

preceding three scenarios. Orange Spain and Huawei have jointly verified antenna solutions in "1+1 SBS" and "1+1=1" scenarios on the commercial network. The industry's first 9-frequency 18-port antenna released by Huawei is used as the passive antenna. It can implement 4T4R on sub-3 GHz bands and serve as an alternative for existing antennas. In addition, it reserves extra ports for frequency band deployment in the future. The C-band Massive MIMO antenna is used as the active antenna. The two "1+1" solutions provide 5G-oriented evolution capabilities for Orange Spain. "Orange is a top global telecom operator that is committed to providing the best network experience", said by Manuel Sánchez Malagón, Planning Director of Orange

Spain, "We believe that limited antenna space may hinder the process of network deployment in the future of MBB network evolution. Orange Spain and Huawei's 5G-oriented antenna solutions can cope with the challenges of insufficient space and ensure excellent network performance and capacity." Mr. Zhang Jiayi, President of Huawei Antenna Business Unit, emphasized that: "Huawei has released 5G-oriented "1+1" full-scenario antenna solutions based on years of experience in wireless network technologies and in-depth understanding of MBB networks. This helps operators overcome 5G network deployment difficulties and facilitates their business success."

Huawei Interprets the Simplified Network Concept for 5G

At the SDN NFV World Congress 2018 in The Hague, Netherlands, Huawei explains what simplified 5G networks mean from four key aspects: simplified sites, simplified architecture, simplified protocols, and simplified operations & maintenance (O&M). As the 5G era approaches, individuals are expecting an inspired service experience and industry customers are working to expedite their digital transformation. This requires telecom operators to continually innovate in their services while reducing OPEX. Complicated networks built in the 2G, 3G, and 4G eras can no longer meet the above requirements, but simplified networks can. Operators can build end-to-end simplified networks by simplifying sites, network architecture, protocols, and O&M, to ensure that networks are centrally managed, agile and effective, automated, and intelligent. Simplified networks can offer the high bandwidth and low latency needed by new services, shorten the TTM of new services, and reduce the construction and

maintenance cost per bit. Simplified sites: By integrating multi-band, multi-mode antennas and other equipment, simplified sites provide unified access to networks through multiple methods, and also modularize and standardize equipment. Simplified sites are designed specifically for 5G, helping customers reduce TCO and enable fast site deployment and service provisioning. Simplified architecture: The flat and flexible end-to-end network architecture decouples services from physical networks, which means a single network can meet the requirements of different service scenarios by allocating network resources on demand. The simplified cloud-based architecture uses a unified cloud platform to support the cloudification of services systems, IT systems, and other relevant scenarios. Simplified protocols: Standard network protocols are introduced in every aspect of networks. For example, the IPv6 Segment Routing (SRv6) technology was introduced in transmission networks, integrating

the previous 10-plus protocols into two new ones. For core networks, the 15 old protocols were upgraded to scalable and standard HTTPS protocols. Simplified O&M: As operators go digital, they need to change their existing service development and operational models. Cross-department functional teams can leverage an agile service design and orchestration platform to build new service models, and embed O&M policies and other service assets into intelligent network engine systems. The result is automated and intelligent network O&M. Yuan Bo, Director of Huawei Network Architecture Transformation Marketing Dept, noted: "Evolution towards simplified 5G networks must be advanced by scenario and follow three key principles: First, we should focus on major issues related to OPEX. Second, we need to start from a single domain to multiple domains, and then form end-to-end simplified networks. Third, we must start from simplifying physical networks, and then simplify network architecture and network O&M. Simplified networks go far beyond the simplification of a single product, and are more about simplifying system architecture." Huawei is now exploring simplified networks in all aspects, helping operators and enterprises move beyond the traditional discrete network architecture. The aim is to enable network digitization with a focus on service experience.





Lebanon Adopts New Mobile Phones Compliance Measures Through inMobiles' MIRS Platform

The Lebanese Ministry of telecommunication along with the local Mobile network operators were increasingly confronted with the emerging of stolen, cloned and fraudulent terminals on mobile networks. This matter represents a real danger to the public, homeland security, government income and operators' networks.

Therefore, the new measures of inMobiles MIRS (Mobile Identity Registration System) platform set under the Ministry of Telecommunications regulations, aim at regulating this sector through a new reliable system and making sure that the import of mobile phones into Lebanese territories is in conformity with the law and that imported devices are not counterfeit.

inMobiles' MIRS has been fully developed in house by a team of more than one hundred highly skilled engineers and helped benefiting the Lebanese Government by: (1) ensuring the compliance of mobile devices existing on the telecommunication

market with international standards, through the certification of all devices according to the IMEI; (2) preventing all counterfeit or stolen devices, or those that do not conform to international standards, from functioning on the network and accessing it; (3) receiving declarations; (4) defining technical standards of telecommunications equipment and terminals; (5) proceeding with approvals required for manufacturing, importing and marketing every device connected on the network and accessible to the public; (6) rationalizing and increase tax revenues; and (7) increasing revenues generated by the treasury due to the collection of customs duties.

Consequently, inMobiles, in partnership with the Lebanese Ministry of Telecommunications and the local mobile network operators "Touch" and "Alfa", established practical procedures that the subscriber can adopt to make sure that his/her device is compliant. Subscribers can contact the respective MNO Customer

Service for further information or send an empty SMS free of charge to the service dedicated Short code and they will receive an instant message explaining the status and model of their device and the steps to follow in case it wasn't compliant. The subscriber can also send an SMS with the IMEI number of their device to the same Short code and they will receive an instant message stating the devices' model.

Although and in order to facilitate the examination process, inMobiles' MIRS has also dedicated a specific section within the Ministry website so that the subscribers can enter the IMEI number and get the information they need on their device's status, model and compliancy.

As a result, and comparing the difference between TAX income of August 2017 and August 2018, InMobiles' MIRS platform exceeded the mentioned revenue of 20 times, and this number is subject to increase onwards.





Microsoft Demonstrates Power of AI at Bahrain

Microsoft Bahrain recently highlighted the importance and benefits of artificial intelligence in the establishment of smart societies, mirroring the ambitions demonstrated by Bahrain Vision 2030, at an event which was held in the kingdom. Microsoft Bahrain participated as the Gold Sponsor of the Bahrain International eGovernment Forum & IT Expo 2018 at the Ritz-Carlton Hotel, in Manama. The two-day event, organized by Bahrain's Information & Government Authority (iGA), is operating under the patronage of Shaikh Mohammed bin Mubarak Al Khalifa, Deputy Prime Minister, chairman of the Supreme Committee for Information and Communication Technology, said a statement. Now in its ninth edition, the Bahrain International eGovernment Forum has become a signature event in Bahrain's business calendar. It is also the main platform for information exchange and collaboration for IT decision-makers and professionals from around the world. Mohammed Ali AlQaed, chief executive, iGA, said: "The long cooperation between us and Microsoft Bahrain can be seen through the joint partnerships in IT programs and initiatives which support the strategic direction of Bahrain specifically during a period in which the country is anticipating advanced stages in the development and infrastructure agenda based on the strategic objectives of the Economic Vision 2030." "The forum reflects the achievements and aspirations of Bahrain in promoting economic infrastructure that is based on the development of an information and data society, as well as enhance future economic plans," continued AlQaed. The 2018 edition is split between five tracks, designed to encapsulate the hot trends and critical discussion areas extant within the global technology sector: cloud computing, digital transformation, blockchain, data analytics and cybersecurity. Microsoft experts addressed forum delegates on the power of artificial intelligence and related technologies, and their ability to engage,

empower, optimize and transform. Simon Bradford, Public Sector Industry Director, Microsoft Middle East and Africa, talked about how migration to the intelligent cloud – and the range of advanced technologies it hosts – can be advantageous to

business-critical dashboards, detailing the satisfaction and happiness of citizens, and providing in-depth reports about the quality of services provided by employees. Pulse incorporates cutting-edge system design and combines it with deep-learning



public-sector entities in pursuit of digital transformation and modernisation. Alessio Bagnaresi, Artificial Intelligence Director, Microsoft Europe Middle East and Africa, covered the more specific applications of AI and how its implementation can have a significant impact on the government sector's ability to innovate. Microsoft also showcased its broad range of AI solutions at the company's booth. Visitors gained the opportunity to get hands-on exposure to some of the most cutting-edge solutions in the industry. Microsoft also demonstrated the cognitive-reasoning and machine-learning capabilities hosted on its Azure platform, using industry-specific use cases such as face recognition, chatbots, emotion detection and object analysis. Microsoft's partner Brainware demonstrated Pulses, its artificial intelligence platform that provides government decision-makers with multiple

algorithms to analyse the full customer experience at service centers. Saif Hilal Al Hosni, general manager, Microsoft Bahrain and Oman, said: "This platform offers the greatest of opportunities for us, and our partners, to demonstrate the power of artificial intelligence to government decision-makers." "AI is playing an increasing role in digital transformation journeys – delivering the power to engage citizens, empower public servants, optimize operations, and reinvent the way governments deliver key services to the public," he added. Bahrain is positioned 26th globally and fifth in Asia in the UN's latest eGovernment Report, and is ranked fourth worldwide in the Telecoms Infrastructure index – a leap of seven places from the previous year's rankings, it stated.

Dubai Airports Takes to the Microsoft Azure Cloud

Dubai Airports announced that it has migrated to the trusted Microsoft Azure Cloud platform as part of an ongoing strategy to drive digital transformation across the organization – engaging customers, empowering employees, optimizing operations and reinventing products and services. As a regional and global hub for leisure and business travelers, Dubai airports have received some 90 million passengers each year, expected to increase to 120 million by 2025. Dubai Airports, in a renewed effort to ensure that each passenger's experience is enjoyable and hassle-free, decided to take a fresh look at its technology infrastructure. "The time had come to look at the global realities of our business," said Michael Ibbitson, Executive Vice President of Technology & Infrastructure, Dubai Airports. "Some 50% of our operational data is generated overseas, at other airports and by many different airlines. It quickly became clear that cloud services were no longer optional for us. Their benefits are evident: flexibility, agility, capacity, scalability and cost-effectiveness. The cloud allows us to maintain the level of service that passengers the world over associate with the emirate of Dubai, while building a secure environment in which everyone can feel safe." Security was a key consideration for Dubai Airports' business technology decision makers. In a diligent assessment of the technology industry, they concluded that only cloud providers have the economies of scale and experience necessary to provide the level of protection that Dubai Airports was seeking. "Cloud services aren't necessarily unsafe or insecure, but your management of them may well be," added Ibbitson. "You need to choose the right partner – as we have carefully selected Microsoft, for its solid track record in service and security – and develop your people so they learn how to use SaaS, IaaS and other cloud services safely." Microsoft invests more than \$1

billion annually in cybersecurity research and development. The company's Azure platform was built from the ground up with the technology industry's most advanced security measures integrated into every layer. Client data is encrypted both at rest and in transit, and a team of seasoned cybersecurity experts maintains a 24-7 vigil, to ensure that Microsoft customers can operate in the cloud with complete confidence. Microsoft has been a partner of Dubai Airports for 15 years. The company already hosts mission-critical applications on Azure, such as Al Majlis, e-services and WOW-Fi. Dubai Airports' world-class team also uses Office 365 and SharePoint for automation, collaboration and productivity as well as Yammer. Microsoft has seen a surge in demand for its cloud services across the GCC and wider MEA region in recent years. According to a Microsoft survey, more than half (51%) of organizations identified cloud computing as a top priority. Spurred by these findings, Microsoft announced in March this year that it would deliver its trusted, secure and versatile cloud to Middle East customers from two new dedicated data centers in the UAE, one in Dubai and the other in Abu Dhabi. The next steps in Dubai Airports' digitization journey

will also include adoption of Dynamics 365, Microsoft's all-purpose commerce platform that merges ERP with CRM and connects all aspects of a business to the power of the intelligent cloud. The rollout of customer service functionality is currently in progress, and a later phase will include Dynamics' accounts management modules. "We are looking forward to accompanying Dubai Airports on the next leg of its digital transformation journey," said Sayed Hashish, Regional General Manager, Microsoft Gulf. "Managing the world's busiest international hub requires bold thinking and careful planning. An entire service ecosystem may hang on your decisions. The intelligent cloud puts information at the fingertips of those who need it, and provides the flexibility and scalability to roll out new applications quickly, so that your customers continue to receive that top-class service they have come to expect." "Microsoft's mission is to empower every person and every organization on the planet to achieve more. The digital transformation opportunities delivered by the intelligent cloud are extensive. Empowerment, engagement, optimization, reinvention; they are all there to capture," he added.





Mobily Wins 2 Awards for Best Investor Relations in MENA

Mobily has won the MIERA award for Best Corporate in Investor Relations (IR) in Saudi Arabia. Voting for the award was based on the results of the EXTEL survey for investors and analysts. Mobily also won the Best Digital Annual Report in MENA reflecting the company's management pursuit for enhanced transparency and communication with its stakeholders. Tareq AlAngari, the Executive General Manager for Investor Relations, received the awards on behalf of Mobily. only Saudi company listed in the run up in this category and bested the other four competitors. Additionally, Mobily CFO Kais BenHamida was nominated for the award of best CFO for IR in MENA, and Tareq AlAngari was nominated for the award of best IR Professional in Saudi Arabia.



Mobily and Huawei to Collaborate on Five Year Plan to Bring 5G to Saudi Arabia

Mobily, a leading Saudi Arabian telecommunications services company, and Huawei, a leading global provider of information and communications technology (ICT) infrastructure and smart devices, have signed a Memorandum of Understanding (MoU) to expand their collaboration in network evolution. The companies announced a five-year plan to upgrade Mobily's networks and accelerate the arrival of 5G to the Kingdom. The announcement was made at Huawei's global headquarters in Shenzhen, China, during a recent visit by Maziad Al-Harbi, Chief Technology Officer at Mobily. Mobily and Huawei's five-year plan, named Network 2023, will see an End-to-End (E2E) network evaluation and evolution strategy to upgrade Mobily's existing infrastructure and help Saudi Arabia

capitalize from 5G from both an industry and consumer perspective. As a network evolution strategy consultant, Huawei will assist Mobily with its 4.5G to 5G evolution, and its target network planning (including spectrum and user experience). The companies will collaborate to fully cloudify Mobily's network to make it ready for 5G, in addition to cooperating on IT and data center strategy and planning. Huawei will also act as Mobily's consultant from an industry and consumer perspective, offering market and business insights and strategy. Ultimately, the aim of the MoU is to strengthen the relationship between Huawei and Mobily in order to bring the most updated and advanced E2E networks to Saudi Arabia. By combining Huawei's E2E portfolio of advanced ICT products and solutions with Mobily's excellence in

customer service, the companies hope to create new digital services and revenue streams, enhance operational efficiency, reduce costs, decrease time-to-market, and increase Mobily's customer base. Maziad Al-Harbi, Chief Technology Officer at Mobily, commented, "We are excited to combine forces with Huawei to ensure that Saudi Arabia remains at the forefront of the latest trends and technologies in 5G. Innovation is vital to enabling the Kingdom to transform into a digital country, and at Mobily we are committed to deploying the most advanced technologies to provide the people of Saudi Arabia with a high standard of living and a modern environment. Our collaboration with Huawei will surely help us reach this goal." Dennis Zhang, CEO of Huawei Tech Investment Saudi Arabia, added, "We are proud that Mobily has selected Huawei as a partner to lead their development in the field of 5G. At Huawei, we aim to play a leading role in assisting the government in reaching the goals outlined in Saudi Vision 2030 to become a diversified, knowledge-based economy, and intelligent and agile telecommunications infrastructure is vital to the success of these aims. 5G in particular promises to accelerate the Kingdom's digital transformation by creating new industries and revitalizing old ones, and we look forward to collaborating with Mobily to bring these benefits to Saudi Arabia."



Mobily Signs Agreement with Ericsson to Manage Its IT Services

Etihad Etisalat (Mobily) announced that it has signed an agreement with Ericsson, a leading company in remote data and telecommunications systems. The agreement aims to Saudize and enhance the quality of services Mobily offers to customers. Mobily CEO Ahmed Aboudoma signed on behalf of Mobily while Rafiah Ibrahim, President of Ericsson in the Middle East and Africa signed on behalf of Ericsson. Mobily CEO Ahmed Aboudoma said the agreement underscores Mobily's commitment to Saudize



information technology, boost investment in the digital economy, transfer knowledge and experience in the field to the Kingdom, enhance national cadre skills, and highlight Mobily's relentless drive to offer the latest technologies to its millions of customers as well as demonstrate its commitment to providing the best-in-class service. He added that Ericsson is a value-added partner to Mobily given its long-standing experience in digital transformation and automation and clear vision that enables its clients to succeed. Rafiah Ibrahim, President of Ericsson Middle East and Africa said "today's agreement marks a significant milestone in our collaboration with Mobily in IT. Today, we will complement our managed services offering with IT Managed Services to provide Mobily subscribers with speed, security and reliability leading to a differentiated customer experience." According to the agreement signed on October 8, 2018, Ericsson will be responsible for managing IT operation services, end user support (first level support), information systems and applications, and infrastructure management services. This includes Business Support System, Network Support Systems, Customer support Systems, and other tasks. The joint Mobily-Ericsson project covers more than 100 technical applications and more than 2,000 IT infrastructure servers spread across more than 3 data centers.



Nokia Deploys Private LTE Network for Brazil's Elektro to Strengthen Power Grid Reliability and Efficiency

Nokia has been selected by Brazilian power distributor Elektro, part of the Neoenergia/Iberdrola group, to deploy a private LTE network to increase the reliability and efficiency of the electrical grid in the City of Atibaia and surrounding areas in the state of Sao Paulo. This highly reliable wireless 4G network, the first of its kind in Brazil, will serve more than 75,000 homes and businesses. The LTE network will be deployed in 3.5 Gigahertz (GHz) frequency band, the first such installation in South America. The network will provide business-critical connectivity for grid equipment, smart meters, substations and distributed energy generation sources throughout the service area, enabling grid automation through real-time exchange of information between these devices and Elektro's Operations Center in Campinas. This will enable the quick identification of events on the electrical grid for rapid restoration in case of failure, and even to avoid outages before they occur, helping

ensure high-quality service for Elektro's customers. For the project, Nokia will supply Elektro with a solution composed of the Nokia AirScale Single Radio Network (SRAN) that includes base stations (eNodeBs), enhanced Packet Core and CPE (Customer Premises Equipment). Nokia Global services will deliver and manage the end-to-end Private LTE solution including network design, deployment, integration, assisted operation, maintenance, construction and training for Elektro. This agreement builds on Nokia's strong track-record providing mission-critical networks to power utilities, and highlights the company's strong position in the emerging market for private LTE networks. It also highlights the progress of Nokia's strategy of expanding its customer base outside of the traditional telecommunications sphere, a key focus of the company's diversification efforts. Mario Ruiz-Tagle, president of Neoenergia, said: "Neoenergia is committed to sustainable development

and the full digitalization of its networks. The project in Atibaia is a pioneering effort here in Brazil, and will deliver increased power efficiency to bring both increased quality and cost savings to our customers. As important, this deployment will enable the introduction of distributed power resources in the future, such as photovoltaic generation and electric vehicles, while providing the required communications for our transformation to new business models." Osvaldo Di Campli, head of Nokia Latin America, said: "This private LTE deployment will provide the large-scale connectivity, extensive coverage and high-bandwidth service needed for Elektro to extend the reach of its network out into their distribution grid, making the grid much smarter. This future-proof solution will also provide an evolution path to 5G technology in the future, which will offer an array of additional capabilities to keep pace with the fast-evolving utility market."

Nokia, LMT and Intel Hit 1.4Gbps in Latvian 5G Tests

Latvian telco LMT has completed 5G testing, achieving download speeds of 1.4Gbps in the Baltic nation. In collaboration with Nokia and Intel, LMT's live 5G testing

also achieved ultra-low latency levels of just 4ms. The tests were conducted at the Baltic Region's 5G Techritory event, which aims to bring together the region's

5G ecosystem. Nokia provided the network hardware, comprising of a Nokia Air Scale Base Station along with a radio access cloud core, while Intel provided the end device, namely its 5G Mobile Trial Platform. The Baltic nations have some of the best mobile networks in Europe and are widely expected to be among the first European countries to rollout 5G mobile services. "LMT's network is currently amongst the most efficient mobile data networks in the world. The era of 2G and 3G networks made Latvian users the most talkative country in Europe. With 4G they ranked second in the world for mobile internet consumption. Now we will aspire to bring the best of 5G to our industrial, governmental and academic partners. We believe the future will be mobile only," said Ingmar Pukis, Vice President of LMT.



Nokia Expands Fixed Wireless Access FastMile Portfolio for Greater Flexibility and Performance in Delivering Ultra-Broadband Services

Nokia is introducing new Fixed Wireless Access products to help operators accelerate ultra-broadband deployments and deliver more bandwidth to people sooner. The enhanced portfolio includes new FastMile high-gain outdoor receivers and indoor gateways that are easy to install and significantly enhance the ultra-broadband experience for customers. Mobile operators invested in 4G to bring broadband speeds to mobile networks. Now they are poised to improve performance significantly through their investment in 5G. In both cases, mobile operators have an opportunity to capture new revenue streams from the delivery of ultra-broadband services to customers using Fixed Wireless Access technologies. With 4G networks, peak residential broadband speeds of several hundred megabits per second are possible - but not always achievable. Nokia FastMile will drive these speeds to wider areas with very-high-gain outdoor receivers that improve spectral efficiency by 4-5x versus using indoor antennas. The results are higher speeds for the user,

more consistent performance at the cell edge and lower radio access network (RAN) costs for the operator. These new receivers can be equipped with Automatic Beam Alignment to help establish an optimal connection to cell sites. Nokia's FastMile smartphone application provides operators and customers with a guided set of instructions that help simplify installation. Nokia is also introducing a set of powerful indoor gateways, available in the first half of 2019, that come with high-gain antennas and 4x4 multiple-input and multiple-output (MIMO) to deliver superior performance. These fully self-contained residential gateways will include options for plain old telephone service (POTS) and Ethernet ports. With high gain outdoor and indoor models, operators can quickly add FWA to their portfolio with minimal upfront costs. With the evolution to 5G, operators will be able to deliver gigabit peak speeds. Rupert Wood, Research Director at Analysys Mason, said: "As 5G dawns, there has been a spike in interest in FWA both as a means for fixed broadband operators to complement fiber-based services, and as a

means for more mobile-centric operators to offer their own challenger services to established broadband. The Nokia FastMile portfolio of high-gain outdoor receivers and indoor gateways addresses the critical condition for the success of either of these approaches: the ability to deliver a reliably high-speed performance while minimizing installation costs." Federico Guillen, president of Nokia Fixed Networks, said: "When it comes to fixed broadband access, there are two things that customers typically care about: speed and reliability of the service delivered. In the wireless world, subscribers are more apt to sacrifice speed for the flexibility to be connected anywhere. New FWA technologies like Nokia's FastMile solution bring the best of these worlds together, giving mobile operators the flexibility to use existing wireless networks to deliver fast, reliable ultra-broadband access to homes and businesses. FWA complements more traditional fixed access solutions and is an important tool in the toolkit helping operators connect more people sooner."

Nokia, Rakuten Complete 5G OTA Test



Japan-based e-commerce giant Rakuten became the latest company to unveil successful trials of 5G technology, completing an over-the-air test with Nokia ahead of its entry into the commercial wireless market in October 2019. The test used the

28GHz band and examined a number of applications running over the service including 4K video delivery and 3D 360-degree VR live streaming. In a statement, Rakuten said the test “reinforces the potential of 5G networks” and noted opportunities for the technology in healthcare, education, energy services, industry and agriculture. Although regulators in Japan are yet to allocate spectrum to host 5G services, a number of companies are trialing the technology in the country with commercial launches planned in time for the Tokyo Olympics in 2020. Rakuten’s own figures state it already runs the largest MVNO in Japan. In April it received approval from Japanese authorities to provide 4G services over its own network in 2019. When it launches it will become the fourth operator in the country, alongside KDDI, SoftBank and NTT Docomo. In addition to its MVNO, Rakuten has a wide number of business divisions primarily focused on internet and e-commerce services.

Nokia Adds Capacity and Density to Industry Leading Copper FTTx Portfolio to Help Operators Meet Ultra-Broadband Demand

Nokia is adding new ASICs to its leading portfolio of G.fast and VDSL2 solutions to give operators greater flexibility for delivering ultra-broadband services. Utilizing next-generation in-house vectoring processors from Nokia, the enhanced access nodes provide operators with more FTTx options for delivering ultra-broadband access to customers. Operators are evolving their access networks to bring higher speeds to customers and deliver on the promise of ubiquitous coverage. However, with vastly different technology challenges across their network, operators need the flexibility to choose the right solution that allows them to address each unique business case and overcome challenges involved with delivering ultra-broadband services. Nokia’s higher density access nodes for G.fast and VDSL2 can help operators accelerate FTTx deployments and connect more people, sooner. Optimized for performance, the second-generation ASICs provide additional vectoring processing power and efficiencies needed to eliminate crosstalk interference between copper lines and improve data speeds. This allows for very large vectoring groups to be applied to VDSL2 applications in cabinets or

central offices as well as G.fast application in large multi-dwelling unit (MDU) or FTTN locations, helping to lower costs per subscriber and reduce the amount of infrastructure needed to service a given area. Capable of supporting a mix of VDSL2 and G.fast line-cards in same platform, the new chipsets based on Nokia Bell Labs innovations and over 12 years of vectoring experience provide greater density options for operators. Nokia provides operators with greater flexibility for delivering ultra-broadband services to customers with a 96-port option for G.fast micro-node deployments and a 384-port VDSL2 35b/Vplus option for a single chassis. Nokia is also introducing new options for copper platforms that allow operators to achieve a single technology, vectored VDSL2 network. Called Long Reach VDSL2 (VDSL2-LR), the technology allows operators to extend the performance of their VDSL2 technology to all subscribers over any length of copper loop. This can help operators gain 25% better service levels over ADSL2+ for long loops and achieve similar performance to VDSL2 17a on medium to shorter loops. Helping operators extend their copper investments and move to a single DSL network through

a simple ADSL line card replacement, VDSL2-LR can reduce network operation costs and provide the foundation needed to deliver broadband services over similar distances achieved with ADSL2+. Teresa Mastrangelo, principal analyst at Broadband Trends said: “We are seeing a growing number of operators using FTTx technologies like G.fast to quickly deliver new ultra-broadband services and meet customers demand for gigabit services. Solutions like Nokia’s higher density FTTx technology options can give operators the additional capacity, scale and flexibility they need to address various use cases and cost effectively extend ultra-broadband services to more people, quickly.” Federico Guillén, president of Nokia’s Fixed Networks, said: “As demand for FTTx technologies like G.fast grows in areas like EMEA and APAC, operators will need flexible options that allow them to easily scale their networks in line with demand. Nokia’s new chipsets allows operators to cost effectively connect more people sooner and accelerate ultra-broadband deployments with higher density G.fast or VDSL access nodes.”

Nokia Helps Operators Migrate Existing Ultra-Broadband Networks to SDAN with Enhanced Lightspan and Altiplano Portfolio

Nokia is introducing new enhancements to its Lightspan and Altiplano portfolios that help service providers transition to SDAN and simplify access management across multi-technology, multi-vendor environments. Nokia adds support to its Altiplano Access Controller for Lightspan FX and FWA nodes, providing operators with a single unified network management system for all access technologies. Through a controlled software migration, operators can now also evolve traditional Nokia fiber nodes to Lightspan SDAN programmable access nodes. This allows service providers to continue to invest into their existing networks today and migrate to SDAN in the future when they want, without technology replacement. To meet growing data traffic and address the varied ultra-broadband applications and services customers require, operators are having to continuously evolve their networks to keep up with demand. In today's complex multi-technology multi-vendor environments, the operator's ability to quickly upgrade, provision and manage their networks is limited. SDAN can help by creating an open programmable network that is easier to adapt, change and expand. When virtualization is correctly applied to the network, it can help operators to introduce innovative capabilities, deliver new services and connect more users. For instance, with Nokia's open and programmable SDAN solution, operators can support and leverage a rich set of use-cases such as fixed access network slicing or simplify multivendor Optical Network Unit (ONU) deployments. However, as with any technology shift, transitioning an existing network to SDAN can be hard, and as challenging to manage as the network complexity operators are trying to solve.

Nokia is solving the migration challenge by SDN-enabling its field-proven fiber ISAM FX solution for high-density central office environments and adding it to the Lightspan family of SDAN programmable access nodes. Through a controlled software migration, operators can now turn an existing ISAM FX shelf installed in the network into a SDAN Lightspan FX node. For greenfield deployments, Nokia's ISAM FX solution with pre-installed Lightspan software allows operators to immediately take advantage of SDAN today or at any point in the future. Built around Netconf/Yang open networks and standardized APIs, Nokia's Lightspan FX delivers the industry's first solution capable of creating a path to SDAN for an existing installed base and greenfield deployments. Once SDAN is applied to the network, operators will need to be able to easily manage a physical/virtual hybrid environment. Unified access management provided by the Nokia Altiplano Access Controller enables operators to master this hybrid model and realize the operational efficiencies promised by SDN/NFV. With added support for Fixed Wireless Access nodes, the enhanced Altiplano solution enables operators to visualize, optimize and automate the network across different broadband technologies, vendor implementations and even traditional and SDAN-enabled systems. As a leader in SDAN, Nokia continues to drive initiatives that help operators scale operations and deliver services more quickly. An example of this can be seen at the upcoming Broadband World Forum event in Berlin where Nokia will demonstrate a cloud-based architecture that can support the automatic deployment of access devices, automatic service provisioning,

intent-based networking and unified management of multiple vendors' devices. Nokia is a leading example of taking the open road and is working with operators to show how its SDAN Lightspan and Altiplano solution can help them scale operations across all devices in the field and roll out services more quickly. Erik M. Keith, principal analyst at GlobalData, said: "As operators evaluate their options for incorporating SDN and NFV functionalities into their networks, support for existing network assets is critically important, especially for equipment that has been deployed relatively recently. With its expanded SDAN and Altiplano capabilities, Nokia now enables operators to transition their existing ISAM FX series fiber nodes into SDAN-programmable Lightspan FX nodes, as well as support new FWA nodes. Operators can then implement key network virtualization, optimization and automation solutions that deliver both enhanced operational efficiencies and corresponding profitability gains." Federico Guillén, President of Nokia's Fixed Networks Business Group, said: "SDAN is becoming a vital tool for operators seeking to address evolving customer needs. However, achieving SDAN requires a major technology shift that can paralyze an operator if existing infrastructure needs to be replaced. Nokia's Altiplano and Lightspan SDAN technology makes it easy and provides the industry's only solution that can help operators migrate their existing installed base to SDAN. Operators can retain assets and continue to invest in their fiber network today and use software to migrate portions or the entire network to SDAN at any point in the future. They get the best of both worlds."

Nokia Deploys Private 3.5GHz LTE Network for Elektro

Nokia has been selected by Brazilian power distributor Elektro – part of the Neoenergia/Iberdrola group – to deploy a private LTE network to increase the reliability and efficiency of the electrical grid in the City of Atibaia and surrounding

areas in the state of Sao Paulo. The network will provide business-critical connectivity for grid equipment, smart meters, substations and distributed energy generation sources throughout the service area. The two parties claim that

the network – which will serve more than 75,000 homes and businesses – is the first of its kind in Brazil and also represents the first installation of a 3.5GHz LTE network in South America.

Nokia, UTS Forge 5G Skills Partnership

Nokia turned the focus of 5G from pure technology development to skills, forging a partnership with an Australian university designed to boost knowledge of the technology by more closely integrating it with academic programmes in the country. The vendor's partnership with University of Technology Sydney, dubbed the 5G Skills Accelerator, will provide "students, academic staff, industry personnel and Nokia's customers, business partners and employees" with access to cutting-edge training practices and systems, the vendor said in a statement. Zoltan Losteiner, head of the Oceania region at Nokia, said the vendor chose Australia because the country is expected to "be among the world leaders in 5G adoption", particularly in relation to "new mission-critical services in areas like industrial IoT". The skills accelerator will help the country to develop the "right skills and knowledge" to cash in on that leading position. Nokia predicted more than 1,000 industry personnel and students in areas including electrical engineering will attend the UTS accelerator in 2019. The facility will offer training covering implementation and operation of technologies underpinning fixed and mobile broadband, and communication service delivery including radio access; IP routing; optical

and core networks; fixed broadband access; security; and IoT platforms. UTS associate dean of External Engagement, Myriam Amielh, said the skills accelerator will enhance the University's teaching capabilities and "enable 5G and the future of Australia's communications networks."



Nokia Launches Multivendor ONU Connect, an Innovative Virtualized Solution that Guarantees PON Interoperability

Nokia launched Multivendor ONU Connect, the industry's only fully open, virtualized solution that enables operators to connect any Optical Network Unit (ONU), regardless of vendor, to a Nokia Optical Line Terminal (OLT). The solution provides a "driver" like approach to how operators deploy and manage their ONUs and enables plug-and-play functionality that can significantly reduce onboarding time and costs. Multi-vendor interoperability is a critical necessity for operators, but those seeking to introduce a new ONU into their network environment are currently challenged by the testing time and costs to ensure interoperability. This is largely due to the unique ONU Management Control Interface (OMCI) implementation found in each ONU: it takes approximately 3 to 6 months to introduce a new ONU, increasing testing costs by more than 50%. With Nokia's Multivendor ONU Connect, one of the biggest and costliest headaches for fixed network operators disappears. Operators can eliminate integration efforts, management complexity and PON interoperability challenges that impact their ability to scale and deliver

innovative new services in a multi-vendor environment. Part of Nokia's Altiplano open programmable framework, the solution decouples software typically binding the ONU to the OLT and puts the management in the cloud. This allows the ONU management to be virtualized and have multiple versions running in parallel. Using an open API framework enables third party stacks to be on boarded quickly, providing added flexibility around the equipment and supply chain partners that can be used. Operators can also easily manage updates required on existing ONUs or quickly introduce new ONUs into the network with simple software upgrades. Julie Kunstler, principal analyst at Ovum said: "Nokia's Multivendor ONU Connect brings operators the true benefits of SDN and NFV. It enables operators to onboard multi-vendor ONUs quickly, providing their subscribers with best in class CPEs for supporting new services while significantly reducing testing and resource costs. While several operators share their respective OMCI, Nokia's Multivendor ONU Connect streamlines interoperability by virtualizing ONU management. Furthermore, operators

can easily manage existing ONUs and their updates, along with new ONUs, solving numerous operational challenges." Federico Guillen, president of Nokia Fixed Networks, said: "I'm excited to say that Nokia is truly 'open' for business. We're actively taking virtualization concepts and turning them into real solutions that operators can deploy in their network today. In addition to simplifying network processes, we're also providing customers with an open solution that guarantees PON interoperability, enabling new services and innovations to be deployed much more quickly. Just like a printer driver for PCs, the Multivendor ONU Connect solution simplifies multi-vendor ONU deployments. This eliminates the risk, cost and headaches associated with ONU selection and focus on providing the best solution for their customers regardless of vendor." Nokia will demonstrate the Multivendor ONU Connect solution at Broadband World Forum 2018 and showcase plug-and-play interoperability over an XGS-PON network, connecting a 3rd party ONT to the Nokia Lightspan OLT.

Nokia and TIM Showcase 5G Services at the Rally Legend in San Marino

Finnish tech giants, Nokia have teamed up with Telecom Italia (TIM) to demonstrate some of the main use cases for 5G, in the tiny European micro-state of San Marino. The pair are making strides towards the goal of making San Marino the first 5G nation in Europe. Special 360° cameras have already been activated on the race track so people can experience the excitement of the competition in an immersive way, directly from TIM's stands, thanks to special virtual reality headsets, powered by 5G network architecture. "We are particularly delighted to be able to work alongside Rally Legend to demonstrate how new technologies can support sports events at an international level," stated Cesare Pisani, chief executive officer of TIM San Marino. "With the "San Marino 5G" project, TIM aims to deliver technological excellence to the Republic of San Marino making it the first 5G State in Europe. The

activities are proceeding in line with the plans agreed with local government and the switching on of the Serravalle Stadio antenna, together with uses that have already been implemented, represent a new important step along this path," he added. The showcase comes on the heels of the

Italian 5G spectrum auction, during which TIM purchased spectrum in the 700 MHz, 3.7GHz and 26GHz bandwidths, for a total of €2.4 billion. The purchase will stand TIM in good stead for the considerably larger task of rolling out 5G across Italy.



VIVA Launches New Cloud-Based Service

As the first cloud-based Unified Communication services provider in Bahrain, VIVA has been awarded the 'Diamond Partner' medal level by Avaya that was announced at an event held at the Capital Club. The identity of Bahrain's FIRST and only cloud-based unified communication service "VIVA One" was revealed in partnership with Avaya, a US based global leader in telecommunication industry. VIVA One, a cloud-based service that features the latest technology in affordable, customized packages for businesses of various sizes and industry verticals. With the technologically advanced service, businesses can enhance their productivity, profitability and employee satisfaction while improving customer

experience. The VIVA One launch event was attended by Senior Government Officials and VIVA Business clients from different sectors. The event featured a live demo session of VIVA One's features and capability across different devices such as laptops, smart phones, tablets and the latest Avaya IP phones; explaining the way VIVA ONE brings value to their business and customers. Commenting on this occasion, Mr. Ulaiyan Al Wetaid, VIVA CEO said, "Our fruitful collaboration with Avaya has well reflected in the launch of "VIVA One". Thus, bringing Bahrain's digital vision to reality is a priority and enabling the drivers for supporting "Cloud First" initiative led by E-Government authority." VIVA CEO continued, "We want to continue on this roadmap to success by making it even easier for startup and established businesses within diverse market of the Kingdom to adopt digital transformation in their daily business operations". Fadi Mubarak, VP Channel, Avaya International said ""VIVA One Solution, and the diamond Status that Viva Bahrain achieved with Avaya are the natural result of a partnership between two organizations that share the same vision as to what our joint customers from different industries require today and committed to meeting and exceeding those customer expectations. VIVA One offering will help accelerate the adoption and integration of advanced Unified Communications services into our customers' business strategies and operational workflows to allow them to efficiently address the opportunities they are going after."





Yahsat's Satellite Broadband Service Launches in Zimbabwe

YahClick, the satellite broadband service of satellite operator Yahsat, officially launched in Zimbabwe. The service was unveiled during a press conference in the country's capital, Harare, where the company also announced its partnership with official service partner, Utande, a subsidiary of Dandemutande Investments. YahClick aims to bring customers in Zimbabwe better access to affordable,

uninterrupted, high-speed broadband connectivity. YahClick uses the Ka-band powered by High Throughput Satellite (HTS) spot beam technology, allowing Yahsat to deliver satellite broadband services via smaller dishes. This significantly reduces the Capital Expenditure (CAPEX) required to build satellite-based connectivity infrastructure. "Yahsat is the first operator to introduce Ka-band satellite broadband

in Africa, and as the leaders within this domain, we aim to continuously increase YahClick's adoption across the continent. We strongly believe that high-speed, reliable broadband connectivity is one of the key facilitators of economic and social progress for African nations," said Yahsat Chief Commercial Officer (CCO) Farhad Khan.

Yahsat Launches YahClick Satellite Broadband in Cameroon

UAE's Yahsat will offer reliable high-speed satellite broadband Internet in Cameroon through its YahClick service, with the aim of increasing the African country's Internet penetration rate and bridging the Digital Divide. Yahsat will provide services via its flagship broadband offering, YahClick, according to a report in IT Web Africa. Yahsat said it aims to improve the West African country's broadband internet penetration rate and provide internet connectivity in areas where mobile operators and access providers' fiber optic infrastructure is either weak or dormant, according to its statement. It will compete in Cameroon with Cameroon

Telecommunications (CamTel), which signed an agreement with the Belgian provider of Very Small Aperture Terminal (VSAT) services SatADSL, to distribute satellite broadband internet services. Cameroon's satellite internet service market includes players Bloosat and GoSat. In July 2018, Yahsat announced plans to expand its operations across West Africa by showcasing YahClick at West Africa Com. "Africa is a high-priority market for us, and with the commercial readiness of our third satellite Al Yah-3," said Farhad Khan, Chief Commercial Officer at Yahsat, quoted in IT Web Africa. "We are now able to offer our broadband connectivity

solutions to even more markets across the continent." In September 2018, Yahsat announced its joint venture with Hughes Network Systems (HUGHES), a subsidiary of EchoStar Corporation, to provide commercial Ka-band satellite broadband services across Africa, the Middle East, and Southwest Asia. In addition to this latest announcement, Yahsat has already announced its intentions to expand its operations in Africa to five new markets in West Africa: Senegal and Gambia through Yahsat's service partner Arc Telecom; Côte d'Ivoire through Cee-Net Technologies; Benin through Isocel; and Ghana through Teledata and Comsys.

Yahsat to Provide YahClick Satellite Broadband in Democratic Republic of Congo

Satellite Communications Provider Yahsat has officially launched its YahClick Internet satellite broadband service in the Democratic Republic of Congo (DRC), the company announced. The YahClick service will help bridge the Digital Divide in the impoverished African country of 84 million inhabitants where Internet penetration rate stands at only 6.1% as of December 2017, according to Internet World Stats. Yahsat will provide the YahClick service by using the Ka-band frequencies on its satellites to provide the Congolese population with high speed Internet connectivity, even in remote

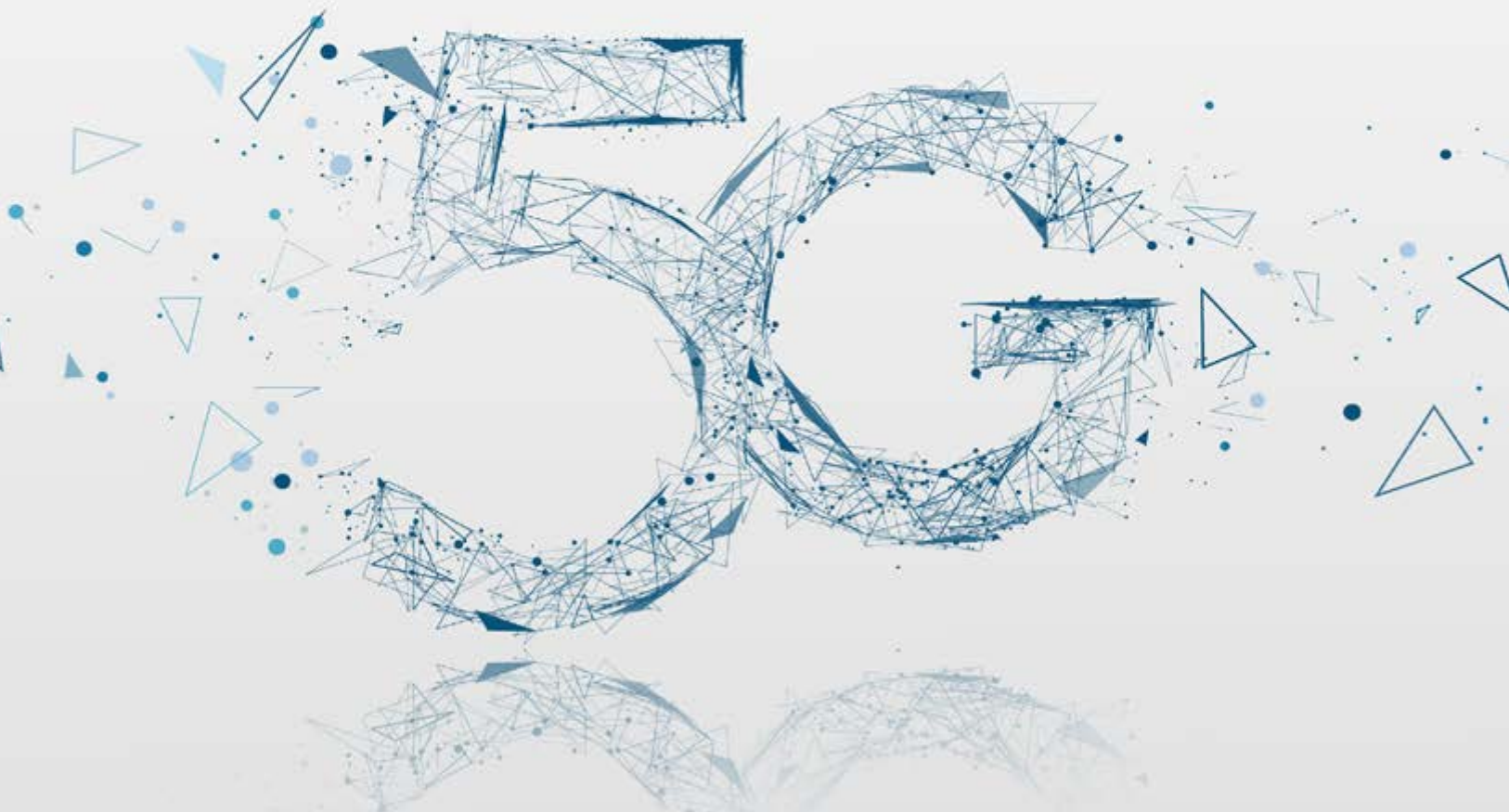
areas of the country where the networks of local telecom operators are unavailable. "Reliable and high-performance Internet connectivity is a catalyst for social and economic progress around the world. With low internet penetration and a history of connectivity disruptions, the DRC is demonstrating a clear need for YahClick's reliable, high-speed service," said Farhad Khan, Yahsat's Chief Commercial Officer. To offer its YahClick Internet satellite broadband services in this new market, Yahsat has partnered with Congolese Internet service providers Castor

Networks DRC and XIT SARL. Through this partnership, the two companies hope to contribute to the democratization of broadband in the country and the digital transformation of the DRC as a whole, and take advantage of the benefits that will hopefully result. Yahsat's penetration in these new African markets is made possible thanks to the Al Yah-3 satellite launched into orbit by Arianespace on 25 January 2018. The Al Yah-3 satellite has expanded the telecom capabilities of the Emirati company into the African and Brazilian markets. 🌍

2018 Middle East 5G White Paper

Unlocking Digital Opportunities with 5G: A GCC Outlook

5G could generate approximately USD270 billion for the GCC ICT Industry by 2030. The GCC has made a good start and needs to accelerate the ecosystem development.



Learn more from the White Paper:



ARTICLE

Artificial Intelligence Drives Digital Transformation of Public Safety



Charles Yang
President
Huawei Middle East



Breakthroughs in deep learning and reinforcement learning are driving a new wave of AI advances. AI applications are now widely deployed across almost all industries, whether through auto-piloting technology, unmanned supermarkets, intelligent voice assistants, and more. AI has become a new powerful engine that drives industry digital transformation.

AI is creating brand-new experiences for everyone and every organization, from Computer-Aided Diagnosis techniques to voice-aided smartphones, handwriting recognition, financial transactions, smart logistics, spam filtering, and translation.

After decades of research and development, AI has evolved to a new stage. Today, AI research extends to areas such as natural language processing, pattern recognition, image recognition, data mining, machine learning, intelligent interface technology, and intelligent information processing.

AI is creating brand-new experiences for everyone and every organization, from Computer-Aided Diagnosis techniques to voice-aided smartphones, handwriting recognition, financial transactions, smart logistics, spam filtering, and translation. AI technology is bringing about major changes in the way businesses develop. It has also had a social impact, delivering public goods like precision medicine, environmental sustainability, and education.

As AI becomes more developed, AI-driven technologies are being implemented across every sector. One sector particularly relevant to the Middle East is public safety.

In Abraham Maslow's hierarchy of needs, safety, food, and water are the most basic needs for human survival. This is especially true for the growing cities of the world. AI is gaining attention not only for the protection of life and property but also for the

Huawei is a leading player in the global and Middle East public safety industry and we provide multiple AI-based solutions. One is the world's first AI-enabled software-defined camera (SDC), the M/X series. This series of cameras can be applied to a vast range of scenarios and improve image processing capabilities by 25 times.

promotion of modern governance. AI will directly improve the quality of life of citizens by creating a world with better city management, faster emergency response times, and more accurate identification and apprehension of criminals.

In surveillance, for example, AI is booming in the video analytics domain. Computer vision deep learning has drastically increased the accuracy of facial recognition (FR) and automatic number plate recognition (ANPR) technology. These have now become a standard feature in safe city solutions to track, trace and alert of known suspect persons and cars in real time.

In the command center, AI language processing is being applied to decrease emergency response time. Voice-To-Text (V2T) technology transcribes emergency calls and uses V2T keyword and investigation analysis as part of intelligence-led policing in order to increase the efficiency of emergency services.

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is the world's first AI-enabled software-defined camera (SDC), the M/X series. This series of cameras can be applied to a vast range of scenarios and improve image processing capabilities by 25 times.

The other is the Industry Enabling Platform to flexibly orchestrate AI services and introduce components from different partners, such as intelligent analysis, to quickly solve cases and establish a new intelligent policing process. This approach enables intelligent infrastructure, efficient and collaborative government services, visualized city operations, and coordinated city emergency response. Through resource convergence, traditional siloed management transforms into integrated governance, and reactive city response transforms into active management.

In light of AI's clear power to bring benefits to organizations across the world, in recent years global technology leaders like the US, China, the UK, and Germany have recognized the importance of AI and incorporated it into their national plans. Many countries are now racing to launch AI strategies so that they can lead the growth of this powerful industry.

Countries in the Middle East should also prioritize the development of a national AI strategy. Many already are – the UAE appointed the world's first Minister of Artificial Intelligence and launched the UAE Artificial Intelligence Strategy 2031. AI technology is central to the success of many components of Saudi Vision 2030.

Countries in the Middle East should also prioritize the development of a national AI strategy. Many already are – the UAE appointed the world's first Minister of Artificial Intelligence and launched the UAE Artificial Intelligence Strategy 2031. AI technology is central to the success of many components of Saudi Vision 2030.

At Huawei's flagship event to take place in Shanghai on October 10th – Huawei Connect – we will unveil a new AI Strategy and Full-Stack Portfolio. We will follow this by becoming the first in the Middle East to launch and showcase all-scenario AI solutions at GITEX 2018 in Dubai.

Huawei is convinced of the value of building a digital ecosystem in the public safety industry, and we will continue to invest in industry-enabling platforms with our partners to drive the digital transformation of the sector. Currently we work with over 20 partners and have brought AI solutions to many of our end customers. In order to keep building the AI ecosystem, in July 2018 we launched the artificial intelligence engineering certification, which offers fundamental knowledge of AI and provides industry-specific applications.

We do this out of our commitment to bring digital to every person, home and organization for a fully connected, intelligent world. In the new era, safety will be as fundamental as air and water, protecting citizens in every city, supporting the old and weak, and bringing peace and prosperity to all. We aim to support the region's long-term economic and development goals, and integral to this is the development new public safety solutions. We are working with global industry leaders in the security field to create new end-to-end public safety solutions driven by AI and new ICT innovations, to create a safer Middle East. 

REGIONAL NEWS

AWS Launches Two Amazon CloudFront Edge Locations in the UAE

Amazon Web Services Inc (AWS) has announced the launch of two Amazon CloudFront Edge locations in the United Arab Emirates. Located in Dubai and Fujairah, the new Edge locations bring the full suite of benefits provided by Amazon CloudFront including deep integration with compute and security services like Lambda@Edge, AWS Shield and LAWS Web Application Firewall (WAF). The new Edge locations give customers in the region an improved experience for their end users, including faster content delivery and added cybersecurity protection. Amazon CloudFront uses a global network of 138 Points of Presence (including 127 Edge Locations and 11 Regional Edge Caches) in 63 cities across 29 countries. In addition to the new Amazon CloudFront Edge locations, AWS also launched AWS Direct Connect in Dubai in August. AWS Direct Connect makes it easy for customers to establish a dedicated private network connection between AWS and their data centre, office, or colocation environment. With AWS Direct Connect, customers can connect to all their AWS resources in any global AWS Region and transfer their business critical data directly between their premises and AWS. "We are thrilled to continue expanding our presence in the Middle East and to be bringing even more advanced cloud technologies to customers in the UAE," said Andy Isherwood, AWS Vice President and Managing Director EMEA. "The Middle East is an important region for AWS and the UAE is a key hub for many of the Middle East's most innovative start-ups and enterprises. We look forward to further supporting these organisations with our new Edge location infrastructure as they accelerate their cloud adoption." Amazon CloudFront is a fast content delivery network (CDN) service that securely delivers data, videos, applications, and APIs to customers globally with low latency, high transfer speeds, all within a developer-friendly environment. It is also integrated with AWS, including physical locations that are directly connected to the AWS global infrastructure, as well as software that works seamlessly with AWS's services. Customers can start

using the service and could see performance improvements of up to 90% in reduced latency for their content delivery as a result of the local Edge locations. The higher accessibility to services and improved and faster user experience with Amazon CloudFront will help in driving the usage of more web applications across the Middle East, including eCommerce, mobile banking, media, entertainment and government services. Like other AWS technologies, Amazon CloudFront is a self-service, pay-per-use offering, requiring no long term commitments or minimum fees and can be used either standalone or in combination with other AWS services, to provide additional benefits to customers. Many organisations are welcoming the launch, including Middle East Broadcasting Center (MBC Group). MBC Group is the largest media company in the Middle East and delivers premium content to over 150 million people across the Middle East, North Africa (MENA) region. Adriaan Bloem, Senior Manager Online Platforms, MBC Group said: "We have been using AWS extensively for our digital properties including SHAHID.net, MBC.net and GOBOZ, MBC's Video on Demand service for kids. With the availability of these local Amazon CloudFront locations, we acquire better ways to manage our costs and gain a tremendous amount of flexibility – thus being able to offer an even better experience for our end-users." Also welcoming the launch of AWS Edge locations in UAE is Anghami, the number one music platform in the MENA region. Anghami has over 50 million users and offers instant access to over 26 million songs. Elie Habib, Co-Founder and CTO at Anghami said: "We are very excited by the opportunities that the new AWS Edge locations will bring to our service, particularly being able to cope with dramatic peaks in traffic. "For example, we see peaks of usage at night, in the morning and especially when new music is released, which can mean a 300% increase in traffic. Having a local Edge location allows us to better cope with these fluctuations. "Not having to worry about latency issues or data transfer speeds, because Amazon CloudFront is delivering our performance needs, frees us up to innovate in new ways for users to interact with the app, from anywhere in the world." Barry Judge, General Manager, UAE for Dubizzle, the leading online classifieds service in the Middle East, added: "We have been using AWS for many years because of the speed and agility that it has provided us, and we are thrilled to see them bring more infrastructure closer to us. "We are constantly releasing new application features and to be able to do that at increased speed is critical for our business and for the user experience. More importantly, security is central to everything we do and with the local AWS Edge location, we are able to improve the way we deliver our services, while at the same time benefit from a wide array of security features that come with Amazon CloudFront, particularly the AWS WAF. "The embedded security features bring us peace of mind, and allow us to focus on how we can better serve our customers."



KACST & ITU Ink New Partnership to Support Young Arab Entrepreneurs

King Abdulaziz City for Science and Technology (KACST), represented by Badir Program for technology incubators and accelerators, has signed a new partnership initiative with the International Telecommunication Union (ITU) for developing several projects in the domain of innovation and entrepreneurship, empowering the digital entrepreneurship and enhancing the efforts exerted for entrepreneurs, innovators and emerging companies in the Arab world. The agreement was signed by Turki Bin Saud Bin Mohammed Al-Saud, the President of KACST, and Houlin Zhao, the Secretary-General of ITU. The agreement was signed at the CITC headquarters in the presence of Eng. Abdullah Al-Swaha, Minister of Communications and Information Technology, and Dr. Abdulaziz Al-Ruwais, Governor of Communications and Information Technology Commission. Under the said cooperation agreement, Badir Program will chair and host the annual meetings of the Arab Technology incubators and Techno Parks Network in the Arab Region (ARTECNET) for three years as from 2019 to 2021, aiming at

the exchange of ideas and visions on the most successful ways to promote the Arab incubator industry, the utilization of experiences, information and experiences to improve the performance of incubators and the setting of ambitious plans and programs to improve the performance and enhance the role of emerging companies in the Arab world. ARTECNET was set up in 2014 in Algeria, with the support of ITU, where a group of the founder members adopted this idea during the Arab Technological Cities Meeting in Tunis 2013. Under the memorandum of understanding, Badir Program shall, in cooperation with ITU, be responsible for preparing and organizing workshops and training programs, whether on-site, via internet or through remote participation, to facilitate the exchange of experiences and scientific and practical information between the Arab business incubators, the decision-makers and the related bodies; to raise awareness and enhance the role of small, emerging and innovative companies in ICT sector; to encourage the spread of digital innovations in the Arab region; and to launch a website for the project.

Following the execution of the agreement, Turki Bin Saud Bin Mohammed Al-Saud, the President of KACST, applauded the efforts exerted by ITU to develop ICT entrepreneurship, stating that KACST aspires to build, in partnership with ITU, a digital environment embracing, developing and attracting the skillful minds in digital transformation and to contribute to the support of entrepreneurship to achieve economic sustainability, entrepreneurship and innovation at the Arab level. The president of KACST expressed his pleasure for Badir's chairmanship of ARTECNET and hosting of the meetings of the Network members for the first time in the Kingdom, stating "We will work to make this event an important milestone for overcoming the challenges faced by emerging companies in the Arab region. Moreover, it is also a real opportunity to meet and interact with the sector players to build and promote entrepreneurship in the Arab countries. Houlin Zhao, the Secretary-General of ITU, also expressed his pleasure for the agreement execution, indicating that ITU seeks to build partnerships with many public and private bodies, to ensure integration, cooperation and effort consolidation for finding innovative and practical solutions to enhance the progress of small and medium enterprises and emerging businesses in the Arab countries. He asserted that the memorandum of understanding executed with KACST will contribute to raising of competitiveness of emerging companies operating in ICT sector and enhancing their role and participation in the sustainable development and economic growth of the Arab region. Badir Program is one of the leading programs of King Abdulaziz City for Science and Technology. The program was established in 2008 to improve and support technical entrepreneurship throughout the Kingdom by helping the strategic policy applied in entrepreneurship and incubators in collaboration with government agencies, universities and the private sector.



Mideast Firms 'Lead EMEA in Digital Transformation'

Middle Eastern businesses are rapidly investing in cloud and mobile solutions at a rate far surpassing other EMEA markets, said Canon Middle East in its "Office Insights 2018" report released at the ongoing Gitex Technology Week in Dubai, UAE. Canon, a leader in imaging solutions, will be demonstrating its innovative solutions and services, designed to drive digital transformation success, at the event running until October 18 at Dubai World Trade Center.

Key findings of the study:

- 83 per cent of Middle Eastern respondents voted cloud-based document access as important or critical
- 67 per cent are already using cloud solutions on a daily basis
- 93 per cent of Middle Eastern respondents use an Enterprise Resource Planning system to efficiently manage information flow across different departments or sites

Rapid innovation is changing the nature of offices beyond its conventional boundaries, as knowledge workers can be productive anywhere, thanks to mobile, cloud, faster network access, and a growing number of online collaboration tools. The digital workplace of tomorrow is certainly beginning to take shape in the Middle East where a third of people in senior management positions have shifted from seeing little to no value in cloud and mobile services two years ago, to embracing the technology today. With over 50 per cent of Middle Eastern businesses believing that the cloud gives them an edge over their competitors and over 50 per cent believing that it improves workforce productivity, it is no surprise that cloud technology is a key driver of technological advancement in the region. The opportunity for cloud-based technology is far from shrinking, as 83 per cent of Middle Eastern respondents consider cloud-based document access important or critical to business success, compared to 67 per cent in the larger EMEA region. Around 67 per cent are already using cloud-based solutions in the Middle East, double the EMEA region average of 34 per cent. The Middle Eastern region has also demonstrated a strong support for mobile working, with 60 per cent of

respondents citing the positive impact it has had on their businesses and 51 per cent of IT departments in the region providing support to employees' personal devices. Respondents also believe that social media makes the workplace more collaborative, that remote working makes people more productive, and that personal devices should be brought into work. This attitude has meant that the adoption of cloud and mobile services has been faster in the Middle East than in other regions across Africa and Eurasia, with strong and impressive results. On cloud-based document management and automation, 85 per cent of Middle East respondents consider it critical or important to convert paper documents to editable, digital ones, recognizing that an organization can only harness the full potential of digital by integrating it into every facet of the enterprise. While no enterprises in the Middle East have entirely stopped using transactional hard copies, 34 per cent are focused on halting their use in the next 12 months. A longer timeframe for phasing out hard copies is planned among 39 per cent of businesses in the region, who look to achieve this goal in the coming 2-3 years, and 16 per cent in the next 4-5 years. The vast majority of ME respondents agree that more automation is inevitable, clearly outlining that this is the direction that the majority of workplaces are headed. From the Middle East, 93 per cent of respondents already use Enterprise Resource Planning (ERP) systems or similar, designed to efficiently manage information flow across different departments or sites. Despite the fact that 57 per cent of respondents worry about losing data in the cloud, this does not seem to deter the uptake of cloud solutions. The Middle East region is the most likely to be enhancing document security in the next 1-2 years (46 per cent) whereas the average in EMEA is only

25 per cent. This concern is translating into real-world action, with 55 per cent in the Middle East consulting with external specialists to help them with document management solutions. Ayman Aly, senior marketing manager, Canon Middle East said: "It is very encouraging to see how aware our region is of the benefits of cloud and how best to implement it, making the most of upfront investments." "When done right, cloud technologies and mobile access can actually improve both security and productivity, allowing users to access lost data, help to wipe machines remotely, and enable flexible working on-the-move. Understandably, many businesses are still cautious about integrating mobile and cloud technology into the office landscape. Our aim is to continue providing support and education to our customers and business partners in the Middle East, to ensure that they are able to reach their full potential, no matter the size or nature of their industry." At Gitex Technology Week 2018, Canon is demonstrating the future workplace through three experience zones highlighting the customer benefits of digital transformation in security, automation, print, mobile and cloud. Recognizing that wider and better use of social networks, data analytics, and smart technologies are having monumental effects on productivity and expectations, Canon focuses on unlocking additional opportunities for businesses through the creation of secure spaces conducive to collaboration. "The office of the future is marked by digitization, automation and optimization, propelling innovation across the entire organization. Canon is committed to work with our clients on their digital transformation journey to update key processes and seize opportunities for automated efficiency while maintaining and improving digital workflows," added Bakhour.



Cloud Boosts Saudi's IT Market to US\$10.6 Billion by 2021

As Saudi Arabia's digital transformation advances Intelligent Enterprises, Smart Cities, and Saudi Vision 2030, the Kingdom's IT market is set to top SR40 billion by 2021, industry experts announced Tuesday ahead of GITEX Technology Week. Global technology company SAP says rapidly-digitizing verticals -- aviation, banking and finance, public sector, retail, and telco -- are enabling organizations to optimize costs, efficiency, and digital business. As a result, the Kingdom's digital market is set to top SR40 billion by 2021, according to a recent report by BMI Research. Supporting regional digital transformation, SAP recently became the first multi-national enterprise application software company to go live on a Saudi cloud data center. "The massive Middle East digital market shows that CEOs are early adopters in digital transformation on the cloud, for digital business models that can transform customer experiences," said Ahmed Al-Faifi, Senior Vice President and Managing Director, SAP Middle East North. "GITEX is an ideal platform to emphasize the urgency that every Middle East industry vertical

and line of business faces in moving to the cloud, in order to gain greater market share and business competitiveness." Supporting digital transformation of Saudi Arabia's industry verticals and lines of business, at GITEX, SAP will exhibit under the theme "The Intelligent Enterprise," with a central showcase of how the future of Smart Cities can reimagine daily lives in the Digital Economy. Visitors will be able to experience intelligent entertainment parks, blockchain for supply chain, smart sports, Intelligent Enterprises, and Future of Work. Enterprises can be enabled by SAP's Digital Hub in the Kingdom, which includes the data center, an open platform for local developers, a co-innovation center, and localization of SAP solutions. Already public and private sector customers, from small- and medium-sized enterprises to large enterprises, are running on the cloud data center. SAP expects to see further integration of innovations in artificial intelligence and machine learning, blockchain, Big Data, and the Internet of Things. "Our Saudi cloud data center and Digital Hub are open to any global

customer -- enabling Intelligent Enterprises to integrate intelligent suites, digital platforms, and intelligent technologies," said Khaled Alsaleh, Managing Director, SAP Saudi Arabia. "From digital oilfields to connected hospitals, the Intelligent Enterprises that will rise to the top are those that optimize artificial intelligence and machine learning, blockchain, and the Internet of Things to transform the economy, society, and environment." At GITEX, SAP will bolster its support for Saudi Vision 2030, with Khaled Alsaleh set to announce new research revealing how cloud serves as the foundation for Smart Cities and emerging technologies. As part of its commitment to enabling Saudi Arabia's digital transformation, SAP is delivering on its 4-year SAR 285 million investment plan. SAP co-innovates with digital leaders in the Kingdom, including the Saudi Arabian General Investment Authority (SAGIA) and the Saudi Arabian Monetary Authority (SAMA), along with ALJ Motors, Emdadat, and many more.

Bahrain Digital Market to Reach \$419 Million by 2021

According to industry expert in Bahrain, digital market is set to reach BD 159 million by 2021. Bahrain Digital Market to Reach \$419 Million by 2021 Global technology company SAP said that

this is enabling different organization to enhance their costs and digital business. SAP becomes first multinational enterprise software company to support digital transformation by going live on a Saudi cloud data center. Additionally, it is open for Bahrain customers. Ahmed Al-Faifi, senior vice president and managing director, SAP Middle East North, said: The massive Middle East digital market shows that CEOs are early adopters in digital transformation on the cloud, for digital business models that can transform customer experiences. He further added that: Gitex is an ideal platform to emphasize the urgency that every Middle East industry vertical and line of business faces in moving to the cloud, in order to gain greater market share and business competitiveness. SAP will exhibit under the topic The Intelligent Enterprise with the central display of how smart cities can reimagine. People can also experience smart sports, intelligent enterprise and the other future work. Visitors can experience solutions running on the SAP HANA in-memory platform, SAP S/4HANA real-time business suite, SAP C/4HANA customer experience solutions, and SAP Leonardo digital innovation system.



Abu Dhabi Launches 5-year Plan for Smart Cities and AI

The Department of Urban Planning and Municipalities in Abu Dhabi has launched the pilot phase of the five-year plan for Smart Cities and Artificial Intelligence (2018 – 2022) named Zayed Smart City Project, according to a top official. "It is a pioneering project for managing the infrastructure by using the Information Technology and the Internet of Things. The project aims to envision the future, drive innovation and provide infrastructure at world-class standards," said Badr Al Qubaisi, General Manager of Abu Dhabi City Municipality (ADM). "It reflects that we are progressing simultaneously on several tracks leading to the digital future in the implementation of the vision of our government, which is endeavoring to run ahead of time. This goal will be complemented by the end of this year when all services of the Department of Urban Planning and Municipalities go digital," he said at a workshop titled 'How can Artificial Intelligence (AI) shape smart cities' at the ADM headquarters. "The Smart Cities project stems from the vision of Abu Dhabi, and the implementation of the municipal system's policies aimed at achieving sustainability, and improving the quality of living in Abu Dhabi emirate. The municipality has actually embarked on the implementation of the five-year plan for Smart Cities and AI," Al Qubaisi said. A presentation was made highlighting

Zayed Smart City by teams of IT and Infrastructure at the ADM. Al Qubaisi said: "Holding the AI seminar is indicative of the seriousness of the digital drive in all our lives." This will help build future by focusing on digitization, evolution, and modernity to improve the quality of life and bring happiness. The seminar addressed the trends, challenges, and ideas about the role of the Internet of Things in building Smart Cities and shaping smart cities and Abu Dhabi's vision for the next generation, the official said. The findings of the workshop will contribute to driving the digital transformation of municipal

services, said an ADM press release issued on Monday. Participants at the workshop included experts from government entities, including Eng. Yousef Al Marhoon from IT Division at the Department of Transport in Abu Dhabi, who made a presentation about applying AI in improving transportation. Eng. Imad Al Hashimi, from the General Directorate of Civil Defence – Abu Dhabi, delivered a speech about the efforts of Civil Defence in applying AI in support of their services and abilities. Marwan Al Marzouqi, from Abu Dhabi Waste Management Centre (Tadweer) presented a paper about the use of AI in the transportation of waste.



Pakistan Government Decided To Increase Regulatory Duty on Imported Mobile Phones

After attending the Senate Standing Committee on Finance meeting, the senior officials informed the media about the increase in regulatory duties. They unveiled that the government has proposed an increase in the rate of RD within the range of 10-20%. The duty on imported mobile phones valuing \$60 or more than that will be increased. The government has made a decision to increase Regulatory Duty (RD) on the import of cellular phones. The duty on the cell phones valuing \$60 and above of any brands will be increased through the Finance Supplementary Bill 2018. They

have estimated to collect approximately Rs 4.4 billion from this measure during 2018-19. RDs play an effective tool in maintaining the stability of the account position, competitiveness of the domestic manufacturing sector and promoting import substitution. So, according to FBR, the government has decided to broaden up the RD regime to include additional luxury and non-essential items. The Finance Supplementary (Amendment) Bill, 2018 has been presented before the Parliament by the government. However, the submission of the list of items on

which the RD has been increased for 2018-19 is still pending. Finance Ministry has not submitted the list yet. Federal Board of Revenue Member Customs, Zahid Kokhar stated that: "We have made efforts to overcome trade imbalance and improve the balance of payment situation." He further added that higher duty will be imposed on the expensive cell phones. The main purpose of the government behind this measure is to introduce fairness in its fiscal measures. They have made this step with regard to items where both the rich and the poor are should be treated alike.

Cloud Drives Pakistan's Digital Market to PKR 800 Million

As Pakistan's digital transformation advances Intelligent Enterprises, Smart Cities, and Vision 2025, the country's digital market is set to reach PKR 800 million industry experts announced during GITEX Technology Week in Dubai. Global technology company SAP says rapidly-digitizing verticals – aviation, banking and finance, public sector, retail, and telco – are enabling organizations to optimize costs, efficiency, and digital business. As a result, Pakistan's digital market is reaching PKR 800 million, according to the International Trade Administration. Supporting regional digital transformation, SAP recently became the first multi-national enterprise application software company to go live on a Saudi cloud data center, open to Pakistan

customers. "The massive Pakistan digital market shows that CEOs are early adopters in digital transformation on the cloud, for digital business models that can transform customer experiences," said Ahmed Al-Faifi, Senior Vice President and Managing Director, SAP Middle East North. "GITEX is an ideal platform to emphasize the urgency that every Pakistan's industry vertical and line of business faces in moving to the cloud, in order to gain greater market share and business competitiveness." Supporting digital transformation of Pakistan's industry verticals and lines of business, at GITEX, SAP will exhibit under the theme "The Intelligent Enterprise," with a central showcase of how the future of Smart Cities can reimagine daily lives in

the Digital Economy. Pakistan's visitors are experiencing intelligent entertainment parks, blockchain for supply chain, smart sports, Intelligent Enterprises, and Future of Work. "Becoming a cloud-first Intelligent Enterprise is the number one business priority Pakistan's CEOs," said Saquib Ahmad, Managing Director, SAP Pakistan. "Our strong Pakistan attendance at GITEX shows the value in moving to the cloud, and integrating artificial intelligence, blockchain, and the Internet of Things to optimize operations and customer experiences. By having a nationwide digital foundation, Pakistan's public and private sectors can enable Vision 2025's transformation of the economy, society, and environment."

VEON Cancels Offer For Direct Ownership of Pakistan, Bangladesh Divisions

Amsterdam-based, Russian-backed VEON has terminated its offer to take direct ownership of its Pakistan and Bangladesh mobile operating units currently held via the group's Egypt-based subsidiary Global Telecom Holding (GTH), partly due to recent currency devaluation in Pakistan. VEON, listed on the US NASDAQ and Euronext

Amsterdam stock markets, said in a release yesterday that it has cancelled the USD2.55 billion share offer (launched on 2 July) 'in light of recent events surrounding the Pakistani Rupee and the reaction to the offer by GTH minority shareholders, which suggests that approval would not have been forthcoming'. It added: 'VEON

will continue to explore options to address its strategic relationship with GTH and its minority shareholders.' VEON owns 57.7% of GTH and already consolidates the results of cellcos Jazz (Pakistan) and Banglalink (Bangladesh) plus another GTH subsidiary, Djazzy (Algeria).

Cloudflare Plans to Set Up Data Center in Bahrain

Following Amazon Web Services' announcement to set up a data center in Bahrain, another global technology company has also announced a similar decision. Cloudflare, a top global US-based company, has also said that it will be setting up a data center in Bahrain. This was announced by Dr. Michael Nelson, a senior executive from the company. Cloudflare is one of the top cloud computing companies with more than 150 data centers around the world. Dr. Nelson was in Bahrain to give a keynote presentation at the Innovation Forum organized by The MIT Enterprise Forum Pan Arab in partnership with the Bahrain Economic Development Board and with the support of Internet Society yesterday. Speaking to Tribune he said that no timescale has been established for the data center, adding that it will be done "soon". "We are still



working to develop a data center here. We work with the local phone companies, the local Internet companies or the local data center companies to establish the data center," he told Tribune.

Dubai to Offer Digital Currency Payments

Citizens and residents of Dubai will be able to make digital payments for school fees, bills and retail purchases with a stable, digital currency after a partnership between blockchain payment provider Pundi X, Ebooc Fintech & Loyalty Lab and emcredit - Dubai's Credit Bureau. Consumers in Dubai, UAE will be able to use digital currency to make retail payments in-store, pay for government utilities, telecommunication, and school fees in government shopfronts via emcash – Dubai's digital currency launched by emcredit, a state-backed subsidiary of the Dubai Department of Economic Development. The Pundi X POS ("point of sale") device created for ebooc fintech & loyalty labs for the exclusive use of emcredit with their branding will be dedicated to running a stable, digital equivalent of the UAE dirham. Ebooc - the first Emirati fintech company is the exclusive partner of Pundi-X and providing blockchain-based NexGen technology and loyalty solutions for the financial services sector. XPOS devices are expected to be rolled out at shopfronts the region following today's deal with provisions for an increase in coming years. An emcredit spokesperson said: "To be the world's first city to offer blockchain-based payment solutions to our residents is an exciting moment for Dubai. It confirms Dubai's status as an international tech hub. Deploying cutting-edge technology such as blockchain is a key priority and is delivering benefits to our citizens in the form of convenience and securities to customers and merchants across Dubai." Zac Cheah, the CEO and co-founder of Pundi X said: "Bringing blockchain-based payments technology into the government sphere is a major development for the technology. "But to be



able to bring it to one of the great cities of the world and the most advanced economy in the Middle East makes today an historic moment for the real-world application of a technology that has promised so much potential until now. We are very proud to partner with emcredit and to support its vision for supporting its customers through technological innovation". Abdalla Al Shamsi, CEO DFP and co-founder ebooc said: "We are delighted to be a part of this historic partnership when Dubai launches the world's 1st first digital currency – emcash. We also envisage consumers in Dubai being able to make real time payments using Dubai's digital currency for all their payment needs for shopping, paying for Government fees etc. ebooc is also looking at extending its reach as an exclusive POS partner of Pundi X." Sunil Malhotra, managing director Bchain and co-founder of ebooc said, "emcredit-ebooc– Pundi X partnership will deliver a differentiated customer experience

through innovative POS products and service for consumers in Dubai bringing together various service providers under one platform." Further details of the partnership will be announced following the development, testing and approval of the technology by government regulators later this financial year, a statement said. Pundi X are shipping thousands of its payments devices to the global retail market, including retail partners in markets such as Singapore, Brazil, Africa and Korea, just eight months after raising \$35-million in startup funding in a public token sale in January. This partnership brings world-leading, blockchain-based XPOS technology into a public sector environment for the first time and is the company's first deployment in the Middle East region. The company is targeting a rollout of more than 100,000 of its unique blockchain-based POS devices to the global retail in three years' time.

Pakistan SCO Connects the Base Camp of K-2 with Mobile Services

Askole of Shigar Valley (Gilgat Baltistan) is located in a remote region of the Karakoram Mountains at a height of 10,000 ft. It is the final settlement before one enters the wilderness of the Karakorum and acts as base camp to four of the

world's 14 highest peaks including that of K-2. The area was provided mobile service by Special Communication Organization. Setting up of mobile service in Askole, is an honor for us to serve the unserved areas no matter what efforts are required, said

SCO head while inaugurating the service. He reiterated that we shall make all our efforts to support tourism by reaching all the remote areas of the region.

Fresh IXP Alliances Bode Well for Africa's Internet

Global non-profit organization the Internet Society has partnered with Facebook to develop Internet Exchange Points (IXPs) throughout Africa, while IXP industry experts Asteroid and NAPAfrica have also signed a MoU. The Internet Society and Facebook will promote IXP infrastructure development, training and community engagement required in order to not only



support the expansion of existing IXPs, but increase the number of IXPs. "The Internet community adopted the goal of having at least 80% of the internet traffic consumed in Africa being locally accessible, and only 20% sourced outside the continent by the year 2020," said Dawit Bekele, Africa Regional Bureau Director for the Internet Society. "We are getting closer to that target thanks to the many activities that promote interconnection and hosting in Africa and to partnerships such as the one we are announcing today with Facebook." Kojo Boakye, Head, Connectivity and Access, Africa at Facebook, said, "We admire the Internet Society's important work to improve connectivity in Africa by supporting IXPs. Our partnership with the Internet Society will help develop Africa's IXP ecosystem by deploying resources like training and equipment to the areas where they are most urgently needed. The MoU between Asteroid and NAPAfrica was established to promote

peering and local interconnection, with an emphasis on IXPs as an essential part of the internet ecosystem. "We are proud to be teaming up with NAPAfrica to combine our competence and experience in IXPs and peering," said Nurani Nimpuno, CCO at Asteroid. "We believe that Africa holds great potential for internet growth, but there are still real challenges to solve in terms of in-country interconnection. IXPs can play a key role in boosting that, and at Asteroid we want to work play a positive role in that development. NAPAfrica with their amazing reputation and experience is an obvious partner for us to work with." Michele McCann, Head of Interconnection and Peering at NAPAfrica, said, "Asteroid has a solid team of reputable IXP experts. We are incredibly excited about their lean, efficient, and highly automated IXP model, and we think it's a good fit in Africa. We are proud to be teaming up with Asteroid in promoting local interconnection and peering on the continent."

China's Tatwah Rumored as Suitor for Turk Telekom

Chinese device manufacturer Tatwah Smartech Co is among parties involved in ongoing ownership talks regarding Turk Telekom (TT), reports Bloomberg citing four people with direct knowledge of the matter. Last month the transfer of a 55% stake in TT to a group of 29 creditor

banks via a special purpose vehicle (SPV) received final approval by Turkey's Ministry of Treasury and Finance. The banks plan to sell the stake – relinquished by indebted Oger Telekomunikasyon AS (OTAS, itself owned by Oger Telecom [Dubai] and Saudi Telecom Company) – but discussions are

ongoing and no final agreements have been reached, Bloomberg's anonymous sources said. A sale to Tatwah is reportedly one of several possible solutions being considered. The Turkish government retains a 25% direct stake in TT plus a 'golden' voting share.

Aftel Sharing Etisalat Network

State-backed telco Afghan Telecom (Aftel) has begun utilising the infrastructure of cellular rival Etisalat Afghanistan as it looks to increase its market share, The National quotes Aftel CEO



Ajmal Ayan as saying. According to the official, Aftel is currently sharing access to between 60 and 70 of Etisalat's towers, and the company is looking for more collaborations with the UAE-based firm. 'I am sure it will be a win-win situation as the Afghan market offers a huge scope of growth for Etisalat,' the official said, adding: 'Our current market share is less than 5%. That is very low but we target to reach the top spot. We have planned to work closely with Etisalat to build our capabilities while spreading our network.' In addition to sharing infrastructure in Afghanistan, Aftel is looking to secure an improved roaming agreement with Etisalat in its domestic market: the UAE is home to one of the largest expatriate Afghan communities with more than 150,000 Afghans living in the Emirates.

Huawei Ready to Help Bangladesh Deploy 5G

Leading global provider of information and communications technology infrastructure and smart devices company Huawei has completed 20 years of its service in Bangladesh - a period that saw the country transformed into an advanced mobile technology. Huawei's presence in Bangladesh market for past 20 years saw the country's graduation from a basic technology-driven society to an advanced ICT-driven society where the Chinese multinational, the Shenzhen-based largest telecommunications equipment manufacturer in the world also played pioneering role in deploying 3G and 4G in Bangladesh. In order to take forward the technological advancement of the country, Huawei has taken several steps on the implementation of 5G, Zhang Zhengjun, CEO, Huawei Technologies (Bangladesh) Limited, told UNB. 5G is the fifth generation of cellular mobile communications. It succeeds the 4G, 3G and 2G systems. 5G performance targets include high data rate, reduced latency, energy saving, cost reduction, higher system capacity and massive device connectivity. "Recently, we demonstrated 5G in the country which was inaugurated by Prime Minister's ICT Adviser

Sajeeb Wazed Joy as part of Vision 2021," said Zhang Zhengjun. Huawei has been in business in Bangladesh for past 20 years starting from 1998 with 85 percent of its local staffs Bangladeshi nationals. Huawei shares the vision of Digital Bangladesh in its journey from 2G to 4G, Zhan Zhengjun said adding that "Number of smart devices has increased phenomenally during 2013 to 2017." Huawei is growing up together with the ICT Industry of Bangladesh and is also concerned about corporate social responsibility through programmes like-ICT Mobile Training Bus, Seeds for the Future, relief campaigns, sports sponsorship and so on, the Huawei Bangladesh CEO said. Based in Dhaka, Huawei Bangladesh has 7 offices, 14 Terminal Service Centers and 350+ Smartphone Brand Shops in this country. Besides providing integrated networking equipment to all the telecom service providers, Huawei has been contributing a lot to the development of Digital Bangladesh by state-of-the-art ICT solutions. On September 11, top ten Bangladeshi students of Huawei's flagship CSR program "Seeds for the Future 2018" were invited for a visit to its headquarters in China. Previously, a good many students

from Bangladesh also visited different parts of China in 2014, 2015 and 2016 under the Seeds for the Future Program. To help Bangladesh train ICT talents and create more opportunities for the talents, 'Seeds for the Future' was the first flagship program launched in the country. Huawei Bangladesh chose Shakib Al Hasan, the no. 1 all-rounder cricketer as its brand ambassador. In December 2017, Huawei Bangladesh was awarded highest VAT payer in service sector for fiscal year 2015-2016 in Dhaka district. Previously, in July 2014, Huawei Bangladesh was awarded the "Best Tax Payer Enterprise". Huawei signed MoU for "ICT Mobile Training Bus" project in 2016 which was a huge milestone. Huawei's 5G technology will enhance mobile broadband, support national energy transformation, increase automotive safety and efficiency, drive manufacturing transformation, bring health to everyone and thus, provide new business opportunities for telecom operators. The company has more than 180,000 employees, 36 Joint Innovation Centers, 14 R&D centers and operates in more than 170 countries and regions.

Libya's Al-Madar Launches 4G+ Mobile Internet Service

Libya's state-owned Al-Madar mobile phone company, the second largest mobile phone company in Libya, announced the launch of its fourth generation plus (4G+) high speed mobile internet service. Al-Madar said that it will start the 4G+ service "soon" in the greater Tripoli area, and that

the service will also be available in the east of the country "soon". It will be seen if the new 4G+ service will indeed be launched soon as the company has been promising to launch it for a number of years. Equally, the Libyan public has been very frustrated by the consistency of internet service

in Libya which has been frequently interrupted by the regular power cuts. The 4G mobile service has been seen as being too expensive and using up a considerable amount of customers' phone credit.



Bahraini Cryptocurrency Exchange Eyes GCC Launch in 2019

Rain, a Bahraini cryptocurrency exchange backed by bitcoin developer Jimmy Song, aims to secure a full operational license in 2019 to expand its operations in the GCC. If successful, the company would be the first regulated digital currency exchange in the region. The oversight could provide comfort to investors wary of cryptocurrency trading, which has been beset by lack of global regulation, recent high-profile heists of digital coins and market volatility. "The biggest issue in this industry is that of trust," Rain's co-founders Yehia Badawy, Abdullah Almoaiqel, AJ Nelson and Joseph Dallago, said in a statement. "We want our customers to feel safe when they are using our product and have taken measures to ensure this, including establishing two stable bank partnerships and incorporating banking grade security checks and verification into our product." Rain, whose digital platform and custodian services allow people to buy, sell and store digital

currency in a secure environment, has operated a limited set of activities since November 2017 as part of the Central Bank of Bahrain's FinTech sandbox trial, intended to support start-ups in the sector. Rain is in talks with authorities to win a full license to scale up its operations next year. FinTech has caught the attention of venture capitalists and other investors across the world, with billions pumped into start-ups and other companies in the sector. Total global FinTech investment rose to \$8.2 billion in the third quarter of 2017, compared with \$6.3bn in the year-earlier period, according to KPMG's latest Pulse of FinTech report. GCC countries including Bahrain and the UAE want to increase their involvement in FinTech as they diversify their economies, and have introduced legal and regulatory reforms to support the fast-growing sector. UAE financial free zone Abu Dhabi Global Market last year published guidance on virtual currencies and initial coin offerings – the digital currency version of public share listings – following high volatility in the trading prices of popular cryptocurrencies such as Bitcoin. However, in an interview with The National last month, the chief executive of ADGM's Financial Services Regulatory Authority said the industry needs more regulation to combat the risk of financial crime. "Every time a coin gets stolen or lost, it affects the confidence in this asset class," Richard Teng said. Rain's investors include cryptocurrency players Breadwallet, Blockwater, JM Bullion, Capital Markets Trading and bitcoin developer Mr. Son. "We will provide the GCC with a digital currency exchange that meets the highest international standards in terms of pricing, product, security and regulation," the founders said.



Pakistan Moves towards Digital B2B Payments

Fintech firm Haball has signed an agreement with electronic trading platform 1Link and Meezan Bank to introduce a solution for digital payments in the Pakistani B2B space. This arrangement will allow businesses to make inter-entity digital payments that fulfil their existing bookkeeping, reconciliation and reporting processes using Haball's "context driven" solution. While Haball's role will be of an aggregator, Meezan Bank will perform the settlement function. 1Link's infrastructure will ensure processing of the transactions. "Haball provides businesses a convenient way to pay digitally and instantly, bringing efficiencies in existing business processes by streamlining existing workflows and

improving productivity," says Omer Bin Ahsan, CEO, Haball. Fatima Group is the first business conglomerate in Pakistan to adopt Haball's B2B payment automation solution. Sardar Naufil Mahmud, CIO,

Fatima Group, states that it will use order-to-cash and subsequently procure-to-pay cycles with "full integration" to its existing ERP systems. [\[1\]](#)





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ARTICLE

Graphene Core as a Basis for Decentralized Telecom Ecosystem



Sergey Malcev, PhD

Lead Blockchain
Software Architect



In the past few years, the telecom industry has been undergoing serious changes, with a number of new technological solutions being implemented. Today, blockchain technology is gradually becoming a part of the telecom world and promises substantial benefits, especially if it's built on Graphene.

The Bubbletone team is building a decentralized telecom ecosystem which is based on a Graphene blockchain core. Developed specifically for the telecommunication industry, the system is focused on professional market players, such as mobile operators, content and other service providers, software developers, etc.

Industrial blockchain

There is a concept of industrial blockchain that has formed in the society. Though, this concept differs from the blockchain associated with cryptocurrencies, industrial and fintech blockchain complement each other.

When it comes to the industrial blockchain, it is focused on solving specific business problems between equal participants in their business environment. For instance, it gives the opportunity to significantly optimize many business processes, reduce costs, and eliminate intermediators. This technology also gives the opportunity to develop new effective solutions that are not available within the classical approach, i.e. centralized systems.

Bubbletone

The Bubbletone team is building a decentralized telecom ecosystem which is based on a Graphene blockchain core. Developed specifically for the telecommunication industry, the system is focused on professional market players, such as mobile operators, content and other service providers, software developers, etc. It represents a global marketplace where

participants can offer and purchase services, as well as resell them to their own clients, i.e. interact directly, without any intermediaries.

Graphene blockchain can maintain a large number of transactions and compete with VISA and MasterCard payment systems. It is capable of pushing up to 100,000 TPS, versus Ethereum and Bitcoin, which currently run at around 25 TPS and 7 TPS, respectively. There is no other known blockchain that can even try to compete with Graphene in the processing such a high number of transactions.

Distributed Ledger Technology is required for such solutions as it seems to be the only platform that is capable of providing a trusted environment for competitive players. We studied available blockchain platforms and came to a conclusion that Graphene core looks very promising for our telecom solution as well as for other industrial applications.

Currently, our system supports more than 10 use cases, including alternative roaming with minimal costs for settlements and integration and digital identity services. More use cases can be supported in case the industry has demand for it. Our Graphene-based solution is very flexible and can be adapted to various business cases.

Graphene and its industrial performance

Graphene is an open-source blockchain technology, mainly written in C++. Graphene source is available in numerous variations, as it has been forked and adapted a lot of times.

The largest public and widely recognized Graphene-based projects are: EOS –

a blockchain that aims to become a decentralized operating system which can support industrial-scale decentralized applications, like Ethereum in functionality, but with significantly higher transaction speed; BitShares – a decentralized exchange and fintech platform; and Steemit – a decentralized blogging platform and social network.

Graphene blockchain can maintain a large number of transactions and compete with VISA and MasterCard payment systems. It is capable of pushing up to 100,000 TPS, versus Ethereum and Bitcoin, which currently run at around 25 TPS and 7 TPS, respectively. There is no other known blockchain that can even try to compete with Graphene in the processing such a high number of transactions. A graphene-based network can confirm transactions in just 1 second (a typical setup uses 3-5 seconds for a block confirmation).

Graphene was developed in a modular fashion that makes it adaptable to many different use cases. It utilizes Delegated Proof of Stake (DPoS) consensus protocol. In DPoS, community elects what are known as witnesses. The witnesses are responsible for generating and adding blocks to the blockchain. To optimize the decentralization level, scalability and performance, the community can control the number of witnesses. Typically, about 20 independent witnesses ensure the stable network operation.

The key benefits of DPoS are as follows:

- Saving on energy costs. In contrast to proof-of-work (PoW) systems (Bitcoin, Ethereum), in which miners have to spend large amounts of energy to be granted the block signing privilege, in DPoS, witnesses are given a specific time schedule without energy-consuming competition;
- No special computing equipment for “mining” is required;
- Higher transaction throughput;
- Reliable Block Generation (~1-3s/block). Time for the next block production is strictly defined;
- Scalability. There is no performance drop when new Graphene nodes join the system.

The security of Graphene is based on elliptic curve asymmetric cryptography (same as Bitcoin), which is used for signing transactions and blocks. The key size is 256 bits (secp256k1). Private messaging between participants with endpoint encryption is possible thanks to a “shared secret” protocol.

With developments of blockchain and cryptocurrency, people realized that governance of DLT systems should not be ignored. The governance of industrial DLT systems is even more important. Graphene proposes a solution such as Committee concept. Committee members are elected by the community (actual election rules can vary). The members are responsible for maintaining the network parameters and can propose changes to the network.

Typical Committee tasks are as follows: regulating network fees, changing network technical parameters, blocking malicious accounts, performing certain transactions to compensate undesired/illegal actions within a DLT system, which may appear, for example, as exploits of software issues.

The security of Graphene is based on elliptic curve asymmetric cryptography (same as Bitcoin), which is used for signing transactions and blocks. The key size is 256 bits (secp256k1). Private messaging between participants with endpoint encryption is possible thanks to a “shared secret” protocol.

Taking into consideration all these facts, a Graphene DLT core can certainly serve as a solid basis to construct effective industry-grade systems for the telecom industry that will give telecom operators, service providers, and end users new opportunities. 📍

SATELLITE NEWS

UAE Successfully Launches Satellite KhalifaSat

It's proud and historic moment for the UAE as its first 100 per cent Emirati-made satellite, KhalifaSat, has lifted off into space from Tanegashima Space Centre in Japan. The launch of the Earth observation satellite took place on October 29, at 8.08am UAE-time onboard the H2-A rocket, which was also carrying Japan's environment satellite, GoSat-2, along with KhalifaSat. The launch was broadcast live on the Mohammed bin Rashid Space Centre's (MBRSC) website and it showed that GoSat-2 was successfully separated from the rocket and reached the orbit at 8.25am. However, the separation of KhalifaSat and its arrival on its desired orbit destination happened in 100 minutes from 8.25am, according to the live stream. A team of 70 Emirati engineers from MBRSC built KhalifaSat, which will be the third satellite the centre has launched into space. DubaiSat1 was launched in 2009 and DubaiSat2 in 2013. Commercial and communication satellites by the UAE - YahSat-1,2 and Thuraya 1,2,3 - have also been launched before. However, KhalifaSat is set to be the most advanced Earth observation satellite for the UAE as it will take high-quality images. KhalifaSat is a top trend on Twitter in the UAE with more than 2,500 tweets in English and over 15,000 Arabic tweets in just within the first hour of the launch. Millions of viewers were expected to tune in to the live stream on MBRSC's website and on their YouTube channel. KhalifaSat is the most advanced Earth observation satellite a team of Emirati engineers have ever developed. It will be able to take high-quality images, which will be provided to the UAE government for free by the MBRSC and at a cost to international entities. However, they will be offered free of charge if they are requested for humanitarian causes. The satellite will also monitor environmental changes locally and internationally to support global efforts to preserve the environment. It is expected to provide detailed imagery of the ice caps at the North and South Poles, helping to detect the effects of global warming. The director of the space systems development department and the project manager of KhalifaSat at the MBRSC, Amer Al Sayegh said: "The event will be live-streamed and we are encouraging everyone to watch it as this will be an important part



of the country's history. This is a very proud moment for us at the MBRSC and as UAE nationals. It's a huge step forward for our space industry."

China Launches 2 BeiDou-3 Navigation Satellites

China launched twin BeiDou-3 navigation satellites on a Long March-3B carrier rocket from Xichang Satellite Launch Center in Sichuan Province. The satellites entered their planned orbit after flying more than three hours, and will work with the 14 BeiDou-3 satellites already in orbit. The satellites are the 39th and 40th of

the BeiDou navigation system, and the 15th and 16th of the BeiDou-3 family. The satellites and the rocket for launch were developed by the Innovation Academy for Microsatellites of the Chinese Academy of Sciences and the China Academy of Launch Vehicle Technology, respectively. The launch was the 287th mission of the

Long March rocket series. The BeiDou satellite system started serving China in 2000 and the Asia-Pacific region in 2012. China plans to send another three BeiDou-3 satellites into space by the end of the year.

AMN and Intelsat Partner to Connect Ultra-Rural Sub-Saharan Africa

Intelsat S.A., operator of the world's first Globalized Network and leader in integrated satellite communications, and Africa Mobile Networks (AMN) announced today that Intelsat has made a strategic investment in AMN. The purpose of the investment is to accelerate the deployment of mobile connectivity to unserved communities across multiple countries in sub-Saharan Africa. Given the economic and geographic complexities of expanding mobile connectivity to the ultra-rural areas of Africa, many mobile network operators (MNOs) face barriers when trying to deploy their networks to these areas. AMN provides MNOs with a network-as-a-service (NaaS) solution in which AMN will fund, build and operate the ultra-rural network for the operators. As a result, African mobile operators will be able to extend their coverage with minimal opex and capex risk, enabling them to grow their subscriber and revenue base, and better serve all their customers. At the core of AMN's solution is a low-cost,

small cell solution that is powered by a highly reliable solar-based system which can be rapidly deployed and installed in less than 6 hours. As part of the long-term agreement, AMN will leverage the power, performance and efficiencies generated by Intelsat's next-generation Intelsat EpicNG high-throughput satellites (HTS), as well as the 23 Intelsat satellites covering the continent to provide the optimal balance between coverage and high-throughput for the enabled sites. Once installed, the sites will connect over the Intelsat fleet to the core of the mobile network operator and deliver 2G mobile services, such as GSM voice, SMS and GPRS/EDGE packet data, with the ability to upgrade the base stations to 3G and 4G as data demands allow. "The high performance, redundancy and flexibility of Intelsat's satellite fleet over Africa made them an ideal partner for us," said Michael Darcy, AMN's chief executive officer. "Intelsat shares our view that mobile coverage is not spreading quickly enough and as such, invested in

AMN's vision of installing a cell site in every African village. Together, we can accelerate the deployment of mobile connectivity and work to ensure that communities, wherever they are located, have equal access to high quality, sustainable and affordable broadband connectivity." Jean-Philippe Gillet, Intelsat's vice president and general manager, broadband, said, "Bringing mobile connectivity to the most rural parts of Africa requires hybrid networks and innovative business models to truly close the business case. By investing in and partnering with AMN, we can rapidly, and cost effectively expand an MNO's reach and deliver critical connectivity to communities who many thought were impossible to connect. We look forward to our partnership with AMN and the ability to deliver a network that will support the social and economic development of communities throughout sub-Saharan Africa."

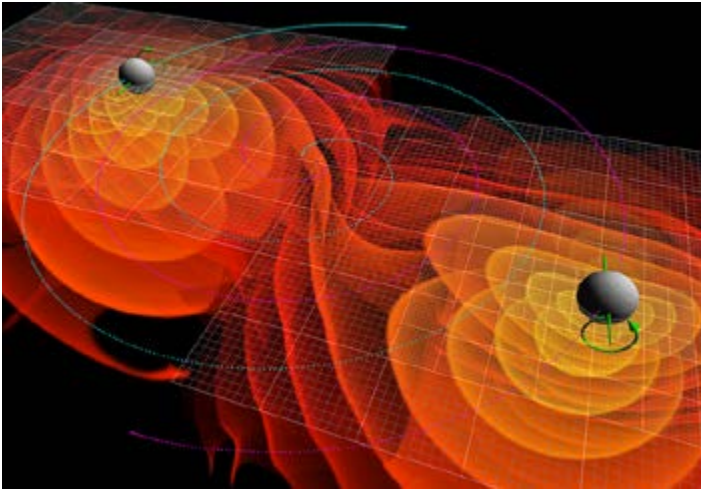
Iridium Awarded \$44 Million DISA Contract Extension



Iridium was awarded a non-competitive, firm-fixed-price \$44 million contract modification from the U.S. Department of Defense Information Systems Agency (DISA) for the extension of services on the current airtime contract. The current contract was effective on Oct. 23, 2013, and renewed the provision for delivering Enhanced Mobile Satellite Services (EMSS). It was slated to provide satellite airtime services to meet the communications needs of the U.S. Department of Defense (DOD) and their federal partners. In the contract, Iridium was to provide unlimited global secure and unsecure voice, low and high-speed data, paging and Distributed Tactical Communications System (DTCS) services for an unlimited number of DOD and other federal government subscribers. Fiscal 2019 defense working capital funds will be used for the contract extension. The period of performance for the option period is October 22, 2018, through April 21, 2019.

China to Launch First Satellite in Hunt for Gravitational Waves

China's first satellite for its space-based gravitational wave detection program, Tianqin, is set to embark on its trek to space by the end of 2019. The program was initiated by cosmologists from Guangzhou's Sun Yat-sen University in 2015, with the ultimate goal of launching three purpose-built satellites to form an equilateral triangle around the earth. "It's like a harp (tianqin) in space. If the gravitational waves come, the 'harp's strings' – laser communications among the three satellites – will be plucked,"



said Luo Jun, president of Sun Yat-sen University and a member of the Chinese Academy of Sciences. Luo told Xinhua that detection will be based on high-precision laser interferometry technology to measure the changes of the distances and locations of the three satellite probes. Gravitational waves are "ripples" in the fabric of space-time caused by some of the most violent and energetic processes in the universe. Albert Einstein predicted the existence of gravitational waves in 1916 in his general theory of relativity. The first-ever discovery of gravitational waves by the US Laser Interferometer Gravitational-Wave Observatory, announced in February 2016, has encouraged scientists worldwide to press ahead with their hunt for the disturbances in space. The Chinese space-based probes will be used to detect gravitational waves at much lower frequencies, and which are generated by the merging of massive or supermassive black holes, said Luo. "Laser-ranging" is one of the pivotal technologies for such detection. China accomplished the feat in January when scientists projected a 384,400-km laser beam at the moon. The communication relaying satellite of China's Chang'e-4 lunar probe, launched in May, carries a laser reflector developed by Luo's team, and is expected to extend laser projection to a record distance of 460,000 km in 2019. The European Space Agency has also launched a space-based gravitational wave detection program, the "Laser Interferometer Space Antenna" project.

Comtech Telecommunications Corp. Receives \$1.1 Million Contract for Transportable Troposcatter Systems from a Domestic Prime Contractor

Comtech Telecommunications Corp. announced that during its first quarter of fiscal 2019, its Orlando, Florida-based subsidiary, Comtech Systems, Inc, which is part of Comtech's Government Solutions segment, has received an order totaling approximately \$1.1 million to provide troposcatter radio terminals to a prime U.S. contractor. This equipment was chosen due to its superior performance at high data rates which will add increased capability to existing Modular Transportable Transmission System (MTTS) troposcatter terminals currently in use by the U.S. Army as part of a missile defense communications networks. Fred Kornberg, President and Chief Executive Officer of Comtech Telecommunications Corp commented, "This contract further emphasizes the U.S. military's need

for reliable, long-range, low-latency, terrestrial communications, especially in light of current international threats to the survivability of space communication

assets. It also validates our view that Comtech's troposcatter equipment is superior and a better value than any other product available."





Intelsat Introduces New End-to-End Managed Service for Business Aviation

Intelsat S.A., announced it is launching FlexExec, a managed end-to-end service enabling service providers to easily and cost-effectively deliver high-performance, in-flight broadband connectivity to business jets globally. FlexExec's broadband services are now accessible via Intelsat's global, high performing, multi-layered Ku-band satellite fleet. Designed specifically to cover high-traffic business jet routes, FlexExec rides on the Intelsat global network, which integrates layers of high-throughput satellite platform (HTS) coverage from the company's proven Intelsat EpicNG fleet with the company's wide-beam satellites to deliver added resiliency and redundancy. "With FlexExec, Intelsat is reinventing the communications experience for business jet operators and passengers," said Mark Rasmussen, Intelsat's vice president and general manager, mobility. "Business travel is demanding and with the global, committed, multi-layered coverage of FlexExec, our service providers can ensure that every business passenger has access to the same high speed, reliable broadband connectivity in the sky as they would at home or in the office. Importantly, the flexibility, throughput and improved economies of scale of FlexExec enables our service providers to differentiate their service offerings and meet the evolving streaming and broadband demands of their passengers over the long-term."

Satcom Direct Charts New Course for Business Aviation Connectivity with Intelsat's New FlexExec Service

Intelsat S.A., announced that Satcom Direct (SD) will be the first solution partner and master distributor to market FlexExec to the business aviation sector. By adding, FlexExec to its new SD Xperience portfolio, SD will be able to deliver high-performance, in-flight broadband connectivity to business jets globally. SD will have immediate access to Intelsat's global, flexible and proven Ku-band satellite fleet, including the Intelsat EpicNG high-throughput satellite (HTS) platform. Unlike other services, FlexExec is uniquely designed to support business aviation, meaning capacity is not shared amongst commercial aviation or consumer broadband customers, ensuring that business jet passengers will have seamless, on-demand connectivity. It can also be customized to meet business jet owners' needs; differentiating and enhancing the value proposition to passengers. "We are delighted that Satcom Direct has chosen FlexExec to be a part of their SD Xperience platform," said Mark Rasmussen, Intelsat's vice president and general manager, mobility. "The global footprint, resiliency,

redundancy and flexibility of FlexExec's seamless Ku-band platform will ensure that passengers can easily extend fast, high quality broadband connectivity from their office into the skies. Whenever it is needed, the power and throughput of FlexExec and SD Xperience will ensure that the business and entertainment needs of their passengers will be met." Jim Jensen, Satcom Direct's founder and CEO, said, "Given the demands of business aviation,

FlexExec will provide the maximum flexibility, efficient use of bandwidth, and seamless connectivity service needed for an industry where routes and passenger requirements constantly shift. FlexExec is unique in the sense that the network is committed to the business aviation sector. As a result, we can deliver a highly reliable, and consistent passenger experience anytime globally. It is a significant addition to the SD customer offering."



Rapier Systems and Cambium Networks Connect Remote Coastal Community in Scotland

Wireless networks specialist Rapier Systems and leading global provider of wireless broadband solutions Cambium Networks today announced they have completed the installation of a new wireless broadband infrastructure to connect the entire Drimnin community in Oban, West Scotland. Rapier connected around 50 properties in the area, including homes, businesses and holiday lets, via licensed microwave links which its engineering team installed over the course of one month. When selecting a Wi-Fi router, it chose Cambium Networks' indoor cnPilot R201P routers, which deliver high capacity and fast installation, as well as remote access and management. As a result of the upgrade, the remote, coastal community – which previously only received an average internet speed of 0.5 Mbps – is now

enjoying speeds of up to 50Mbps. "We used cnPilot routers as they allow remote access and monitoring of the client's connected property via an app," said Stuart Wilson, Technical Director at Rapier Systems Ltd. "This means we can fully monitor the network remotely and quickly identify faults if they arise. We can also offer support to our customers quickly and avoid the costly and labor-intensive need for site maintenance visits. The remote access aspect was key to our success, as everything was able to be managed directly from our operational base." Cambium Networks' dual band cnPilot routers streamline components for a simplified indoor network. They are backed by Cambium Networks' cnMaestro™ cloud manager, offering end-to-end visibility of the network and customer devices.

"Drimnin is the epitome of rural areas in Britain which are underserved by traditional fixed lined access, and this deployment shows how fixed wireless access provides a cost-effective and fast means of high-speed broadband deployment," said Dan McCarthy, Sales Manager, UK and Ireland, at Cambium Networks. "We were delighted to be able to play a role in this project, and it is great to see Drimnin's residents enjoying high-speed connectivity which is enabling them to do things many people now take for granted, such as working from home effectively and streaming content." Drimnin is one of Scotland's most remote places, located 12 miles away from Lochaline via a single-track road. The community can also be reached by various ferry services.

Blockchain Startup Space Impulse Aims to Streamline Time to Orbit

Space Impulse aims to lower costs and accelerate times to orbit by streamlining supply chain integration on a comprehensive, global Business-to-Business (B2B) platform. The platform is designed to address the challenges of complex, high-stakes sourcing, procurement, and fulfillment processes that ensure the movement of people and cargo safely along the path connecting Earth and space. By taking advantage of blockchain and smart contract technologies, the platform aims to solve key issues of security, verification, coordination, trust, and privacy that bind the highly interdependent exchanges of value along that path. Space Impulse transactions will be executed in an Ethereum-protocol utility token called Plasma that was developed specifically for the Space Impulse platform. However, parties to any given transaction will have the ability to transact in fiat currencies (with Plasma performing the execution in the background) or with Plasma itself,

in each case implementing the smart-contract functionality of the Ethereum blockchain. Space Impulse founder Rabi Boundi developed the Plasma-powered B2B marketplace concept while leading a software applications company he founded in 2010 called Movin'App. Space Impulse was founded in 2017. The Space Impulse

platform aims to be first in the industry to provide a marketplace for all roles in the extended network of companies and institutions that work along the Earth/space interface. This includes launchers, integrators, insurers, certifiers, engineers, shippers, legal, and more. It is being developed as an open-source project.



Rocket Lab Opens New Zealand Facility to Manufacture Electron Rocket

Rocket Lab unveiled a new production facility in Auckland, New Zealand, that is designed for rapid, mass production of the Electron rocket. Adding to Rocket Lab's existing production facility and headquarters in Huntington Beach, California, the new facility brings Rocket Lab's manufacturing footprint to more than 4.5 acres and enables the company to build an Electron rocket every week. The new facility was officially opened on Oct 12. "Every detail of the Rocket Lab launch system has been designed to provide

small satellites with rapid and reliable access to space. This requires the ability to manufacture launch vehicles at an unprecedented rate, so we've expanded our global production capability to build and launch an Electron rocket to orbit every week," Rocket Lab Chief Executive Peter Beck said in the release. Electron launch vehicles undergo final assembly at the new Auckland facility, where all parts go through a process for testing and integration into the rocket before launch from Rocket Lab's private orbital launch

pad, Launch Complex 1, on the Māhia Peninsula. All Electron launches, will be commanded from the new Mission Control at the Auckland facility. This Mission Control will serve launches from Launch Complex 1 in Māhia, as well as Rocket Lab's U.S. launch site, which is currently undergoing final selection. The new production facility will house more than 200 of Rocket Lab's growing team of 330 people.

Satellite Vu Showcases Ground-Breaking Technology at GITEX to Address Maritime Litter in MENA and Southeast Asia

Pioneering NewSpace Company, Satellite Vu, will take part in GITEX Future Stars, the fastest growing start-up event in MENA and Southeast Asia. Satellite Vu, an earth observation company with a difference, is preparing to provide a disruptive service that will enable governments and organizations to take on the enormous challenge of plastic pollution that is detrimentally affecting our maritime environment. GITEX provides a stage where Satellite Vu can engage with like-minded, enlightened potential partners. The company is also developing plans to open an office in the region and is actively seeking distributors and investors. "The level of plastic pollution has reached epic proportions," said Anthony Baker, CEO, Satellite Vu. "To give some context to the situation, the Earth Day Network found that the amount of plastic produced in a year is roughly the same as the entire weight of humanity. This plastic is killing our wildlife and it has entered the food chain. We are here at GITEX to seek partners and investors to tackle this problem in the region using Satellite Vu's technology." Current available techniques are ineffective at tracking the movement of plastics due to cost and sheer amount of time taken to survey large areas. Moreover, existing methods do not deliver data frequently enough. Satellite Vu is set to transform the rapidity and precision of data and most importantly, to make it affordable and therefore accessible to countries and organizations that need help in addressing marine plastic pollution. Satellite Vu offers a sustainable solution that will address customers' requirements through a new breed of satellites. The satellites will re-visit a target site every hour, throughout the day and night, and produce imagery regardless of the weather conditions so that constant, near-real time monitoring is possible. "This level of information is unprecedented," continues Baker. "If you can see where the plastic is originating from, how it circulates and where it ends



up, you have the information to do something about it. That is why this technology is so important to the conservation of our maritime environment." The company aims to launch 7 multi-functional satellites that will produce high resolution infrared imagery, at less than 5 meters, which is interpreted and converted into timely data using unique algorithms that end-users can readily access. Data produced by Satellite Vu can also be overlaid onto other forms of data such as social media, mobile phone and proprietary information. This results in another layer of intelligence from which new business insights may be generated. "I would encourage companies or individuals who share our concerns or are interested in our technology to come to engage with Satellite Vu during GITEX. We look forward to sharing the impact that our technology will make to this region, and to our planet."

Viasat Unveils Cloud-Enabled Solutions for Artificial Intelligence and Machine Learning Applications over Secure SATCOM and LOS Network

Viasat Inc., announced the availability of secure cloud-enabled artificial intelligence (AI) and machine learning applications over Viasat's global satellite communications (SATCOM) architecture and line of sight (LOS) tactical network technologies for warfighters on the move. By offering a secure, integrated network of cloud-enabled solutions, Viasat can reduce warfighters' cognitive loads in order to make more accurate, informed, lifesaving decisions with accelerated speed across the battlespace. At this week's Association of the United States Army conference in Washington, D.C., Viasat completed a successful connectivity demonstration focused on bringing access to advanced cloud capabilities to the tactical edge. The demo, which was attended by a number of representatives from the U.S. Army, showed how Viasat's SATCOM architecture and LOS tactical network can provide a holistic communications solution by integrating Link 16, Mobile

Ad-Hoc Networking, Wi-Fi and LTE technologies to significantly enhance situational awareness at the tactical edge and fulfill emerging U.S. government concepts of operation. Throughout the demonstration, Viasat's SATCOM network and LOS technologies provided a secure, high-speed, resilient backbone connection to link connected devices to media-rich AI and machine learning-based applications offered by a number of today's cloud technology providers. "Viasat is partnering with global cloud computing leaders to bring advanced AI and machine learning-based operational capabilities to the warfighter—from predictive analytics and media rich intelligence, surveillance and reconnaissance data to prescriptive outputs," said Ken Peterman, president, Government Systems, Viasat. "Through Viasat's modernized end-to-end communications network, we will empower warfighters with advanced data-driven insights and operational capabilities

that will allow them to make the most informed decisions possible—even in the fog of war. Today's demonstration shows the power of our SATCOM network and LOS innovations to deliver the next-generation internet of battlefield things (IoBT) to significantly improve military readiness and mission effectiveness." Viasat will provide ubiquitous and secure SATCOM required to access cloud-enabled military applications via its Hybrid Adaptive Network (HAN) concept. The HAN provides access to Viasat's end-to-end SATCOM innovations such as active cyber defense, layered resiliency and elite satellite capacity to support a range of operations requiring IoBT and cloud-based applications. The HAN allows users to seamlessly operate across different networks (both government and private sector), creating an end-to-end layered, resilient network that is unique to Viasat and not offered by any other provider today.

U.S. Air Force Awards Three Launch Service Agreements

The U.S. Air Force announced the award of three Evolved Expendable Launch Vehicle (EELV) Launch Service Agreements to (in alphabetical order) Blue Origin, Northrop Grumman Innovation Systems, and United Launch Alliance. The award to Blue Origin will be for development of the New Glenn Launch System. The award to Northrop Grumman Innovation Systems is for development of the OmegA Launch System. The award to United Launch Alliance will be for development of the Vulcan Centaur Launch System. The Launch Service Agreements will facilitate the development of three domestic launch system prototypes and enable the future competitive selection of two National Security Space launch service providers for future procurements, planned for no earlier than fiscal year 2020. Through public-private partnership agreements, the goal of the acquisition strategy is to satisfy federal law by ensuring that the U.S. maintains assured access to space, with at least two domestic launch service providers and without reliance on non-allied rocket propulsion systems. "Our launch program is a great example of how we are fielding tomorrow's Air Force faster and smarter," said Secretary of the Air Force Heather Wilson. "We're making the most of the authorities Congress gave us and we will no longer be reliant on the Russian-built RD-180 rocket engine." With the Congressional mandate to transition away from reliance on foreign rocket propulsion systems, and the planned Delta IV retirement, the Air

Force developed an acquisition strategy to accelerate National Security Space launch requirements. "Leveraging domestic commercial space launch systems is good for the Air Force, and a revitalized commercial launch industry is good for the taxpayer," Wilson added. The EELV program has successfully launched 72 NSS missions, dating back to 2003, using the Atlas V and Delta IV launch vehicles. "Since the early days of the space program, the Air Force has been a world leader in space launch," said Air Force Chief of Staff Gen. David L. Goldfein. "As space becomes more contested and our adversaries develop new capabilities to thwart our advantage, we are fielding our space capabilities to ensure we remain the best in the business." 

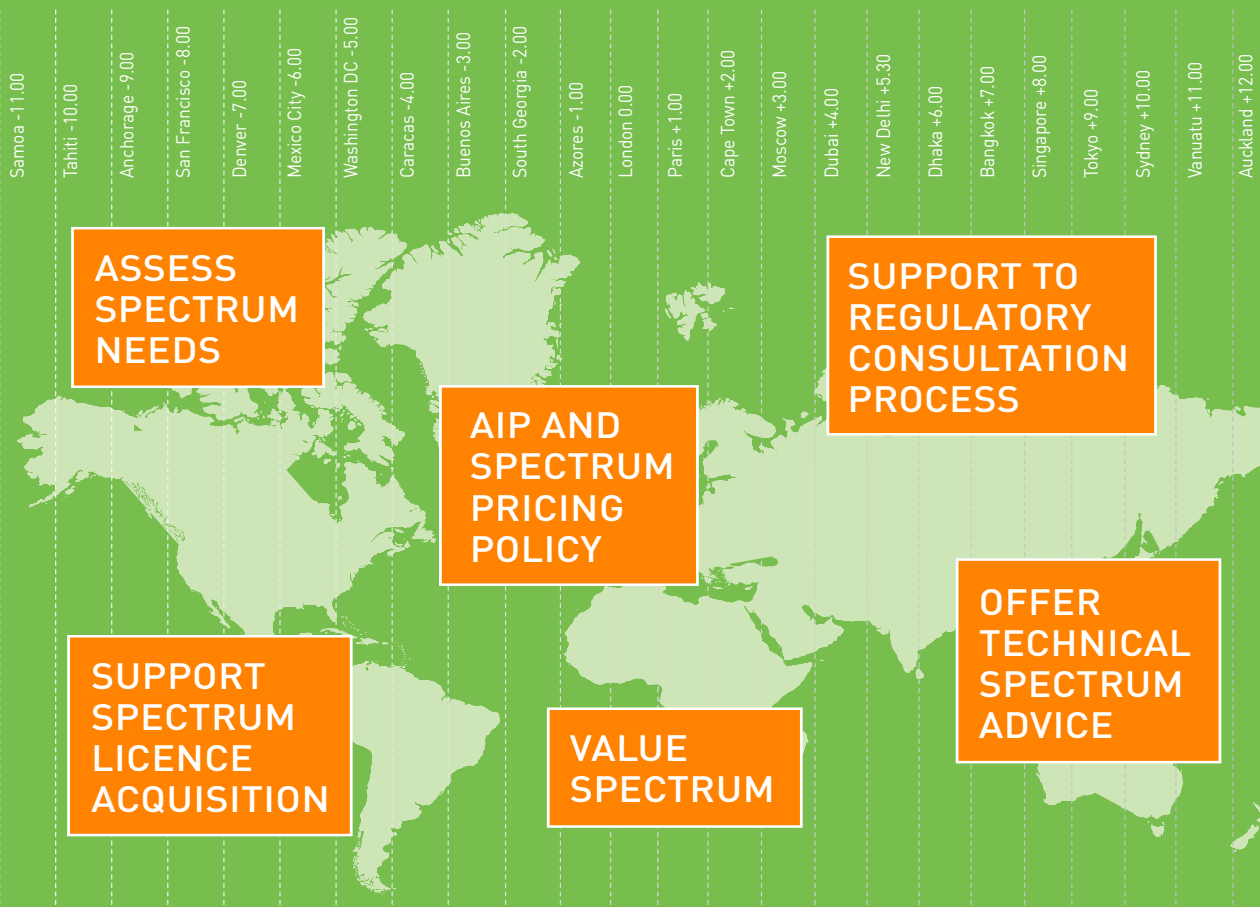


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ARTICLE

What is the Telco Cloud Model and How This Will Impact the Telecoms Industry?



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In the last decade, telecoms operators have come to the realisation that their actual playing field can be broader than the traditional connectivity business. They have increasingly been trying to expand into the digital services world, where a series of web-scale players are setting the agenda and extracting value out of a new ecosystem of digital data-rich services. The likes of

The Telco Cloud model uses network function virtualisation (NFV) and software-defined networking (SDN) technologies as building blocks. These technologies equip the telecoms network to run on the cloud using commercial off-the-shelf hardware and turn the telecoms network into a software-based engine which can be automated due to centralised routing functions.

Google, Netflix, Uber and Airbnb have deployed platform models that allow them to scale their business and enjoy asset-light, data-driven 'freemium' business models¹ which enable market disruption. The Telco Cloud model is the response from the telecoms world. This model enables telecoms operators to evolve from traditional physical infrastructure businesses to 'co-opete' (i.e. simultaneously compete and co-operate) with those web-scale players and strengthen telecoms operators' foothold in the digital economy.

The Telco Cloud model uses network function virtualisation (NFV) and software-defined networking (SDN) technologies as building blocks. These technologies equip the telecoms network to run on the cloud using commercial off-the-shelf hardware and turn the telecoms network into a software-based engine which can be automated due to centralised routing functions. The comprehensive and effective implementation of these technologies thus enables the transformation of the telecoms network into a virtualised and 'software-ised' factory. This transformation can

¹ In a freemium business model, basic services are free while more advanced services are charged for

unlock the rich set of capabilities and sources of data (as in 'information') that exist in the telecoms network: application programming interfaces (APIs) expose these capabilities and data sources to third parties, such as business partners and customers. Such third parties become part of an ecosystem of partners which can co-create value, to the mutual benefit of the operator (shared, incremental revenue on top of standard connectivity services) and of the value-added-service partner (new business). For example, in its November 2017 analyst and investor conference call, Vodafone described the platform concept underpinning its Digital Vodafone strategy: new services, Vodafone Passes and the Internet of Things (IoT) are all enabled by a digital platform approach.

A comprehensive network transformation using NFV/SDN technologies has a number of key benefits:

- Service agility. A fully virtualised and 'software-ised' network allows for the launch and remote configuration of network services from a centralised console, which is expected to reduce time to market for traditional and new services. NFV automation supports customer self-service deployment of network services through a portal, reducing deployment timeframes and accelerating time to revenue. This service agility will in turn considerably enhance customer experience by making new service features available more rapidly, allowing customers to customise their services online and

charging customers only for what they use.

- Cost leadership: Using general-purpose, standardised and inexpensive servers and storage devices as the hardware infrastructure to provide network functions and network control is expected to reduce hardware costs. The pooling of hardware resources is expected to improve capacity utilisation and defer new hardware investments. In addition, power management features in standard servers, and the ability to scale virtualised network functions (VNFs) on demand, are expected to reduce energy consumption. Finally, the increased automation and remote configuration enabled by NFV/SDN is expected to reduce headcount by limiting the need to send technicians to sites to manually configure network equipment. For instance, Telenor, which has already deployed virtualised networks in Pakistan and Thailand, expects to establish common IT operations across Asia, consolidating data centres and reducing its yearly run rate by around 60% in 2020.
- Scalability: The ability to create traffic routing rules and to instantly scale network services up or down based on the level of demand is expected to reduce traffic congestion and enhance overall quality of service.

Fully achieving the benefits described above requires viewing migration to the Telco Cloud model as more than a network transformation – it should be considered

The introduction of virtualisation and 'software-isation' requires telecoms operators to develop a digital mindset and a digital organisation to deal with these changes. Operators therefore need to transform their ways of working, their culture, their skillsets and their processes.

as a broader company transformation. The network is at the core of an operator's business: it is the basis for what an operator sells, and its cost and capabilities determine the value/revenues an operator can generate. A fundamental change in an operator's network technology can only be made along with a significant change in its operations and organisation. The introduction of virtualisation and 'software-isation' requires telecoms operators to develop a digital mindset and a digital organisation to deal with these changes. Operators therefore need to transform their ways of working, their culture, their skillsets and their processes. Figure 1 illustrates the key aspects of a Telco Cloud transformation.

While the Telco Cloud model is a promising new approach likely to deliver positive transformational impact, it also presents a

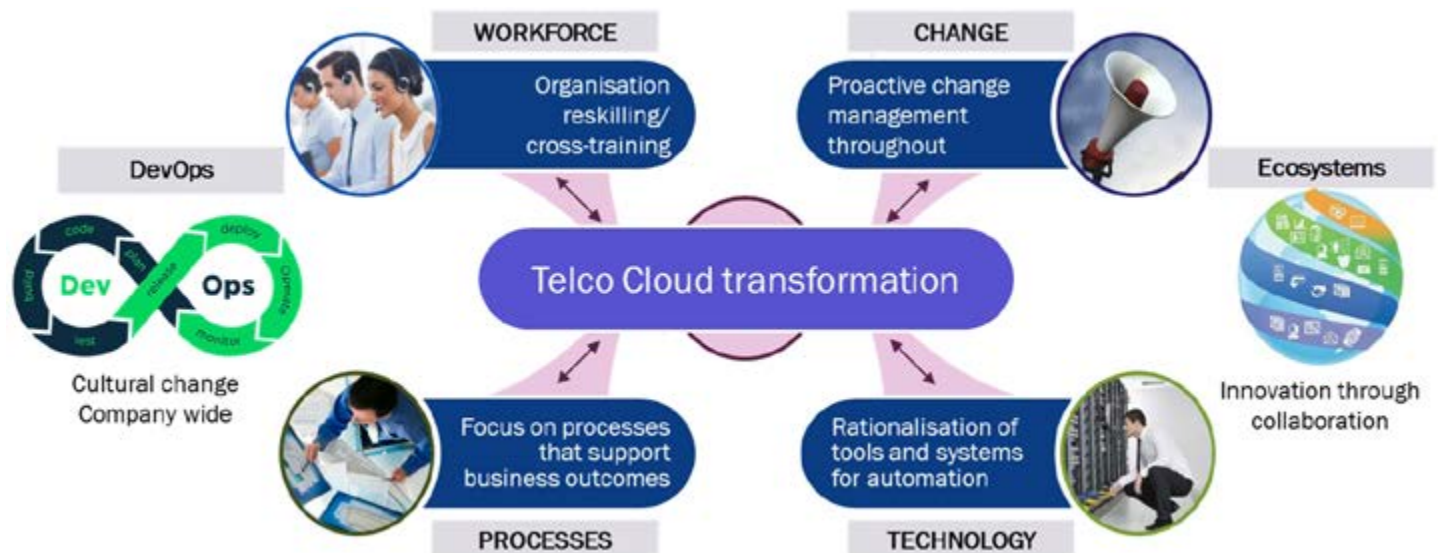


Figure 1: Telco Cloud transformation [Source: Analysys Mason, 2018]

number of key implementation challenges:

- **Legacy infrastructure:** The physical network is a vast collection of proprietary equipment, across different domains (voice, data, transmission). Similar services may be provided by different systems, such as voice running on TDM, VoIP and IMS.² Virtualising the network means replacing all these systems, boxes and their management systems with their virtualised equivalent, which will run on a horizontal cross-function virtualised network function infrastructure. This is not a simple task given that operators host, operate and maintain a wide variety of legacy physical equipment due to years (if not decades) of customer services. Thus, for most operators, the virtualisation journey is expected to be a long-term process of more than ten years.
- **Product immaturity:** Some of the NFV/SDN technologies, such as containers, are evolving and immature and may pose unacceptable risks for certain virtualised network functions that need to support mission-critical parts of the network and millions of subscribers. Some protocols implementing NFV/SDN, such as OpenFlow supported by the Open Networking Foundation, have also seen alternative approaches being developed to achieve the same objective, with little certainty as to whether one or several will be adopted unanimously by the industry. Assessing the level of technology maturity, in line with an appetite for risk and an overall skill level, is therefore essential to a successful implementation.
- **Regulatory obstacles:** While the Telco Cloud model seeks to unleash a wave of innovation on the telecoms industry, the regulatory framework that applies to telecoms operators needs to catch up with the move. Industry-specific regulations such as interconnection regulation, net neutrality and data sovereignty may create significant impediments to operators moving fast in terms of the implementation of this model.


In this context, telecoms operators have very different strategies for network

virtualisation. Analysys Mason has benchmarked the network virtualisation maturity of 35 operators worldwide in the Nokia Telco Cloud index (TCi)³. As shown in Figure 2, there is a strong correlation between operators that have already implemented virtualised network functions in their production networks and those that have prioritised Telco Cloud transformation as a top-three initiative for their companies. When network virtualisation is valued at a strategic level over other technology initiatives, it is clear that this drives interest, investment and involvement across the organisation, resulting in faster progress towards commercial deployment.

However, even the most visionary operators believe network virtualisation is not as high a priority as investment in their access networks (LTE+, fibre-to-the-home, 5G). Operators' attitudes to network virtualisation vary depending on their aspirations as businesses: for example, whether they aspire to become digital service providers, or see themselves as real-estate/utility companies. Few operators in today's market truly wish to transform themselves into digital organisations that can operate like Google or Netflix: able to release new product features to the market every few hours, automate their operations end-to-end, develop open-source software innovation

and invest in cutting-edge technology companies to differentiate themselves from their competition. Many operators cannot cope with the scale of the change involved; others do not see the urgency for change.

Analysys Mason has benchmarked the network virtualisation maturity of 35 operators worldwide in the Nokia Telco Cloud index (TCi)³.

In summary, the Telco Cloud model is a promising new approach for operators to transform their business and become better shaped for the digital economy. This model encompasses a comprehensive and long-term technology transformation as well as a broader and no less extensive company transformation. Given the implementation challenges, it is crucial for operators to define their stance on this new model, and the related approach and timing for its implementation. Analysys Mason is currently supporting operators in the Middle East region to define their strategy and implementation approach in relation to the Telco Cloud model in order to help operators prepare themselves for this upcoming mid- to long-term industry shift. 

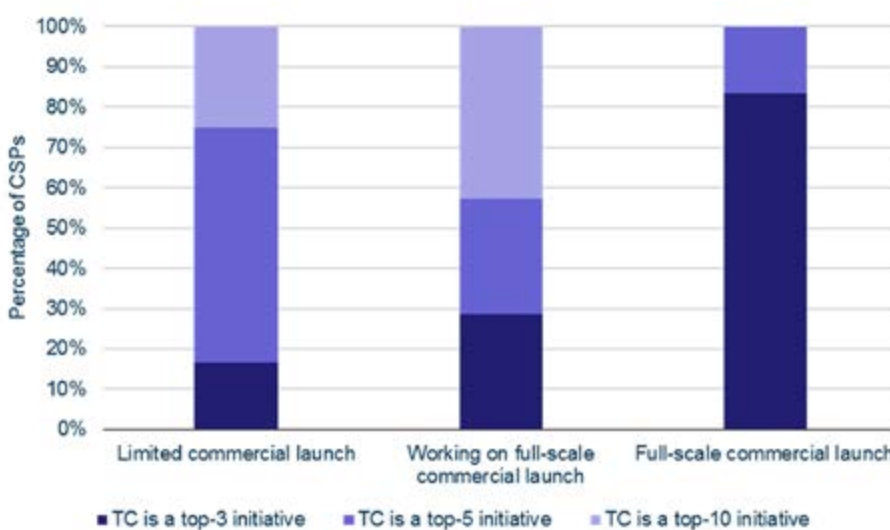


Figure 2: The percentage of operators at different stages of network virtualisation that reported it as a top-three, top-five or top-ten priority initiative for the business [Source: Nokia TCi, Analysys Mason, 2018]

² TDM = time-division multiplexing; VoIP = voice over Internet Protocol; IMS = IP multimedia subsystem

³ <http://www.analysismason.com/Research/Content/Reports/Telco-cloud-Nokia-RMA07-RMA16-white-paper/>

WHOLESALE NEWS

New Termination Rates to Take Effect in South Africa Next Month

The Independent Communications Authority of South Africa (ICASA) has confirmed that it has completed the



review of its '2014 Call Termination Regulations' and will publish its final '2018 Call Termination Regulations' in the government gazette. Operators with a more than a 20% share of total minutes terminated in the wholesale voice market will see fixed termination rates (FTRs) drop to ZAR0.09 (USD0.006) from October 2018; ZAR0.07 from October 2019; and ZAR0.06 from October 2020. Mobile termination rates (MTRs) for operators with a greater than 20% share, meanwhile, will drop to

ZAR0.12 from October 2018; ZAR0.10 from October 2019; and ZAR0.09 from October 2020. For operators with 20% or less share of total minutes terminated in the wholesale voice market, FTRs will drop to ZAR0.10 from October 2018; ZAR0.08 from October 2019; and ZAR0.06 from October 2020. MTRs, meanwhile, will be set at ZAR0.18 from October 2018; ZAR0.16 from October 2019; and ZAR0.13 from October 2020.

Proximus Signs up 14th Wholesale Fiber Customer

Belgian full-service telecoms operator Proximus has announced that it has signed up a 14th wholesale customer to use its in-deployment fiber-to-the-home (FTTH) network. Jeroen Degadt, the telco's director of Carrier & Wholesale (CWS), commented: 'We are very happy that, in just one year, 14 wholesale partners have

already joined our fiber network. We didn't wait for a regulated model to offer fiber... from the outset, we opened our network to respond to the changing needs of our wholesale customers, and to give other companies a chance to develop their own innovative services.' Proximus unveiled its ten-year EUR3 billion (USD3.5 billion) 'Fiber



for Belgium' program in December 2016, with a view to increasing the country's FTTH coverage.

AKEP Sets New Glide Paths for Fixed and Mobile Termination Rates

Albanian telecoms watchdog the Electronic and Postal Communications Authority (Autoritetit Te Komunikimeve Elektronike Dhe Postare, AKEP) has concluded market analyses of the fixed and mobile sectors and published several decisions to impose conditions on operators deemed to have

significant market power (SMP). In the fixed segment, AKEP set a new glidepath to lower termination rates from ALL1.29 (USD0.012) per minute (excluding tax) to ALL1.00 from 1 December 2018 and to ALL0.70 from 1 December 2019, whilst ALBtelecom's transit fees were lowered

from ALL0.81 to ALL0.63 and ALL0.44 on the same dates. Meanwhile, mobile termination rates (MTRs) were set for all three mobile network operators and would lower from ALL1.48 to ALL1.22 on 1 December 2018 and ALL1.11 one year later.

Poland to Get Lower Wholesale Line Rental Rate

Poland's Office of Electronic Communications (Urząd Komunikacji Elektronicznej, UKE) is to reduce the cost of wholesale line rental (WLR). Incumbent

telco Orange Polska will charge alternative operators PLN18.82 (USD2.92) for line rental, down from PLN20.05 previously, Telecompaper reports. Orange's rivals had

hoped for the WLR rate to fall to around PLN10, though the UKE has justified its decision by saying that demand for fixed lines is dropping.

Telenor Enables LTE Roaming for Zain Sudan

Norwegian telecoms group Telenor has announced the signing of a global connectivity agreement that will enable Zain Sudan to provide LTE roaming services. Through this agreement, Zain Sudan can now offer worldwide 4G coverage through Telenor's IPX connectivity network. 'We

are delighted to have strengthened our relationship with Zain Sudan and that this agreement will ensure consistent user experience for both companies' subscribers at all times,' commented Harald Krohg, CEO of Global Wholesale at Telenor, adding: 'Speed and quality will be

even more important in the years to come and Zain Sudan's roamers will now enjoy the same superior experience as they do at home. We are looking forward to explore new services together with Zain Sudan.'

Swiss Parliament Rejects New Wholesale Access Regulation for Swisscom

The Swiss parliament has rejected a proposal to subject Swisscom to additional wholesale regulation opening up its network to competitors. Despite support from the government minister and regulator, the MPs voted against the measure to expand regulation beyond the copper network to include virtual unbundling and fiber, ATS reported.

Niger Proposes Reinstating International Calls Tax

The government of Niger is proposing to reintroduce a tax on international calls in 2019, a member of the parliament's economic affairs committee told AFP. In November 2017 the government voted to scrap the tax on incoming international traffic (Taxe sur la Terminaison du Trafic International Entrant, TATTIE), effective 1 January 2018, in return for which the nation's telecoms operators committed to make significant investments in improving coverage and service quality. However, the government is seeking to restore the tax, after accusing telecom companies of failing to honor commitments to improve services. Deputies will vote on whether to reintroduce TATTIE towards the end of the year.

SK Telecom Completes First 5G Call with Samsung Commercial Equipment



South Korean operator SK Telecom, in cooperation with Samsung Electronics, has completed the first 5G call using the 3GPP 5G Non-standalone (NSA) new radio (NR) standard and commercial 5G NR equipment that can be readily applied in a commercial 5G network. The call took place at SK Telecom's 5G testbed in its Bundang office building. The first 5G NSA-NR calls were achieved by using services that SK Telecom and Samsung jointly developed and built for the trial on 3.5GHz 5G NR radio, 4G LTE radio and NSA core. 📶

TECHNOLOGY NEWS

Shipments of Cellular IoT Gateways to Reach 8.6 Million by 2023

Berg Insight estimates that global cellular IoT module shipments increased by 76 percent in 2017 to a new record level of 237 million, fuelled by exceptional volume growth in China. Until 2023, shipments of cellular IoT devices are forecasted to grow at a compound annual growth rate (CAGR) of 23.2 percent to reach 1.1 billion units. The 3GPP standards for LTE – Cat 1, Cat M, and NB-IoT – will contribute substantially to growth in the next coming five years. These new standards are designed to be less complex to limit power consumption and are priced more favorably to address the mass market and make it viable to connect entirely new applications. The results of Berg Insight's latest cellular IoT module vendor market share assessment show that the three largest module vendors have 46 percent of the market in terms of revenues. "Annual module revenues for the three largest market players Sierra Wireless, Gemalto and Telit increased by 6.9 percent to US\$ 1.17 billion, with the total market value reaching approximately US\$ 2.5 billion," says Sebastian Hellström, IoT analyst at Sweden-based IoT analyst firm Berg Insight. Sierra Wireless leads IoT

module revenues, followed by Gemalto and Telit. SIMCom Wireless leads in shipments, but is only in fourth place in terms of revenues. Quectel is number two in terms of volumes and in fifth place in terms of revenues. China has been the scene for significant M&A activity in the past years. ZTE offloaded its cellular IoT business to Gosuncn during 2016 and 2017. At the same time, Sunsea AIoT emerged as a

new major industry player through the acquisitions of Longsung and SIMCom. While there has been some consolidation among the larger suppliers, the long tail of companies with activities in the market for cellular IoT modules is growing. A number of new players have been attracted to the market, particularly in the emerging NB-IoT segment. Examples include Nordic Semiconductor, Foxconn and WNC.



Charter Aims to Take 5G Tests to 32GHz

US cable operator Charter Communications requested permission from the Federal Communications Commission (FCC) to explore how fixed and mobile 5G service might operate in a new spectrum band: 32GHz. In a filing with the FCC, Charter asked for the green light to conduct 180 days of fixed wireless access testing in Los Angeles, California starting 1 November. The operator said the experiments will help it "evaluate the use of 32GHz spectrum for its use in point-to-multipoint access network capacity (e.g., rate versus range) and data throughput" and "advance the

potential deployment of 5G fixed and mobile services". The tests will include point-to-point transmissions from an antenna (pictured) mounted on an 8-foot pole on the roof of a Charter building to a receiver mounted on another Charter building 300 feet away. Such experiments are not new for Charter, as the operator has also dabbled testing 5G services in the 3.5GHz and 28GHz bands. But its decision to look at 32GHz does represent a deviation from a broader industry focus in the US on the 28GHz, 37GHz and 39GHz bands. In 2016, the FCC opened the 28GHz,

37GHz and 40GHz bands for wireless use, and is set to kick off an auction of 28GHz licenses on 14 November. Charter was not among the companies listed as applicants to take part in that proceeding. It's unclear if or when the FCC might bring 32GHz licenses to auction. The band is currently used by incumbent radio astronomy and earth exploration satellite services, though Charter and other industry players including T-Mobile US have pushed the FCC to open the band for mobile use to create a larger channel of contiguous spectrum for 5G services.

SK Telecom Launches IoT-based Cattle Healthcare Service

SK Telecom has developed a new IoT-based solution which allows farmers to monitor the health of their cattle in real-time using Semtech's LoRa devices and wireless radio frequency technology (LoRa Technology). Dubbed "LiveCare", the product is a LoRa-equipped biocapsule which is implanted into a cow's gastrointestinal tract to monitor a variety of health indicators. The



new service will see biocapsules packed with a communication module connected to the operator's LoRa-based IoT network. The smart biocapsule is then injected into the stomach of a cow, monitoring body temperature and potential hydrogen levels, with data recorded and then sent to a central server as well as cattle farm owners via a smartphone or computer. Thus, ranchers can monitor the data transmitted from the devices for anomalies in a cow's body temperature and other vitals to detect the onset of disease, estrus and to forecast delivery of calves. The LiveCare device is shielded from being tampered with by outside conditions due to its strategic position inside the cow itself. This solution is expected to drastically improve the quality of life for the cow and by extension the cattle as a whole on the dairy farm. "Our unique solution lets farmers know immediately when a cow's health is compromised. It takes the guesswork out of farming and lets the rancher focus on preventing cattle disease," said Taehee Moon, project leader for the small farm project group of SK Telecom. "Healthier cows mean more milk can be produced and dairy farms can focus more on growing their business." According to SK Telecom, a trial run on a South Korean farm using the technology showed an increase in annual milk harvest of 1,200 liters per cow, an increase of \$1,100 in income per cow for the farmer and an additional \$400 in savings for each estrus successfully planned using the LiveCare solution. SK Telecom plans on extending its services to provide automatic notification to ranchers of contagious disease as well as location tracking in the near future.

AT&T: We're Not Only Focused on mmWave for 5G

5G Transport & Networking Strategies -- AT&T wants you to know that it will not be solely dependent on millimeter wave as the spectrum for its forthcoming mobile 5G service in the US. "That's absolutely not true," Gordon Mansfield, VP of RAN and device design at AT&T Inc. (NYSE: T), told the crowd at Light Reading's event Tuesday. AT&T has previously said that it will use millimeter wave spectrum for its rollout. The operator, however is also rolling out 5G-ready equipment with its FirstNet deployment on 700MHz low-band, as well as 2.3GHz WCS spectrum in the mid-band. Mansfield was pointing out that AT&T won't be solely reliant on 28GHz mmWave as it moves toward 3rd Generation Partnership Project (3GPP) 5G New Radio-based service. He also appeared to criticize the 5G-based fixed wireless access service from chief rival Verizon Communications Inc. (NYSE: VZ). "They have to go ahead and rip out the equipment at the customer homes when they want to update," Mansfield said, not naming Verizon's 5G Home Service, a fixed wireless offering based on the operator's 5GTF specification, which launched on October 1. Speeding up the deployment of mmWave for the mobile rather than fixed 5G will require more infrastructure integration, as Verizon seemed to

acknowledge at the event. AT&T is hopeful that its millimeter wave "Project AirGig" will be able to provide gigabit-speed backhaul in the future, especially in rural areas. The AirGig technology wirelessly rides alongside medium-voltage power lines and uses newly designed "low-cost" plastic antennas for connectivity.



SKT, Samsung Claim First 5G NSA Call



SK Telecom (SKT), the largest mobile operator in South Korea, and Samsung completed what they said was the first 5G call using the 5G non-standalone new radio (NR) standard and commercial 5G equipment. The 5G non-standalone call, made during a trial at the operator's 5G testbed, used 100MHz of spectrum in the 3.5GHz band and commercial 5G equipment jointly developed by the two companies, SKT said in a statement. 3GPP's Release 15 non-standalone and standalone standards were unveiled in December 2017 and June 2018 respectively. In September Qualcomm and Ericsson completed a 3GPP Release

15-compliant 5G NR call on a "smartphone form factor mobile test device", using mmWave spectrum in a non-standalone mode. SKT last month selected Samsung, Ericsson and Nokia as its 5G network equipment suppliers, leaving China-based Huawei off the list. The country's three major mobile operators are working towards a joint commercial 5G launch in March 2019. Korea's Ministry of Science and ICT has put pressure on the companies to collaborate on 5G technology to "avoid excessive competition" and ensure the country is the first to launch the next-generation technology.

NFV Proving Puggy in Digital Transformation Strategies, Say Operators

Almost half of operators are struggling to find the right business case for virtualization, which is hindering their attempts at digital transformation, a new survey from TM Forum has found. Its latest Digital Transformation Tracker, conducted this summer, found a slower than expected shift towards network transformation, even though 44 percent of operators said it was integral to a successful digital transformation. The struggles with virtualization reflect a wider concern at how network transformation fits within the wider digital transformation strategy. The report said digital transformation still suffers from a loose definition of what it will involve, how network transformation involves different timeframes for both virtualization and cloud adoption, and how the IT and network arms, as well as the technology parts of the consumer and

business teams at operators have a poorly defined relationship. Almost a third (32 percent) said they are deploying NFV in the packet core, and 36 percent in the mobile edge of virtualized customer premises equipment. Mark Newman, Chief Analyst at TM Forum, said: "The telecoms industry first started to embrace the concepts of network virtualization and software-defined networking eight or nine years ago. Today, it appears the majority of CSPs are moving from the awareness and planning phases of transformation to deployment of VNFs. This progress is a positive thing, albeit a lot slower than expected." However, the deployment of these virtual network functions has not had the transformative impact that many CSPs were hoping for. As a result, many are now moving beyond virtualization to full network cloudification." Elsewhere, 60 percent of respondents said

implementing agile OSS/BSS as their main concern, with 56 percent claiming security vulnerabilities and 52 percent citing length times for standards to be rolled out. There is also a gap between introducing DevOps with 77 percent of companies deploying it in IT teams, but only 23 percent in network teams. The softwarisation of the industry has led to 34 percent of operators employing up to 250 software developers and introducing plans to grow this to at least 500 during the next two years. Neman added: "The benefits of network transformation can only be achieved by using cloud-native software that can be modified through DevOps practices and easily integrated with solutions from suppliers using open source "But it also requires CSPs to address network and operations transformation at the same time.

Beeline, Huawei Make 5G Hologram Call

Russia's Beeline has partnered Huawei to demonstrate 5G holographic video calling, claiming a first Russian 5G network call 'on commercial equipment' (as opposed to 'laboratory' tests). The demo used frequencies from the millimeter wave range at 26.6GHz-27.2GHz which have been temporarily allocated to Beeline for testing.



Verizon Turns on World's First 5G Network

The very first commercial 5G network on the globe goes live today. Verizon's 5G Home network, providing 5G broadband internet service, is officially live today for consumers in parts of Houston, Indianapolis, Los Angeles and Sacramento. Installations of 5G Home began this morning for "First on 5G" customers in those cities, with a resident of Houston, Clayton Harris, becoming the first 5G customer in the world. Built on the Verizon-led open 5G TF network standard, Verizon 5G Home is the next generation of home broadband internet service that provides super-fast Wi-Fi. "The world's first commercial 5G service is here," said Ronan Dunne, President Verizon Wireless. "We've formed incredible partnerships with many of the world's leading technology companies, the international technical standards bodies, public officials, developers and our own customers to drive the 5G ecosystem forward, faster than most had predicted. And now, actual customers. It's been an incredible journey... and we're just at the starting line." Verizon was able to launch 5G in these first four cities because of forward-looking state policy and local leaders who embraced innovation and developed a strategic vision for how 5G could be a platform to attract new investment, businesses and next generation services for residents.

"First on 5G" Members – early adopters of 5G technology – get exclusive perks including 5G Home service free for the first three months (after that introductory period, Verizon Wireless customers with a qualifying smartphone plan will pay \$50 per month for the service, while non-Verizon Wireless customers will pay \$70 per month), free white glove installation and equipment, and early access to new services, including 5G mobility. 5G Home customers will also get YouTube TV free for the first three months and a free Apple TV 4K or Google Chromecast Ultra device at installation. Verizon has led the industry with our clear focus on bringing 5G service

to consumers as quickly as possible. That's why our 5G Home service is built on the Verizon-led open 5G TF network standard; we are able to deliver results and a 5G network faster than waiting for the formal 3GPP 5G NR standard to be incorporated into network equipment, devices, chipsets and software. As our 5G technology partners bring that hardware, software, chipsets and devices to market on the 3GPP 5G NR standard, we'll upgrade First On 5G Members to that equipment at no charge. When new network equipment is available and introduced, we'll expand our 5G broadband internet coverage area quickly and bring 5G to additional cities.



China Completes Key 5G Trials

China moved a step closer to commercial 5G launches after its IMT-2020 (5G) Promotion Group completed a third phase of non-standalone (NSA) trials and reached the halfway point in standalone (SA) trials, C114.net reported. The tests were based on 3GPP's Release 15 standards unveiled in June and December 2017. China's three major mobile operators have said they plan to offer initial 5G services in 2020. Tests covered indoor and outdoor trials, core network and base station functions. Huawei, ZTE and China Information and

Communication Technologies Group completed trials using the 3.5GHz and 4.9GHz frequency bands, C114.net said. More than 20 companies took part the third phase NSA trials, including Ericsson, Nokia Shanghai Bell, Samsung, Qualcomm, Intel and Rohde & Schwarz. Yang Chaobin, president of Huawei 5G product line, said: "The test results showed Huawei's confidence in providing operators with mature and reliable 5G end-to-end commercial products. They were also the result of the joint efforts of Huawei and

many industry partners." The group's next step is to conduct interoperability tests on system and chip system terminals. Standalone trials involved core network functions, base station functions, outdoor and interoperability trials. Huawei and Intel jointly completed what they said was the industry's first call on a standalone network. China's 5G R&D tests started in 2016 and are scheduled to run to end-2018 over three separate phases.

Czech Operator Nordic Telecom Launching '5G Internet at Home'

Czech operator Nordic Telecom, which holds frequencies to operate wireless broadband and mobile internet services in the 420MHz and 3.7GHz bands, has announced the soft launch of its '5G internet at home' service. Branded 'Nordic 5G' the telco is promising users a fiber-like experience with download/upload speeds of either 40Mbps/4Mbps for CZK395 (USD17.8) per month, or 100Mbps/10Mbps for CZK555. Both plans come with 'unlimited' downloads and Nordic Telecom is currently taking registrations in 'selected locations'. Furthermore, users can opt for Nordic 5G + Nordic TV which includes 80 TV channels and starts from CZK450 per month, it says, while it is also looking to

tempt users by running a discounted six-month promotion on its plans. In March 2018 Nordic Telecom launched the first non-commercial pilot operation of high speed fixed wireless services in selected locations in the Czech Republic, noting that services were available in Prague, Vinori and Dobris. Speaking at the time, Martina Lovcikova, head of the telco's retail division, said that total investment of CZK750 million is planned to build out the new network 'especially in medium-sized and smaller cities' where it believes there is room to improve the quality of fixed internet connections. Nordic Telecom's 'LTE-fiber-like experience' requires the installation of an indoor router and an

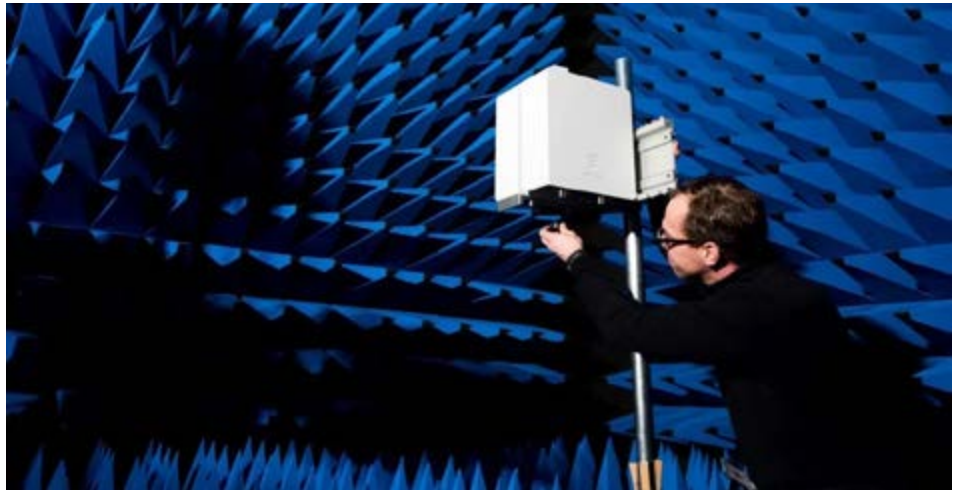
outdoor unit that requires professional installation. In September 2017 the Czech Telecommunication Office (Cesky telekomunikacni urad, CTU) announced the allocation of spectrum blocks in the 3.7GHz band (3600MHz-3800MHz) to four winning bidders including Nordic Telecom – the successor to the defunct brands of Air Telecom and U:fon. The unit was subsequently assigned two 40MHz blocks in the 3720MHz-3760MHz and 3760MHz-3800MHz range, while the other winning bids came from O2 Czech Republic (1x40MHz block), another newcomer in the shape of PODA (1x40MHz), and Vodafone Czech Republic (1x40MHz); each 40MHz block cost CZK203 million (USD9.2M).

Ericsson, Qualcomm Turn to 28GHz for Latest 5G Data Call

The call, using the 5G New Radio standards, was held at Ericsson's lab in Kista. It used Ericsson's 5G New Radio equipment and basebands, as well as a test device equipped by Qualcomm's Snapdragon X50 5G modem. Ericsson cited figures from GSMA Intelligence which said more than 20 operators were holding trials using the 28GHz band. It is expected that that frequency will be central to European, American and South Korean operators' 5G plans. It follows both companies holding a similar downlink data call in early September that used the 39GHz band. They also previously tested interoperability tests on the 3.5GHz spectrum band. Ericsson said access to high frequency bands was vital to provide the ultra-high speeds and low latencies required for 5G. Thomas Noren, Head of 5G Commercialization at Ericsson, said: "By adding 28 GHz to the list of spectrum bands supported and tested

by our equipment for initial 5G launches, we make it easier for our customers to roll out early 5G services to their users. This is made possible by our collaborative efforts with key partners to build a solid 5G ecosystem." Last week Ericsson teamed

up with Telia Company and an Estonian university to build a pilot 5G network by the end of this year. The Swedish vendor also recently signed an agreement with Beeline covering the development and deployment of 5G.



Wind Hellas to Launch 5G Trial in Kalamata

Greek telco Wind Hellas says it plans to launch a pilot 5G mobile network next year in the city of Kalamata on the Peloponnese peninsula. A memorandum was signed last month by Wind, the General Secretariat for

Telecommunications & Post, and the mayor of Kalamata, and a report from Kathimerini cites Wind Hellas's head of strategic development, Antonis Tzortzakakis, as saying that work on the project is already

underway. According to TeleGeography's GlobalComms Database, Wind Hellas is the smallest of Greece's three mobile network operators (MNOs), with around 22% of the overall market in subscriber terms.

Telekom 5G to Cover 99% of Germans by 2025

German telecoms company Deutsche Telekom has unveiled an eight-point program for the development and launch of 5G mobile communications. The firm, which operates in its domestic market via its Telekom Deutschland unit, plans to launch 5G in 2020 and cover 99% of the population and 90% of the country by 2025. As part of its efforts, Telekom says it will increasingly partner with other companies that are investing in broadband upgrades, sharing the infrastructure needed for 5G with other network operators, particularly in rural areas. Each year, Telekom plans to build over 2,000 new mobile sites, mainly in white spots, to reach a total of 36,000 by 2021, and it will also install 10,000 smaller radio cells to improve coverage at particularly high-demand locations or inside buildings. Around 22,000 of the firm's 27,000 sites are already connected to its fiber-optic network, which currently

stretches 500,000km, and will be extended by 60,000km annually. Telekom currently serves 24.4 million households with fixed broadband speeds of up to 100Mbps, and

top speeds of up to 250Mbps are already available to around ten million households, with this set to increase to 28 million in 2019.



Wi-Fi Alliance® Introduces Wi-Fi 6

Wi-Fi Alliance® introduces Wi-Fi 6 as the industry designation for products and networks that support the next generation of Wi-Fi®, based on 802.11ax technology. Wi-Fi 6 is part of a new naming approach by Wi-Fi Alliance that provides users with an easy-to-understand designation for both the Wi-Fi technology supported by their device and used in a connection the device makes with a Wi-Fi network. The new naming system identifies Wi-Fi generations by a numerical sequence

which correspond to major advancements in Wi-Fi. The generation names can be used by product vendors to identify the latest Wi-Fi technology a device supports, by OS vendors to identify the generation of Wi-Fi connection between a device and network, and by service providers to identify the capabilities of a Wi-Fi network to their customers. The generational terminology may also be used to designate previous Wi-Fi generations, such as 802.11n or 802.11ac. The numerical sequence includes:

Wi-Fi 6 to identify devices that support 802.11ax technology

Wi-Fi 5 to identify devices that support 802.11ac technology

Wi-Fi 4 to identify devices that support 802.11n technology

Each generation of Wi-Fi offers new features – faster speeds, increased throughput, and better experiences. Industry adoption of the new terminology will help users better understand the experience they can expect. Wi-Fi 6 will deliver an improved experience to address device and application needs in a range of

consumer and enterprise environments. The generational terminology is expected to be widely adopted by the Wi-Fi ecosystem. “For nearly two decades, Wi-Fi users have had to sort through technical naming conventions to determine if their devices support the latest Wi-Fi,” said Edgar Figueroa, president and CEO of Wi-Fi Alliance. “Wi-Fi Alliance is excited to introduce Wi-Fi 6, and present a new naming scheme to help industry and Wi-Fi users easily understand the Wi-Fi generation supported by their device or connection.” In addition to describing the capabilities of the device, device manufacturers or OS vendors can incorporate the generational terminology in User Interface (UI) visuals to indicate the current type of Wi-Fi connection. The UI visual will adjust as a device moves between Wi-Fi networks so users have real-time awareness of their device connection. Beginning with Wi-Fi 6, Wi-Fi Alliance certification programs based on major IEEE 802.11 releases will use a generational Wi-Fi name; Wi-Fi CERTIFIED 6™ certification is coming in 2019.



Qualcomm Expects 5G Device Launches in Early 2019

Ben Timmons, Senior Director of Business Development at Qualcomm Europe, admitted it was difficult to unpick an ongoing PR war regarding 5G firsts, but added there was tremendous momentum from manufacturers to commercially launch a 5G device as early as Q1 2019. Speaking at Qualcomm's 2018 5G State of Play briefing in London, Timmons (pictured) conceded 5G "seemed distant" even a few months ago, but real activity on the device side and developments around interoperability has made the prospect of the next-generation technology a lot more "tangible". Building on recent progress, Timmons still warned it was difficult to identify exactly what people mean when claiming 5G firsts, with vendors, operators, companies like Qualcomm and even national governments all "trying to prove they are in the lead". "A lot of the demos and announcements have done quite a lot with 4G technology," he added, "but used in a particular way, such as Massive MIMO, which is kind of 5G. The good thing about it, however, is that people are committing and want to make it happen, so to be overly critical of announcements, demos, trials and pilots is a bit harsh." He said the ecosystem needed to see five to 15 smartphones and other pieces of user equipment working with five or six major infrastructure vendors for 5G, otherwise "we haven't got anything. And that is at the point we are getting to". In his presentation, Timmons stressed the importance of interoperability between its technologies (such as the Snapdragon X50 5G modem) with the infrastructure network platform of vendors, which was "vital" to advancing

the technology. He said the company was able to overcome the interoperability hurdle this year, holding a demonstration at Mobile World Congress with Ericsson and Nokia which proved "that the technology we are developing that was actually going to end up in the device worked and would interwork with other infrastructure vendors". This milestone, he said, was of utmost importance. Putting it into context, he said the company had been "critical" of early 5G demos which were only based on end-to-end proprietary systems. "If the network side equipment and device side equipment interoperate big deal, because it's all your technology. The thing that is really critical is making sure that my device technology works with someone else's infrastructure technology and that has always been our focus." Central to the company's 5G developments has been its 5G test phone, which is powered by the X50 chip. Timmons said this device was

now used by engineers, infrastructure vendors and operators "to test 5G is working". While it is clearly larger than today's premium smartphones, Timmons said competitors' 5G test devices (which he did not name) looked more like "a box resembling something like a VCR". The test device, along with its X50 chip and the next Snapdragon processor, which will be unveiled at its event in Hawaii later in the year, has given Timmons the confidence Qualcomm has a "real route to commercialization". "For our customers we are confident they will get to market end of Q1 or beginning of Q2 with X50 powered smartphones," he said. "It may be there is no network there and operators don't have launch plans in those timeframes but in terms of the process that we are going through, in terms of doing interoperability testing with the infrastructure vendors and developing a commercial smartphone, we are on track."



Japan Operators Accelerate 5G Launch Plans

Operators in Japan are working toward launching limited commercial 5G services in 2019, bringing the schedule forward and with pilots taking place at the Rugby World Cup being held in the country. Previously, the country's operators had touted the 2020 Summer Olympics in Tokyo as a major proving ground. But with momentum around 5G having picked up pace globally, the operators now seem to be moving

faster with their plans. Citing local publications, RCR Wireless News reported representatives from NTT Docomo, KDDI and SoftBank told a government hearing that limited commercial launches would take place in 2019, ahead of a full 5G service for smartphones in 2020. It said market leader NTT Docomo plans to rent out 5G devices (albeit without charge) at the Rugby World Cup, which takes place

between September and November 2019. In the meantime, a 5G spectrum allocation process will take place in the country. Availability of suitable frequencies is of course critical for operators. The country's operators have already been pressing ahead with 5G tests and commercial supply deals have been signed.

REGULATORY NEWS

Cote d'Ivoire, the Most Powerful Economy in West Africa, Aspirant to ITU Council Seat to Regionally Boost Digital Economy and Foster Socio-Economic Progress

The Government of Cote d'Ivoire has announced its intent to contest the election of ITU Council membership from Region D, elections for which will be held during the Plenipotentiary Conference 2018, which is the highest policy-making body of the ITU. Held every four years, the Plenipot is the key event at which ITU Member States decide on the future role of the organization, thereby determining the organization's ability to influence and affect the development of information and communication technologies (ICTs) worldwide. The Conference sets the Union's general policies; adopts four-year strategic and financial plans; and elects the senior management team of the organization, the Member States of the Council, and the members of the Radio Regulations Board. Later this month, the ITU Plenipotentiary Conference will meet in Dubai, United Arab Emirates. It will be preceded by the last meeting of the 2018 session of the Council on Saturday, 27 October 2018. To maximize the impact of mobile technology on being able to fulfill the Sustainable Development Goals, Mr. Claude Isaac Dé, the Minister of Digital Economy and Post, Cote d'Ivoire, recognizes the need to proliferate basic telephony as well as mobile internet among the still unconnected populations of the country, which effectively means overcoming affordability issues, revamping taxation policies, reducing the cost of mobile ownership, creating relevance of the Internet among low-income groups and women, and to enable telecom operators to develop new business models and tariff structures targeting the unconnected. In a country where the ICT sector contributes nearly 8% to the gross domestic product, providing a livelihood to more than 150,000 citizens, efforts are being made by the "ANSUT" to increase the GDP contribution to 15% by 2020; an ambition that demonstrates

the importance of the ICT sector to the country's economy, and the leadership that Cote d'Ivoire aims to provide both within its borders as well as regionally. Cote d'Ivoire sees ITU's evolving role in the new smarter world of digital communications as an entity that should continue to lead and guide the world's digital communications sector, enabling international collaboration and cooperation, promote access to affordable communications services to under privileged and female populations, and create an inclusive knowledge-driven society, which should be equipped with stronger financial and human resources. Cote d'Ivoire's aspirations to be elected as a member of the ITU Council demonstrates the west African nation's continued focus on ICT-driven leadership and economic growth, with the economy having grown by over 7% in 2017. The West African country's National Development Plan (NDP) 2016–2020, which has underpinned government

efforts on enabling socio-economic progress in Côte d'Ivoire by reducing poverty, improving inequality, increasing agricultural output and promoting the manufacturing sector, has had a positive impact on the communications sector as well. The government of Cote d'Ivoire has expressed its commitment to ITU-led initiatives and to ensuring its participatory role in digitally connecting the world, fulfilling the Sustainable Development Agenda, addressing private-sector incentivization and internet development issues and needs, building the capacity of the young populations across developing Member States, extending reach of the ITU's stakeholder-inclusion efforts and fortifying the ITU's regional presence, assist in building ITU's improved institutional capacity as a global body, and to participate in all feasible means to create new financial and administrative resources for the Union.



Fresh Philippines License Attracts 6 Bidders

Six companies including China Telecom and Norway-based Telenor Group purchased documents to bid for a long-awaited third mobile license in the Philippines. In a statement the Department of Information and Communications Technology (DICT) said the potential bidders are China Telecom, Telenor, PT&T, LCS Group of Companies with TierOne Communications, Udena and an undisclosed bidder. The bidding documents are available for PHP1 million (\$18,487). A court denied a request for a temporary restraining order

on the process filed by Now Telecom on 9 October in protest at the addition of specific provisions to the process by the National Telecommunications Commission. Despite the knock-back, the company announced it will participate as a member of a consortium. After the decision by the Manila Regional Trial Court, DICT acting secretary Eliseo Rio said the timeline for the selection will go ahead as planned. Companies can submit bids from 7 November. Selection of the new entrant will focus on their level of

commitment with planned coverage to be the main consideration, followed by annual capex and minimum data rates. Filipino authorities in late September approved the terms for selecting the third operator. Local media previously reported at least 12 overseas operators were interested in partnering with four or five local companies to establish a third operator to challenge the dominance of PLDT (owner of mobile player Smart Communications) and Globe Telecom.

COAI Forecasts Additional Losses for India Telcos

The head of the Cellular Operators' Association of India (COAI) expects the country's mobile operators to suffer at least three more quarters of losses as the current tariffs are not sustainable, Press Times of India (PTI) reported. Rajan Mathews (pictured), director general of COAI, told PTI that high government fees, including license and spectrum usage charges, together with high spectrum costs have added to the operators' problems, noting that 2018-19 will certainly be a "tough year" in terms of financial performance. He said the industry already experienced two quarters of losses this fiscal year. The country's major operators have seen sharp drops in both profitability and revenue since Reliance Jio entered the market in September 2016 offering low-cost unlimited data and voice plans. Jio is already the second largest mobile player in India with 215 million subscribers and nearly a 19 per cent market share at end-June. The latest Telecom Regulatory Authority of India figures showed operators' gross revenue fell 10 per cent year-on-year to INR584 billion (\$7.85 billion) in the April to June period. Postpaid ARPU in Q2 2018 fell 21 per cent year-on-year to INR307, while prepaid ARPU dropped 9.2 per cent to INR59. Mathews said it is difficult to see tariffs dropping much further,

adding declining revenue would hamper the industry's ability to invest in new technology to expand and improve coverage, the newspaper reported. Bharti Airtel reported a net profit of INR973 million in its fiscal Q1 (ending 30 June), down from INR3.7 billion the previous year, with revenue falling 9 per cent to INR200.8 billion.



Court Dismisses Internet Throttling Complaint

The N'Djamena High Court has rejected a complaint filed against cellcos Airtel and Tigo over bandwidth throttling, Agence Ecofin reports. The case was filed by a group of Chadian lawyers, who have stated that they will now appeal the decision. Neither operator has denied restricting internet access, but explained that they had been directed to do so by the government. Indeed, a representative from the Regulatory Authority for Electronic

Communications and Post (L'Autorite de Regulation des Communications Electroniques et des Postes, ARCEP) told the court that the regulator had issued the instruction following an order from the Ministry of Public Security. As previously reported by TeleGeography's CommsUpdate, internet access in Chad has been throttled since late March 2018 according to French NGO Internet Without Borders (Internet Sans Frontieres, ISF),

which claimed in a joint statement to the UN Human Rights Council the following month that Chad had 'mastered the practice of shutting down telecommunications for political reasons'. ISF's submission stated that bandwidth throttling was 'making it extremely difficult for Chadian citizens to connect to social media and messaging apps without the use of a VPN.'

FCC Tells Court It Has No “Legal Authority” To Impose Net Neutrality Rules, Defends Repeal In Court, Claims Broadband Isn’t “Telecommunications.”

The Federal Communications Commission opened its defense of its net neutrality repeal, telling a court that it has no authority to keep the net neutrality rules in place. Chairman Ajit Pai’s FCC argued that broadband is not a “telecommunications service” as defined in federal law, and therefore it must be classified as an information service instead. As an information service, broadband cannot be subject to common carrier regulations such as net neutrality rules, Pai’s FCC said. The FCC is only allowed to impose common carrier regulations on telecommunications services. “Given these classification decisions, the Commission determined that the Communications Act does not endow it with legal authority to retain the former conduct rules,” the FCC said in a summary of its defense filed yesterday in

the US Court of Appeals for the District of Columbia Circuit. The FCC is defending the net neutrality repeal against a lawsuit filed by more than 20 state attorneys general, consumer advocacy groups, and tech companies. The FCC’s opponents in the case will file reply briefs next month, and oral arguments are scheduled for February. The FCC’s argument that its net neutrality rules are illegal is notable for a couple reasons. Judges at the DC Circuit appeals court ruled in 2016 that the rules were legal, allowing them to remain in place despite the broadband industry’s attempt to overturn them. The FCC repealed the net neutrality rules anyway after the majority changed hands from Democrats to Republicans. In defending that repeal, Pai’s FCC isn’t merely claiming that the rules were a bad idea—the FCC is claiming

it has no authority to impose such rules at all. The FCC’s claim that it has no authority to impose net neutrality rules could be important in determining whether state governments such as California’s may impose net neutrality rules similar to those repealed by the FCC. Pai claims the FCC can both repeal its own rules and preempt states from enacting similar ones, because broadband is an interstate service and state rules conflict with the “federal policy of non-regulation.” But defenders of state rules say that the FCC cannot preempt state laws regulating conduct over which the FCC claims it has no regulatory authority. The FCC’s argument that broadband isn’t “telecommunications” hinges on Pai’s interpretation of the Communications Act. The Communications Act specifically defines telecommunications as “the transmission, between or among points specified by the user, of information of the user’s choosing, without change in the form or content of the information as sent and received.” A telecommunications service is “the offering of telecommunications for a fee directly to the public.” An information service, by contrast, is defined in the Act as “the offering of a capability for generating, acquiring, storing, transforming, processing, retrieving, utilizing, or making available information via telecommunications.” The information service definition “includes electronic publishing, but does not include any use of any such capability for the management, control, or operation of a telecommunications system or the management of a telecommunications service.”



Argentina to Block Unregistered Pre-Paid SIMs

Argentinian telecoms regulator the National Entity for Communications (Ente Nacional de Comunicaciones, ENACOM) has informed pre-paid mobile phone users that they have until Thursday 18 October to register their SIM cards, or

face disconnection. The process was initiated back in November 2016, when the Ministry of Communications (Ministerio de Comunicaciones) and the Ministry of Security (Ministerio de Seguridad) agreed Joint Resolution 6-E/2016, which

was published in the Official Gazette that month. Since May 2017 all pre-paid users have been obliged to provide ID and register their details when buying a new SIM card.

EC Harmonizes Frequencies for Short-Range IoT

The European Commission is working to harmonize radio spectrum for short-range IoT devices, enabling the 900MHz band to be used for applications such as smart cities, homes, farming and transportation systems. Its intention is to meet the spectrum needs of next-generation RFID devices and other IoT products which can be connected independently of mobile networks. The Commission noted that while more expensive devices can operate in different spectrum bands or different portions of bands, this is not the case for low-cost short range devices, which could cause issues around production cost and radio interference. The regulator adopted an Implementing Decision covering the 874MHz to 876MHz and 915MHz to 921MHz bands to provide a “long-term strategy to counterbalance fragmentation in these bands across Europe”. Until now, EU member states have used these bands

for short-range devices (including RFID tags) or railway communications. With the 900MHz range used for tagging “almost globally”, this also opens the way for scale economies and global applications based on networked short-range devices, such as asset tracking. Frequencies have also been set aside for railway and military applications. The Commission said the decision follows a “positive opinion” from member states in the Radio Spectrum

Committee. It continued: “In future, once the new EU Communications Code will enter into force, radio spectrum will be assigned and coordinated even better at EU level than at the moment, so that Europe can become a leader in the rollout of 5G networks.” The move is said to complement other spectrum initiatives related to 5G, which are ongoing in other bands (700MHz, 3.6GHz and 26GHz), with “further availability of spectrum by 2020”.



Chavit Singson, Dennis Uy among Six in Frame for Third Telco Bid

The National Telecommunications Commission (NTC) has confirmed that at least six groups have formalized their bids to compete for the Philippines' third telco slot, including former Ilocos Sur Governor Chavit Singson and Dennis Uy's Udenna Corp. With participants needing to pay PHP1 million (USD18,700) for the bid documents – and have PHP700 million worth of 'participation security' – the Luis Chavit Singson (LCS) group has joined TierOne Communications with the goal

of delivering 'much needed world class telecommunications services across the archipelago'. The pair is adamant that if successful in its bid, it will deliver services countrywide and especially 'in areas outside key cities' so that 'they will no longer be treated like second-class citizens when it comes to telco services'. TierOne is a broadband internet provider in the Autonomous Region in Muslim Mindanao (ARMM). Separately, representatives of Dennis Uy's Udenna Corp also bought

documents for the third telco spot, joining Mel Velarde-led NOW Corp (NOW Telecom), Norway-based Telenor and two more companies which have opted to remain anonymous. Still to be heard from are local firms Philippine Telegraph and Telephone Corp (PT&T), Transpacific Broadband Group International (TBGI), Converge ICT Solutions and EasyCall Communications Inc. (ECPI), as well as the likes of China Telecom, LG Uplus, KDDI, AT&T, Viettel Group and Vodafone Group.

Mauritania Hoping to Attract New Player as Part of 4G Sale

The government of Mauritania has opened an auction for three 4G licenses, with a fourth concession being made available to a new entrant. While the 4G-only permits are expected to be picked up by the country's three incumbent cellcos – Mauritel, Chinguitel and Mattel – the new

license covers 2G, 3G and 4G technologies in an effort to attract further competition to the market. Applications for the licenses are being accepted until 5 December. Mauritania was home to an estimated 3.9 million cellular subscribers at the end of June 2018. The incumbent trio of

operators have come in for criticism from the regulator for their failure to provide consistent quality of service (QoS) levels, and all three firms have been fined on more than one occasion for falling below minimum QoS requirements.

Indian Telcos to Face New Wave of Financial Challenges Following DoT Probe

India's beleaguered telecoms operators must brace themselves for a new round of financial challenges, according to ratings agency Fitch. According to a report published by Fitch, India's Department of Telecoms intends to launch a fresh audit of the country's mobile operators, covering the period 2012-2018, to ascertain whether telcos have been under reporting their revenues. Indian telcos are already struggling under the weight of huge levels of debt, which are being exacerbated by ultra-competitive market conditions. "The audit would be opposed by the operators, which are certain to again challenge the decision through the courts. The DoT had already twice commenced

audit investigations into the books of the operators; audits of FY2006–FY2008 (April–March), and FY2011–FY2015 accounts had uncovered as much as INR1.07tn (\$14.7bn) in under-reported revenues, prompting the Comptroller and Auditor General (CAG) to serve notices for INR258.8bn (\$3.6bn) in unpaid dues. Operators have challenged the CAG's findings, while the courts have yet to decide on the matter. We expect that industry cash flow will be affected if the courts allow the DoT to collect the additional spectrum fees, given pre-existing commitments to capital expansion," the report said. While the Indian government has been keen to work with the industry to overcome these

issues, Fitch's report says that it is unlikely that the government will excuse or reduce any subsequent debts that arise from historic under reporting of revenues. "The Indian government is unlikely to provide any financial relief for embattled operators as raising funds from the telecoms sector will allow it to address revenue collection shortfalls in other areas. The state has already slashed the goods and services tax (GST) across a wide range of consumer goods and has ramped up agricultural subsidies, providing reason for us to believe it will overshoot its 3.3 per cent fiscal deficit target for FY2018-19," the report concluded.

DoT to Consult Other Ministries over SC Aadhaar Ruling

In the wake of the Supreme Court's decision this week to bar private companies from using Aadhaar for customer ID and registration, the Department of Telecommunications (DoT) is to consult with the Unique Identification Authority of India (UIDAI) – the agency responsible for managing the

Aadhaar identification system – the law ministry and telecom service providers to ensure that the sector is compliant with the apex court's ruling. The Economic Times quotes DoT head Aruna Sundararajan as saying the ministry will hold inter-ministerial talks to discuss issues arising from

the decision including voluntary use of the Aadhaar system by consumers. Following a Supreme Court ruling in February last year the nation's mobile providers rolled out the Aadhaar-based 'electronic know your customer (eKYC)' system for registering new subscribers and re-verifying existing customers, replacing slower and less reliable verification methods, which could take up to a week to complete. The apex court's surprise reversal this week has left the industry – including operators and regulators alike – in confusion, with the DoT's previous directions on subscriber registration now in direct conflict with the new ruling. The DoT has not stated how long it will take to issue fresh instructions to telcos to comply with the new order, but Rajan Mathews, the director general of the Cellular Operators Association of India (COAI), told the paper that the industry group would take two-three weeks to review the order before submitting their findings to the DoT.



FCC Chairman Says Continued Mobile Service Disruptions after Hurricane 'Unacceptable'

FCC Chairman Ajit Pai has called for US operators to offer customers free service due to the "completely unacceptable" delays in restoring service after Hurricane Michael hit the Gulf of Mexico

coast. His call met with a prompt response from Verizon, which said it will be offering customers in the two most affected countries free mobile service for three months.

True Seeking to Revoke TOT Arbitration Award

True Corporation has filed a petition with the Central Administrative Court to revoke an arbitration award given to TOT in their dispute over ADSL services. True emphasized it did not breach the contract

for joint operation and investment in providing ADSL, dating back to 2005. In September 2018 True was ordered by an arbitration tribunal to pay a penalty to TOT for breaching the agreement to provide

ADSL services, or allowing other parties to make use of the system's equipment. The penalty is reportedly around THB94 billion (USD2.8 billion).

Indian Regulator Defends 5G Spectrum Pricing

The Telecoms Regulatory Authority of India (TRAI) has defended its pricing for its forthcoming spectrum auction that will underpin the rollout of 5G networks on the sub-continent. TRAI has set a price of 492 crore Indian rupees (\$66.4 million) per MHz of 5G spectrum. "We are hopeful that the auction will take place on the 5G front, there is no reason for us to think it will not

happen. With respect to people saying that the auction prices are higher, we have applied the same principle which we had also used in the past, to arrive at the estimation of the reserve price," TRAI chairman, RS Sharma, told India's Financial Chronicle website. With blocks being auctioned off in 20MHz blocks, Indian telcos will be obliged to spend a minimum of 9,840 crore Rupees

(\$1.4 billion) to secure spectrum at the auction. India remains one of the world's toughest markets in which to turn a profit, as ultra-fine margins send telcos into a race to the bottom on price. The fear is that by artificially inflating spectrum pricing, the Indian government could lose ground in its quest to bring 5G mobile networks to the masses.

GSMA Launches Innovation Fund for Rural Connectivity



The GSMA launched a new Innovation Fund for Rural Connectivity, aimed at expanding digital inclusion through innovative new technology solutions for connecting unserved rural communities. The Fund is backed by the UK's Department for International Development (DFID) and managed by the GSMA. The Fund will provide grants up to £300,000 and is open to eligible companies who can deploy solutions in Uganda or Ghana, in partnership with MTN Uganda and Vodafone Ghana respectively. Funded projects will test innovative ways to deploy mobile broadband networks in rural areas, looking to demonstrate commercially sustainable models that can be scaled and replicated in similar environments. "Mobile operators are committed to advancing connectivity in rural areas as they work to deliver commercially sustainable solutions to accelerate progress against the UN's Sustainable Development Goals (SDGs)," said John Giusti, Chief Regulatory Officer, GSMA. "The Innovation Fund for Rural Connectivity will

drive partnerships aimed at developing new ways of using mobile technologies to close coverage gaps in rural areas so that more citizens have access to life-enhancing mobile services." Projects eligible for funding will test innovative ways to deploy mobile broadband networks in rural areas, in partnership with a mobile operator, and projects will need to demonstrate commercially sustainable models that can be scaled and replicated in similar environments. Successful grantees and their partners will receive advice and guidance from the GSMA, including analytical support to identify commercially viable sites for deployment, and full technical and commercial performance reports. Applications will need to focus on at least one of the following areas: active base station technology; passive infrastructure; energy; backhaul; operation and maintenance; or sustainable business models. Connectivity Drives Social and Economic Benefits Mobile internet connectivity brings a wide range of social and economic benefits, helping to promote digital inclusion and supporting the delivery of essential services and key development objectives such as poverty eradication, healthcare, education, financial services and gender equality. The UN's Sustainable Development Goals recognizes the importance of connectivity and include a specific target on ensuring universal and affordable access to the internet. According to the GSMA's Connectivity Index¹, more than two-thirds of the global population is now connected to the internet. The GSMA's recent Mobile Industry Impact Report² highlights that countries with high levels of mobile connectivity have made more progress in meeting their SDG commitments. The study shows that mobile is continuing to expand its reach, with 400 million more people benefiting from mobile connectivity since 2015, but more work needs to be done, particularly in rural areas.

Regulators Adopt Best Practice Guidelines for Digital Transformation

The recent ITU Global Symposium for Regulators 2018 (GSR-18), held at ITU headquarters in Geneva, Switzerland, adopted a new set of best practices to guide policy-makers and regulators in 193 Member States to facilitate digital transformation. Regulators at the Symposium recognized the need to keep pace with advances in technology, address new regulatory frontiers, and create the foundation upon which digital transformation can achieve its full potential. "Today more than ever, policy-makers and regulators need to

keep pace with digital transformation sweeping across the sectors and impacting all aspects of our daily lives as consumers, businesses and citizens," says Brahima Sanou, Director of the ITU Telecommunication Development Bureau. The GSR-18 Best Practice Guidelines, of which you will find some excerpts below, place particular emphasis on: emerging technologies; business and investment models; and continued innovation and progress – all aimed at supporting digital transformation.

Fostering the potential of emerging technologies

In the guidelines there is a call for implementing an agile framework for an innovative digital ecosystem through flexible light-touch, multi-sectoral, forward-looking, neutral and transparent policy and regulatory approaches. The guidelines call for encouraging policy and regulatory measures to facilitate the deployment and use of emerging technologies for affordable digital infrastructure and services, including in the area of infrastructure sharing, interconnectivity, quality of service and effective use of spectrum.

Business and investment models supporting digital

An investment-friendly policy and regulatory framework is needed to support digital transformation which permeates all industries and impacts markets in all sectors. Regulators and policy makers need to work together proactively to promote policies that encourage both innovation and effective competition among sector players in the ecosystem, and that also support the protection of consumers.

Continued innovation and progress

Amidst the technology swirl of the last decade, new technologies, new players and new business models are rapidly coming of age. Proactive measures and exchanges with all players in the value chain in the sector (start-ups, competition hubs, manufacturers, operators, as well as users) are key for boosting the emerging digital ecosystem. Regulators at GSR-18 agreed that ICT policy and regulatory frameworks need to be up-to-date, flexible, incentive-based and market-driven to support digital transformation across sectors and across geographical regions.

They believe in putting in place innovative, out-of-the box measures such as:

- regulatory sandboxes for enterprises
- "start-up and experiment" interfaces
- 5G pilot projects.



Regional Players Jump on 600MHz Bandwagon

Regional US operators Agri-Valley Services and NewCore Wireless have teamed up with Ericsson to conduct a joint 4G LTE trial using 600MHz spectrum, as they seek to evaluate the band's commercial usage prospects in regional markets. The trial, which will take place in Caro, Michigan, is said to be the first such 600MHz trial staged with a regional carrier in the US. Agri-Valley Services is testing the performance of the 600MHz band for fixed-wireless access (FWA), while NewCore Wireless will offer hosted core services for Agri-Valley Services. According to TeleGeography's

GlobalComms Database, the '600MHz Broadcast Television Spectrum Incentive Auction' commenced in August 2016 and concluded in February 2017. The bidding process raised a net total of USD19.3 billion, with 50 bidders placing winning bids for a total of 2,776 licenses. T-Mobile US comfortably dominated the bidding process and remains the only operator to have publicized a commercial launch to date. The firm agreed to pay almost USD8.0 billion for a total of 1,525 regional licenses. T-Mobile's 600MHz LTE network went live in August 2017, in Cheyenne,

Wyoming, and now covers 1,254 towns and cities in 36 states.



NOW Sues NTC over NMP Selection Process



The Philippine Daily Inquirer reports that NOW Telecom – among the prospective bidders for the country's New Major Player (NMP) license – is suing the National Telecommunications Commission (NTC) over details of the selection process. NOW, an affiliate of publicly listed NOW Corp, launched its legal action at the Manila Regional Trial Court on 8 October – the same day it acquired NMP selection documents from the NTC – to challenge key portions of the terms of reference requiring hefty financial commitments which it called 'onerous, confiscatory and

potentially extortionary'. The Philippines' initiative to select the NMP – a.k.a. the 'third telco' – is aimed at breaking the market dominance of full-service operators PLDT and Globe Telecom, but a tight deadline of 7 November for opening bids now looks in doubt pending a court decision. NOW's petition questions NMP financial requirements, including a 10% performance security bond valued between PHP14 billion and PHP24 billion (USD258 million-USD443 million) plus a PHP700 million participation security and PHP10 million non-refundable appeal fee. Elise Rio Jr., Department of Information and Communications Technology (DICT) acting secretary, defended the provisions yesterday, saying: 'The government wanted to attract a strong contender. The bond is there because we want a third telco who can compete with Globe and [PLDT mobile subsidiary] Smart Communications.' Filipino President Rodrigo Duterte has

threatened to assume direct control of the NMP selection process if the DICT fails to meet its deadline. 'The President will not be happy with this development,' Rio said, adding that the third telco initiative was of 'national interest'. Earlier, the NTC confirmed that at least six groups have formalized their bids to compete for the third telco slot, including NOW, Telenor Group, Luis Chavit Singson (LCS)/TierOne Communications, Dennis Uy's Udenna Corp and two more companies opting to remain anonymous. Other groups previously linked with a potential NMP bid include local firms Philippine Telegraph and Telephone Corp (PT&T), Transpacific Broadband Group International (TBGI), Converge ICT Solutions and EasyCall Communications Inc. (ECPI), as well as the likes of China Telecom, LG Uplus, KDDI, AT&T, Viettel Group and Vodafone Group.

Google Fees to Hit China Low-Cost Device Vendors

Google's plan to stop bundling preinstalled apps on its Android platform and charge smartphone makers to license apps in Europe is likely to hurt low-cost handset vendors in Asia which rely on free apps from the search giant, Nikkei Asia Review reported. The decision to charge was part of a bid to avoid additional fines from European Union regulators. The European Commission in July issued a €4.3 billion fine to Google after it found the tech giant abused the dominant position of its Android platform to force manufacturers to install its apps on devices. It gave the tech giant until 28 October to change its business practices or face further penalties. Starting 29 October, Google will offer individual paid licenses for its Search app and Chrome browser, as well as a bundled license for the rest of its app suite, which includes YouTube, Maps and Gmail, for manufacturers who want to preinstall the apps on devices shipped to the EU. The move could raise costs for Android phone makers, which includes Samsung, Huawei as well as the likes of Xiaomi and Oppo. Makers of higher-end devices could pass on the licensing fees to customers by raising prices, but Nikkei Asia Review noted that would be difficult for players such as Xiaomi and Oppo which have gained traction in Europe with their low-cost smartphones. Xiaomi moved into France and Italy, after launching in Spain last year, while rival Oppo markets its devices in Spain, France, Italy, Russia and the Netherlands, and reportedly plans to launch in the UK. Richard Windsor, founder of research blog Radio Free Mobile, estimates that after Google apps are unbundled from both Google Play and Chrome, for it to break even it would need to charge between \$48.50 and \$58.20 per device to any handset maker that

did not wish to install Google Search and Google Chrome on its Android device that also has Google Services. "However, even at \$25 per unit, this will destroy the already anaemic profitability of Android handset makers, the vast majority of whom make less than \$10 operating profit on every handset they make," he warned. He suspects that "given the choice, Android handset makers will continue installing both Google Search and Google Chrome on their Android devices as the alternative would seem to be economic suicide". Windsor added: "I think that there is nothing to prevent Google's continued dominance of Android as the EU remedies make life for Android handset makers even more impossible than it already is." Google will now allow device makers to build modified or "forked" versions of its Android platform for smartphones and tablets offered in the EU. The move reverses a previous policy which blocked manufacturers from offering its suite of apps on such devices.



FCC to Drive US 5G Goals with More Spectrum

The Federal Communications Commission (FCC) outlined plans to free up more spectrum for 5G and Wi-Fi, as well as opening up rules for rural carriers to promote investment, as it looks drive US leadership in the next-generation of mobile technology. In a post, Chairman Ajit Pai outlined the regulator's spectrum proposal, which will be voted on later this month, with the announcement building on a speech he made last week at a White House summit on 5G. In his presentation, he focused on the FCC's plan to promote US superiority on 5G technology through its 5G FAST Plan, on which he provided more detail with this latest announcement. Starting with 5G, Pai highlighted the

regulator's plans to hold two auctions for high-band mmWave spectrum in the 28GHz and 24GHz bands beginning on 14 November, but added it also wants to free up mid-band spectrum for 5G and other uses. Therefore, it is proposing to make better use of the 3.5GHz, which will "make targeted changes to our rules to promote investment and innovation in this important band". "For example, by allowing providers to renew 3.5GHz licenses, we will substantially increase their incentive to deploy 5G networks using this spectrum," said Pai. While 3.5GHz spectrum has not been touted as 5G-suitable, it does have the potential to deliver more capacity and speed compared with spectrum currently

used in today's mobile networks. Turning to Wi-Fi, Pai said the technology was enabled by the FCC's decision to make certain spectrum available for unlicensed use and, as it becomes more popular, "so has the demand for more unlicensed spectrum to accommodate this traffic". Wi-Fi currently runs on only two frequencies, 2.4GHz and 5GHz, but expanding its use to another band could alleviate congestion. Therefore, the regulator is proposing to expand unlicensed use in the 6GHz band, which would "promote efficient use of the spectrum that may otherwise not be used at all". Pai added that it could make more than 1GHz of new unlicensed spectrum available. "This last point bears elaboration: this massive amount of spectrum could enable faster Wi-Fi connections and substantially expand the reach of internet access providers that use unlicensed spectrum, like small, competitive fixed wireless companies," he said. Pai added the move could also enable mobile broadband companies to supplement their licensed holdings for 5G. Finally, Pai said the regulator will also vote on modernizing rules governing rural carriers, with the view of removing regulations to allow them to invest in their networks. He said the order, if approved, would enable rural companies to take "resources currently wasted on regulatory compliance and devote them to building stronger networks and delivering better services".



UK Confirms New Voluntary Code of Practice for Smart Device Makers

The UK government has launched a new voluntary Code of Practice for manufacturers to boost the security of internet-connected devices. The first technology companies to sign up for the code are HP and Centrica Hive.

Nigeria's Teleology to Buy Uganda Telecom for UGX 268 Billion

The Uganda government has agreed to sell Uganda Telecom (UTL) to Nigerian firm Teleology Holdings, after seven bidders competed to buy the state-owned enterprise, reports the Monitor. [📰](#)

A SNAPSHOT OF REGULATORY ACTIVITIES IN SAMENA REGION



The Afghanistan Telecoms Regulatory Authority (ATRA) has launched a public consultation process regarding the efficiency of spectrum usage, in particular the frequencies to be assigned for 4G services, in order to determine the allocation process for spectrum for mobile service providers. For the licensing of 3G spectrum rather than auction the permissions, Afghanistan's regulatory authorities set a price of USD25 million for an

authorization comprising 2x10MHz in the 2100MHz band and allowed the nation's mobile operators to each purchase a license with no time limit on the availability. As such, the first license was issued in March 2012 – to Etisalat Afghanistan – whilst the last operator to purchase its concession, Afghanistan Wireless Communications Company (AWCC), did so in December 2014. (October 12, 2018) telegeography.com

Afghanistan



Abdelkader Messahel and Geoffrey Onyeama, Foreign Affairs Ministers of Algeria and Nigeria respectively, updated their countries' partnership for the fiber optic that should link Algiers and Abuja. This operation was conducted during the fourth session of the Algeria-Nigeria High Joint Cooperation Committee held in Algiers on October 14, 2018. During the meeting, a new roadmap was established to finish the realization of the telecommunications infrastructure that will tighten the two countries' economic partnership. In the framework of the project between Algeria and Nigeria (joined in 2003 by Niger), notable progress has been made in the past years. There is, for instance, the signing of a construction, operation, and maintenance agreement in Niamey in July 2005 by the three countries. In 2010, they completed and adopted the technical specifications. In 2011, they adopted administrative and technical clauses in Niamey and set a project management committee. During the African Internet Governance Conference held in Algiers in 2017, they also installed the Liaison Committee of Trans-Saharan Fibre Optic Backbone. Inscribed in January 2002 among their growth priorities, the Fibre optic backbone project between Algeria and Nigeria was initiated during the first meeting of the Algeria-Nigeria High Joint

Cooperation Committee held in Mumbai, India and co-presided by the two partners, then presidents Abdelaziz Bouteflika and Olusegun Obasanjo. The project launched in the framework of the New Partnership for Africa's Development (NEPAD) is about 4,500 km long. Algeria captures the longest fiber with 2,800 km while 900 km would be deployed in Niger and 800 km in Nigeria. (October 17, 2018) ecofinagency.com

Algeria

The posts and electronic communications regulatory body (Autorité de régulation de la poste et des communications électroniques-ARPCE) and Sudan telecommunications regulatory agency (Autorité de régulation de la poste et des télécommunications -ARPT) signed a partnership agreement during the sixteenth annual session of Arab Regulators Network held on October 1-4, 2018 in Bahrain. Via this agreement signed by Mohammed Ahmed Nacer, president of ARPCE, and Yahia Abdallah Mohamed Ahmed, Managing Director of ARPT, the two regulators will exchange their respective telecommunications market regulation experience. They will also share good practices for the development and modernization of ICT networks and services. (October 15, 2018) ecofinagency.com



Telecommunications Regulatory Authority (TRA) Bahrain held a workshop with mobile telecom operators from around the Kingdom on October 2, 2018 at its headquarters to discuss an upcoming audit on mobile coverage and quality of services

in Bahrain. TRA's Director of Technical and Operations, Mr. Mohamed Alnoaimi, said in a statement regarding the audit that, "Consumer experience should be a mobile network operator's top priority." Mr. Alnoaimi continued, "We annually audit the

Bahrain

quality of outdoor coverage provided by operators to make sure consumers in Bahrain are getting the most out of their mobile services. However, consumer's experience degraded quality of service indoor compared to open areas, due to the nature of penetration of mobile signals inside buildings. We invite all consumers to read the report when it is released in December of this year to help them make informed decisions when choosing their services and operators." As a condition of their Individual Mobile Telecommunications License, Mobile operators are under an obligation to provide mobile coverage to 99% of Bahrain's population that the TRA is responsible for verifying with respect to each operator. The audit will cover mobile billing, service quality, and network coverage. It is anticipated that the 2018 Mobile Audit Report is due for public release in December providing the public with comparable quantitative and qualitative data on the performance of mobile operators.

(October 10, 2018) tra.org.bh

Telecommunication Regulatory Authority (TRA) Bahrain is set to host the 16th annual Arab Regulators Network (AREGNET) meeting, which is to take place from October 1-4 in Manama, Kingdom of Bahrain. The AREGNET meeting is preceded by a workshop organized in association with the International Telecommunications Union (ITU). This year, the AREGNET workshop will place emphasis on Machine-to-Machine (M2M) communications and Internet of Things (IoT). The workshop is aimed at introducing insight on new industry topics and strengthening the collaboration between Arab countries through a series of workshops moderated by leading experts of the industry as they proceed to analyze in-depth topics of international issues related to M2M and IoT, and how it impacts the future of the telecommunications industry. The talks will further explore the potential of M2M and IoT connectivity in leading to the development of 'Smart Cities' and the limitations faced by certain policy makers and regulators whilst working on feasible strategies and ideas to create a sustainable environment.

Sheikh Nasser Bin Mohammed Al Khalifa, Acting General Director in the Kingdom of Bahrain as well as chair the 2018/2019 round of AREGNET, and we look forward to sharing our vision and expertise in the telecommunication industry which has lead the Kingdom to achieve no.1 ranking in the ICT Development Index (IDI) of the International Telecommunications Union (ITU)" and added, "Bahrain's ICT industry has shown substantial growth and potential to further its expertise and we look forward to continue our contribution into achieving growth in ICT across the Arab Region" and added "and with the inevitable introduction of 5G networks we will not only experience an evolution of mobile broadband networks but also bear witness to new unique network and service capabilities. It will integrate networking, computing and storage resources into one unified infrastructure. This unification will allow for an optimized and more dynamic use of all distributed resources, and the convergence of fixed and mobile services. In addition, 5G will support multiple models, enabling operators and other players to collaborate in new ways and create an ecosystem for further technical and services innovation for all ICT stakeholders." AREGNET, which was set up in 2003, is comprised of all telecommunication regulatory authorities across the Arab world, established under the League of 15 Arab States. The entity aims to serve as an open platform to share opinions and expertise, prepare policies, develop case-studies, and procedures to create common organizational practices with the region to achieve sustainable development goals within the ICT sector. The practices that are under AREGNET are aimed to be fair and transparent in order to encourage the development and modernization of the telecom and ICT industry in the region. AREGNET works towards transforming the Arab economy into a digital one to increase productivity and efficiency within the region by introducing and implementing new technologies, resulting in an overall attractive environment for local and international entities that develop and create modern technologies and applications.

(October 1, 2018) zawya.com



Mobile number portability (MNP) services have been belatedly launched in Bangladesh after a number of false starts, The Daily Star reports. In order to change mobile network providers within 72 hours, customers will be charged a fee of BDT50 (USD0.59) plus 15% VAT, while to switch within 24 hours costs an additional BDT100. Customers will have to wait at least 90 days to make another switch. The introduction of MNP services has been in discussion since 2009. In June 2016 the Bangladesh Telecommunication Regulatory Commission (BTRC) issued an

invitation for applications for a license for the implementation and operation of an MNP system, with Bangladeshi-Slovenian joint venture Infozillion BD Teletech Consortium securing the contract in November 2017. The service was set for introduction in May 2018, though it was delayed to August 1 after mobile operators requested 'a couple of months for preparation'. Another two-month extension followed in late July due to 'international calls issues.'

(October 1, 2018) telegeography.com

Bangladesh



Jordan

The Chairman of the Board of Commissioners of the Telecommunications Regulatory Authority (TRA), Eng. Ghazi Al-Jabour, recently participated in the 16th meeting of the Arab Regulators Network, held in Manama, hosted by the Bahrain Telecommunications Regulatory Authority (TRA) United Arab Emirates for the current session attended by the heads of regulatory bodies of (13) member countries of the network. Dr. Al-Jabour that preceded the meeting, conducting two specialized workshops on linking the Internet networks and the Internet of things and with wide participation of representatives of the Member States of the Arab Network for Regulatory Authorities communications and information technology sector, as the Commission participated in the expert meeting, which aims to stand on the progress of work on projects Various projects such as the project of exchange of experience in monitoring the quality of cellular communication services and the protection of beneficiaries'

affairs, the comparative study of telecommunications prices in the Arab countries, the project of access to telecommunications and information technology services in remote areas, Thirat communications software applications via the Internet network protocol and other projects until the adjournment of a final formal meeting of the discussion, as the Commission participated in a high-level meeting of chairpersons in parallel with the meeting of experts for the purpose of discussing several strategic matters relating to the work of the network and the development of communications and technology sector. The Authority is involved in two projects of 10 projects, namely the project of exchanging experiences in combating international call smuggling through SIMBox devices, the project of exchanging experiences in monitoring the quality of cellular communication services (QoS / QoE) and protecting the interests of beneficiaries as proposed by the Executive Chairman. (October 10, 2018) trc.gov.jo



Kuwait

Kuwait's Communication & Information Technology Regulatory Authority (CITRA) and Bahrain's Information & eGovernment Authority (IGA) signed a MoU in the field of Cloud Computing. The MOU, following the Cabinet's approval and in line with relationships between both countries, facilitates government processes, increases efficiency and contributes in speeding the implementation of projects while maintaining security and confidentiality of information and data. The MOU was signed by Mohamed Ali AlQaed, Chief Executive of IGA, and Salim Muthib AlOzainah, CEO and CITRA Board of Directors Chairman. AlOzainah expressed his delight in signing the MOU which demonstrates the strong ties between the two neighboring countries as well as stresses that such initiative comes in line with achieving Kuwait's Vision 2035 that aims at supporting eTransformation. He added that Kuwait has recently held a number of MOUs in the field of IT so as to keep pace with the advanced technology and meet the future needs of Kuwait. AlQaed praised the efforts exerted by Kuwait as one of the GCC countries which leads in benefiting from Bahrain's experiences within the Cloud Computing field. He also highlighted the positive impact of this initiative to develop, enhance and sustain the quality of services provided to users; in addition to providing appropriate environment to attract more foreign investments to the region. He said that the Kingdom is always pleased to exchange experiences with all countries which support government direction in developing government services and accelerating eTransformation in all sectors. In 2017, Bahrain adopted the 'Cloud First' Policy in the public sector – becoming the first Arab country to adopt such policy and one of the first worldwide.

(October 7, 2018) nooz.com

New Kuwait 2035's nationwide digital roadmap is driving the country's digital innovation market to nearly KWD 300 million this year, and transforming enterprises and daily lives, industry experts announced at SAP NOW Kuwait. Boosted by digital investment in the oil and gas and retail sectors, Kuwait's smart services and software market is set to KWD 293 million in 2018, according to a recent report by BMI Research. Kuwait Vision 2035 is set to leverage digitization to enhance its standing as a regional financial, commercial, and cultural hub. "New Kuwait 2035 is fostering nationwide digital transformation to drive economic diversification, private sector job creation, and e-government services," said Qusai Al-Shatti, Deputy Director General for Information Technology Sector at Kuwait's Central Agency for Information Technology, a keynote speaker at SAP NOW Kuwait. "Digital transformation is the heart of Kuwait's enterprises, and is making Kuwait's economy more competitive, and organizations more responsive and predictive to citizens' needs." During SAP NOW Kuwait, held under the theme of "Driving Change: It All Starts Now," hundreds of the country's public and private sector C-suite executives exchanged best practices in digital transformation, learned about New Kuwait 2035's digital roadmap, and learned about the latest digital trends. "Future business challenges in Kuwait will be radically different," said Ahmed Al-Faifi, Senior Vice President and Managing Director, SAP Middle East North. "Driven by New Kuwait 2035, the next-generation value economy is about being inspired to innovate using intelligent technologies. Kuwait's early adopters of Artificial Intelligence, Machine Learning, Internet of Things, Advanced Analytics, and Blockchain will seize business competitiveness, and transform economy, society, and environment." In Kuwait,

SAP is seeing strong digital transformation demand among the Banking and Finance, Government and Public Sector, Oil and Gas, and Retail sectors. Already, SAP is exchanging best practices in co-innovating with digital disruptors such as EQUATE Group. EQUATE Group's digital transformation is optimizing costs, meeting future business needs, and driving innovative business models. "Kuwait is ideally-positioned to enhance its standing as a regional financial, cultural, and institutional leader by leveraging digital transformation," said Mohamed Helmy, Managing Director, SAP Kuwait. "Thanks to robust digital infrastructure, technology-savvy youth, and a rapidly-growing small- and medium-sized enterprise sector of bold entrepreneurs and startups, Kuwait is set to adopt the new technologies and business models to drive digital business innovation." (October 3, 2018) [zawya.com](#)

The Communication and Information Technology Regulatory Authority and Amazon Web Services (AWS) were putting frameworks and policies for cloud service to develop e-government services in Kuwait. CITRA said it was coordinating with Amazon to organize workshops inside Kuwait to provide solutions for the government sector in general, the health and educational sectors in particular, to provide state-of-art e-services for public. CITRA and Amazon signed a memorandum of understanding on cooperation, on sidelines of His Highness the Amir Sheikh Sabah Al-Ahmad Al-Jaber Al-Sabah's visit to Washington last month. The MoU will contribute to digital transformation of Kuwait thus honoring 2035 vision. The agreement will help promote development of cloud service that would enhance the performance of the government bodies. (October 2, 2018) [menafn.com](#)



The 20th International Space Radio Monitoring Meeting Within the context of the international cooperation between the Sultanate of Oman and world countries in the field of frequency spectrum management, the Telecommunications Regulatory Authority (TRA) hosts the 20th international Space Radio Monitoring Meeting during the period October 16 to 18. The agenda of the three-day meeting will discuss a number of significant issues relating to space radio monitoring. The first day of the meeting will address the cases of space interference and ways to solve them while reviewing the latest reports of ITU on space monitoring and the innovative solutions in space monitoring as well as the most evident challenges in the future. On the second day, all participants will be able to visit the TRA's Satellite Radio Monitoring Station (SRMS), which was officially inaugurated earlier this year and is considered the first of its kind in the Middle East to be operated by a regulator. Participants will be able to identify the technical capabilities of the station and closely recognize its most prominent features. On the third day, the meeting will discuss topics related to the regulatory administrations and aspects of cooperation between them through ad hoc meetings with the administrations' representatives. Engineer Yousuf Al-Balushi, TRA Vice President of Frequency Spectrum management Affairs emphasized in his speech at the opening ceremony of this meeting that the field of space communications has been witnessing great strides in recent years in conjunction with an increase in the number of satellites and small transmitters. This has created several challenges for using space communications such as harmful interference cases and unlawful use of these services. It has therefore become increasingly necessary to find appropriate solutions to overcome these difficulties by using the proper monitoring systems and equipment, combine efforts and strengthen international cooperation between all administrations and concerned parties to minimize the effects of interference and unlawful uses. It is also very crucial to provide support to the ITU

to perform its regulatory role in coordinating the use of satellite networks and ensuring their operation without interference. Al-Balushi further added that hosting the 20th International Space Radio Monitoring Meeting in Oman for the first time stems from the TRA Oman conviction that the meeting and its agenda are of great importance that comes in continuation of TRA Oman efforts to consolidate and boost international cooperation in all spectrum related issues in general and space monitoring in particular. Mr. Al-Balushi said that TRA initiated coordination with other administrations that are concerned with space monitoring, in addition to the ongoing discussions with the ITU on signing a memorandum of understanding to facilitate solving cases of space interference, as it is the case with other administrations that own satellite monitoring stations. TRA is also in the process of listing this station within the stations contained in the ITU report No. 2182, for the stations available to measure emissions from both geostationary and non-geostationary satellite stations, to be the ninth station of its kind. This will increase cooperation in monitoring space and detecting interference which ensures optimal use of space resources. At the conclusion of his speech, Mr. Al-Balushi extended his thanks to Omantel, Kratos, Oreedoo and Azyan Telecom for sponsoring the meeting. It is worth noting that this meeting is being held annually since 1998 and has been previously hosted by a number of administrations of advanced countries in possession of space radio monitoring stations such as Japan, Germany, USA, China and South Korea. The honor of organizing this meeting with the participation of representatives from various organizations, ITU, International Civil Aviation Organization and manufacturers from all over the globe in this edition is a sign of the international community's confidence in Oman's capabilities represented by TRA and its excellence in the field of frequency spectrum management.

(October 17, 2018) [tra.gov.om](#)

Oman



Pakistan

The number of broadband subscribers including 3G and 4G in Pakistan has crossed 61 million mark by end of August this year as all four operators providing mobile broadband services added more than one million subscribers in one month. The number of mobile broadband subscribers was around 60 million till July 2018. The tele-density of mobile broadband is 29.14 per cent. Statistics issued by Pakistan Telecommunication Authority (PTA) on Monday revealed that the number of mobile phone users, on the other hand, reached 151 million by same time period as compared to 150.24 million during June 2018. The tele-density has reached 72.97 per cent till August 2018. The operators-wise data showed that Jazz's total count for 3G and 4G users stood at 20.1 million including 15.045 million 3G users and 5.077 million 4G subscribers by August 2018. Jazz 4G users jumped from 4.6 million from July 2018 to 5.077 million by August same year. Zong's 3G subscribers have reached 9.034 million while the number of 4G users jumped from 7.76 from July to 8.131 by the end of August. Telenor also saw a similar change in 3G/4G subscribers, with the number of 3G users on the network decreasing from 10.511 million by June 2018 to 10.210 million by August 2018. The number of 4G users increased from 3.315 million by end July to 3.59 million by end of August 2018. Ufone added 0.47 million 3G users on its network as the total number reached 7.472

million by end of August 2018 as compared to 7.06 million by end of July 2018. Meanwhile, when contacted, official sources said policy directives for test and development of technologies for fifth generation (5G) wireless networks in Pakistan had been issued which would be implemented by Pakistan Telecommunication Authority (PTA). The next generation mobile services (3G/4G) are continuously gaining momentum in Pakistan since their launch in mid-2014 while the demand for data services is growing along with the subscriber base. The sources said 4G network roll-outs continued across the country. "We need to introduce more innovative services in mobile broadband arena not only to facilitate the consumers but also attract precious foreign investment and meet modern requirements," the sources said. As per reports, the advent of smartphone and wireless technologies in the country during last few years have led to creation of numerous innovative services and applications that are being used to ensure benefits for different kinds of users. This is smartphone through which spreading online information to people regarding education, technologies, agriculture and other domains have become simple and fast. The mobile broadband users growth in Pakistan is expected to touch 8 per cent mark in coming years as the country would have more than 100 million smartphones by 2020.

(October 10, 2018) nation.com.pk



Saudi Arabia

The Saudi Communications and Information Technology Commission (CITC) has fined three telecoms operators – Saudi Telecom Company (STC), Etihad Etisalat (Mobily) and Zain – a total of SAR14.32 million (USD3.81 million) for breaching local rules. Whilst exact details have not been published, the fines relate to 'several violations' and are considered final, according to the CITC's statement. STC will have to pay SAR12.47 million, with Mobily and Zain penalized SAR1.56 million and SAR296,000, respectively. Meanwhile, the CITC has suspended the sale of Mobily's pre-paid and post-paid mobile services to new customers due to the company's violation of its licensing obligations. The CITC said that Mobily did not meet the Saudization requirements for employees at the executive level, thus violating the terms and conditions of its unified concession issued at the end of 2017. Mobily said in a statement on Tadawul that it was unable to predict the financial impact of the suspension at this time, though it highlighted that it was working with the CITC to resolve the issue.

(October 8, 2018) telegeography.com

Saudi Arabia's National Cybersecurity Authority has issued basic cybersecurity guidelines, which have been prepared to establish minimum standards to be applied in different governmental agencies. These guidelines are meant to minimize the risks of cyber threats to their infrastructures, networks, and systems, which contribute to enhancing the kingdom's cybersecurity, the security of its vital and economic interests and national capacities, said a Saudi Press Agency report. The authority is the specialized agency for cybersecurity in the kingdom, and in accordance with its authority to develop policies, governance mechanisms, frameworks, standards, guidelines and instructions related to cybersecurity to protect networks, systems and data, and to circulate these guidelines to relevant parties, follow up on compiling and updating them. The authority said applying these guidelines is mandatory for all governmental agencies, including ministries, authorities, institutions, and others, in addition to private sector agencies that own, operate, or host sensitive national infrastructures.

(October 7, 2018) tradearabia.com



Sri Lanka

The Inaugural Ceremony of National Information Technology Conference 2018 organized by the Sri Lanka Computer Society was held under the patronage of President Maithripala Sirisena at Colombo. The Sri Lanka Computer Society organized the conference for the 36th time with the objectives of advancing the knowledge of the IT professionals and sharing the latest knowledge in the field. The three-day conference from October 2-4 is also an opportunity to promote linkages between local

and foreign experts and firms in the IT sector. The President said Sri Lanka's IT industry is well poised to achieve its full potential and reach its 5 billion USD target. President presented awards to the 8 most outstanding IT professionals of the year. Minister of Telecommunication, Digital Infrastructure and Foreign Employment Harin Fernando and other distinguished guests were present at the event.

(October 3, 2018) colombopage.com



Turkey

In the second quarter of 2018, the number of mobile subscribers in Turkey amounted to 79.5 million people, which is 3.8 percent more than in the second quarter of 2017. The Information and Communication Technologies Authority of Turkey (BTK) noted that the number of fixed line subscribers in the second quarter of 2018 was 11.5 million people, which is 4.8 percent more than in the second quarter of 2017. "In the second quarter of 2018, the total revenue from the electronic communications sector amounted to 14.4 billion Turkish liras, which is 15.9 percent more than in the second quarter of 2017," the BTK said. The BTK also noted that in the second quarter of 2018, 2.8 billion Turkish liras were invested in the electronic communications sector of Turkey, which is 38.8 percent more than in the second quarter of 2017. There are 47 mobile operators in Turkey, and only three of them operate - Avea, Vodafone and Turkcell.

(October 9, 2018) marketwatch.com

Ömer Abdullah Karagözoğlu, Head of Information Technologies and Communication Authority, attended the BEREC / IRG General Assembly Meeting. BEREC (European Regulatory For Electronic

Communications) and IRG (Independent Regulatory Group); The European Union (EU) is a platform where the European Commission regulates the European Commission in the field of electronic communication with the European Commission in order to act in a common framework for the implementation of electronic communication legislation and at the same time to compare national legislation and EU legislation depending on the changes and developments in the sector. BEREC, in which Turkey is an observer, and IRG's 36th General Assembly meeting were held between October 3-5, 2018 in Portoroz, Slovenia. In addition to EU member states; The ICTA (European Free Trade Area) countries and the heads of the national regulatory authorities of the EU candidate countries were gathered together with the ICTA, Board Chairman Ömer Abdullah Karagözoğlu and Board Member Celalettin Dinçer. The meeting focused on the EU's new electronic communications code (EECC) and the EU's agenda for electronic communications. Within the framework of the aforementioned agenda, BEREC expert working groups conducted discussions on raptor network neutrality ", " end user ", " circulation "and BEREC 2019 work program. (October 8, 2018) btk.gov.tr



United Arab Emirates

Smart Dubai, in partnership with the Telecommunication Regulatory Authority (TRA), has inaugurated UAEPASS, a National Digital Identity and Signature Solution for all citizens, residents and visitors, in collaboration with Abu Dhabi's Smart Solutions & Services Authority; and the Dubai Electronic Security Centre (DESC), as strategic partner providing the underlying Digital Certificates contributing to safeguard UAEPASS, as well as DarkMatter Group. Dr. Aisha Bint Butti Bin Bishr, Director General of Smart Dubai, attended the press conference, along with Hamad Obaid Al Mansoori, Director General of the Telecommunications Regulatory Authority (TRA), Dr. Rauda Saeed Al Saadi, Director

General of Abu Dhabi's Smart Solutions & Services Authority, and Faisal Al Bannai, Founder and Managing Director of DarkMatter Group. UAEPASS provides a single digital identity that allows the user to access services for both local and federal government entities, in addition to other service providers. The solution introduces mobile based authentication to users who can simply validate their identity using their smartphone. It also allows users to digitally sign and validate documents, in order to minimize their visits to service centers to sign important and time-sensitive documents. UAEPASS addresses the need to unify login credentials to access different federal and local

online services. Moreover, the solution aims to improve user experience by simplifying the digital identity registration and authentication processes to be convenient and intuitive for the user. This collaboration aligns with the UAE's directive to launch and implement national level projects, contributing to achieving the goals of UAE Centennial 2071, UAE Vision 2021, and future sustainable development. It also contributes to realizing Dubai's Paperless and Blockchain Strategies, in addition to accelerating digital transformation. Dr. Aisha Bint Butti Bin Bishr, Director General of Smart Dubai, said: "Eliminating paper transactions has been a leading objective for our strategies and initiatives at Smart Dubai. From Blockchain-powered systems to the Dubai Paperless Strategy to the Week Without Service Centers initiative, it is our unwavering conviction that the future is paperless, and seamless digital and electronic services are a hallmark of all successful smart cities." "A secure and universal digital identity is essential for implementing ongoing smart transformation initiatives," Dr. Aisha said. "UAEPASS not only helps centralize users' logins and credentials, which eliminates the hassle of creating and remembering a multitude of usernames and passwords, but it also improves security and confidentiality when conducting online transactions. This effectively removes one of the biggest hurdles to large-scale automation and digitization and drives forward our plans to transform Dubai into a leading smart city, all the while making people's lives easier and happier." Hamad Obaid Al Mansoori, Director General of the TRA, said: "The vision of Smart Dubai and the expertise of TRA is a strong combination that has made the mission of integrated government services a reality, thereby benefiting the citizens, residents and visitors of the UAE. The launch of the UAEPASS service is a special moment for us, as it exemplifies our efforts in line with the directives of our great leaders to make the UAE the most digitally advanced nation of the world." Al Mansoori stated that the TRA is accelerating its march towards smart transformation in the UAE to deliver its advantages to the public. "Enabling the vision of smart government at the federal level and using digital technology to enhance the lifestyle of people are integral parts of the Authority's strategic objectives. We hope the UAEPASS service, apart from providing a unified service to the customers, regardless of their physical location, will also promote the idea and benefits of having an integrated work environment on local and national levels," Al Mansoori concluded. Dr. Rauda Al Saadi, Director General of Abu Dhabi's Smart Solutions & Services Authority (ADSSSA), said: "We commend the Telecommunication Regulatory Authority and Smart Dubai on their efforts in leading the implementation of the UAEPASS. To align to this initiative, we will be adopting this platform across the digital journeys available for citizens, residents, visitors and businesses under the TAMM program. This step reinforces our adoption of innovative technologies and our intentions to continue to collaborate with federal and local government entities." Faisal Al Bannai, Founder and Managing Director of DarkMatter Group, said: "Aligned with the UAE leadership's vision to accelerate the digital transformation of the nation, DarkMatter Group is proud to be the partner bringing this solution to its government customers." "Digital ID platforms are essential elements of an overall digital transformation strategy. This platform is built

on robust cryptography techniques with authentication and verification methods that meet international standards," Al Bannai added. "The UAEPASS will be a digital enabler that automates many government and private-sector services, while reducing cost and putting services at the fingertips of all citizens, residents and businesses across the UAE."

(October 16, 2018) [zawya.com](#)

Marking a strong opening, the mGovernment Stand got a high turnout, with 21 federal entities participating as a team on a stand that carried the logo of the TRA, upholding the principle of 'one government and good services'. Ten of the most inventive projects have been weaved into an immersive and informative video experience based on the theme 'The Leap', and will give an opportunity to the visitors to enlighten themselves about different services and initiatives of the TRA that impact our day-to-day life. This theme aims at raising awareness about the TRA's ICT related work and explains how it integrates the latest know-how to best benefit the end-users. Mr. Hamad Obaid Al Mansoori, Director General of the TRA, said, "We are proud to be part of the 38th edition of GITEX, the annual meeting that gathers the top international ICT companies. This participation is characterized by a collective spirit and a focus on the future outlook and innovation in the development of solutions leading to the government of artificial intelligence based on a strong ICT infrastructure. The TRA's projects being showcased are: ICT Fund - that highlights its achievements in supporting investment and education in ICT, Bashr - the portal that helps establish a new business in just 15 minutes, User Experience Lab - a lab that improves the quality of digital platforms in order to make them more user friendly and customer oriented, AI Lens - a software that detects the intensity of an emergency using pictures and the Happiness Journey - an immersive tech-assisted experience on various projects by TRA across the UAE and its role in customer happiness. The TRA journey themed 'The Leap' also includes Capture the Signal - an interactive game on spectrum management allowing visitors to work as frequency engineers, Happy Digital Community - a digital tool that reads popular reactions on various social media platforms, Penalty Kick - the game that demonstrates the speed and accuracy of 5G over 4G and 3G, Man vs Machine - the project that highlights the power of artificial intelligence and how the TRA uses robotic technology to test applications and City of Robots - that shows how the TRA uses robots for 'data center monitoring.' In addition to the TRA, government entities participating in GITEX under the umbrella of the UAE mGovernment include: The TRA's platform includes the following government entities participating in GITEX under the umbrella of the UAE Smart Government: Ministry of Finance, Ministry of Human Resources and Settlement, Ministry of Justice, Federal Authority for Land and Maritime Transport, Ministry of Health, UAE University, Emirates Authority for Standardization and Metrology, General Authority of Civil Aviation, Ministry of Economy, Ministry of Energy and Industry, Insurance Authority, Securities and Commodities Authority, Ministry of Community Development, Federal Authority for Electricity and Water, Ministry of Infrastructure Development.

(October 15, 2018) [zawya.com](#) 

REGULATORY ACTIVITIES BEYOND THE SAMENA REGION



Australia

The government opened a fourth round of its mobile black spot program and released the guidelines for the national initiative designed to improve mobile coverage in rural and remote regions. The federal government in June committed AUD25 million (\$19 million) for the new round of funding under the program. To support round four, the government recently re-opened the national mobile black spot database for nominations from local, state and territory governments, federal senators and federal members of parliament, the Department of Communications and the Arts said in a statement. Mobile operators and infrastructure providers have until 10 December to submit applications. Over the first three rounds, the government committed a total investment of more than AUD680 million, including funding from state and local governments and mobile operators. The government said in June the program is more than halfway towards its goal of delivering 867 base stations nationwide by June 2019.

(October 16, 2018) mobileworldlive.com

The Department of Communications and the Arts (DCA) has released guidelines for the fourth round of its 'Mobile Black Spot Program', calling for applications from cellcos and infrastructure providers for the competitive assessment process. In a press release issued by the DCA it was noted that the government has committed AUD25 million (USD18 million) for this

round of the program. According to the regulator, the next phase of the project will look to continue enhancing coverage in regional and remote areas across Australia, and will specifically target mobile blackspot issues at regional and remote Public Interest Premises, including 'economic centers, emergency services facilities, health facilities, educational facilities, indigenous community organizations, local government facilities and not-for-profit organizations'. To support the latest phase, the government recently reopened the National Mobile Black Spot Database for nominations from local, state and territory governments, as well as senators and members of parliament. Although the database was closed last week (11 October), funding can still be sought for locations that are not on it, and mobile network operators and infrastructure providers have until 10 December 2018 to submit applications. In related news, last week the DCA reported that 'thousands of homes and businesses' across the country had gained access to improved mobile coverage as a result of its mobile black spot program. In so doing, it confirmed the activation of the 600th base transceiver station (BTS) to be constructed or upgraded as part of the program, while adding that the first three rounds will have delivered a total of 867 BTS nationwide, once all work is complete.

(October 15, 2018) telegeography.com



Benin

The Republic of Benin's telecoms regulator ARCEP officially launched mobile number portability (MNP) on September 28, 2018. MNP has been in preparation since July 2017, and has been piloted by ARCEP based on technical solutions from Porting Benin, a subsidiary

of Dutch company Porting Xs. Arnaud Kouidjan Nihoue, director of networks and infrastructure at ARCEP, declared that MNP will encourage the continuous improvement of operators' quality of service and boost competition between the networks.

(October 2, 2018) Agence Ecofin



Bolivia

Bolivia formally introduced mobile number portability (MNP), and all three cellcos – market leader Entel and smaller rivals Tigo and Viva – now advertise the service prominently on their websites. Portability requests will be processed within 24 hours but are restricted to customers who have owned the SIM card in question for at least 60 days. The introduction of MNP had been under consideration by the Authority for the

Regulation and Oversight of Telecommunication and Transport (Autoridad de Regulacion y Fiscalizacion de Telecomunicaciones y Transportes, ATT) since 2012 and, despite four candidates being shortlisted in April 2016 with a view to managing the portability process, the plans ground to a halt, before being resurrected in July 2017.

(October 2, 2018) telegeography.com



Canada

The Canadian Radio-television and Telecommunications Commission (CRTC) has announced details of its upcoming five-year CAD750 million (USD575 million) fund to improve broadband internet access in underserved areas. The CRTC Broadband Fund is aimed at supporting projects to build or upgrade infrastructure for fixed, fixed-wireless and mobile broadband services, and is designed to complement existing and future private investments and public funding. Interested parties can apply to the CRTC for funding starting in

2019 (with further details to be outlined in a future announcement); information resources for applicants will be made available in the coming months. The CRTC will use a competitive process to evaluate and select high-quality projects to be granted funds, and will be responsible for monitoring funded projects. The CRTC has also released details of the criteria used to evaluate Broadband Fund applications plus information on the fund's governance, operating and accountability frameworks. (September 28, 2018) telegeography.com



Chile

UK-owned cellular challenger WOM has asked the Antitrust Tribunal (Tribunal de Defensa de la Libre Competencia, TDLC) for incumbents Movistar, Claro and Entel to return spectrum that had been allocated in excess of the allowed spectrum cap, La Tercera writes. WOM argues that the trio have not complied with a Supreme Court ruling from June this year, which confirmed that in bidding for 700MHz band frequencies the three cellcos had not respected the 60MHz spectrum cap and ordered them to return airwaves so that they were in compliance with the regulations. The apex court decision added that if the regulatory authorities felt that the 60MHz limit was no longer necessary, it would need to lift or remove that cap through a consultation process with the TDLC. Indeed, the Department of Telecommunications (Subsecretaria de Telecomunicaciones, Subtel) sent an updated spectrum plan to the antitrust watchdog earlier this month. WOM has complained, however, that the incumbents have gone against the 'natural meaning' of the Supreme Court's judgment, interpreting the decision as conditional on the ongoing consultation between Subtel and the TDLC to 'avoid compliance with the sanction imposed by the Supreme Court'. To that end, WOM has demanded that the trio relinquish the spectrum, and that Subtel enforce the court's sanctions by taking any necessary measures.

(October 19, 2018) telegeography.com

Chilean watchdog the Department of Telecommunications (Subsecretaria de Telecomunicaciones, Subtel) and the Ministry of National Assets have signed an agreement to work together to facilitate the deployment of telecoms infrastructure on government-owned land. Under the agreement, the Ministry of National Assets will provide Subtel with information on the bidding and leasing processes for sites that telcos will be allowed to use for the deployment of infrastructure. These sites are expected to include land for the installation of fiber-optic cabling and telecom towers, as well as government buildings that can be used to host cell sites. The cooperation agreement was developed as part of a framework to improve connectivity in Puerto Williams, a town in the extreme south of the

country; around 90% of the land in Puerto Williams is state-owned. Undersecretary of Telecommunications Pamela Gidi said of the agreement: 'Having the support of the Ministry of National Assets to encourage the deployment of telecommunications networks confirms the commitment of our government to find formulas that seek to bring the benefits of digital connectivity to all places in Chile. Today we are in Puerto Williams making this announcement, as this location will be crucial for the submarine laying of the Southern Optical Fibre and that will undoubtedly be the digital door for all the inhabitants of this extreme region to enter the digital society. That a person today cannot count on the internet, is to restrict their quality of life [and] put barriers to their educational or professional development, and under our government, our task is to reverse that digital marginality.'

(October 9, 2018) telegeography.com

Chilean watchdog the Department of Telecommunications (Subsecretaria de Telecomunicaciones, Subtel) has submitted its update National Spectrum Plan to the Antitrust Tribunal (Tribunal de Defensa de la Libre Competencia, TDLC), proposing new spectrum caps across spectrum band groupings. The development follows a Supreme Court ruling in June this year that determined that the allocation of 700MHz frequencies in 2014 to Movistar, Claro and Entel was anti-competitive, as it ignored a spectrum limit of 60MHz imposed by a 2009 decision of the apex court. The most recent ruling noted that if the relevant authorities had considered the cap too low for the needs of the market, the agencies should have adjusted or removed the cap before beginning the spectrum auction. Further, the Supreme Court ordered that should Subtel choose to alter the upper limit on airwaves, it must do so in consultation with the anti-monopoly watchdog. Subtel's proposals suggest grouping frequencies into four 'macro bands': Low, <1GHz; Middle-low, 1GHz-3GHz; Middle-high, 3.4GHz-3.8GHz; and High, 27.5GHz-28GHz. For each of the macro bands, operators would be granted the following allowances: Low, 50MHz; Middle-low, 60MHz; Middle-high, 80MHz; and High 200MHz. The limits would, however, require most operators to return

some spectrum in the Middle-low band. At present, Subtel notes that Entel would be required to return 40MHz, as it holds 60MHz in the 1900MHz range and 40MHz in the 2600MHz band. Movistar and Claro would need to return 22MHz and 10MHz, respectively, with each holding 30MHz in the 1900MHz range and

40MHz at 2600MHz, whilst Movistar retains a further 12MHz tranche of regional 2600MHz frequencies. Similarly, VTR would need to return 6MHz as its regional spectrum holdings include a 36MHz tranche, in addition to a nationwide 30MHz block of 1700MHz airwaves. (October 5, 2018) [telegeography.com](#)



Finland

Finland's Ministry of Transport and Communications (Liikenne- ja viestintäministerio, MoTC) and the Finnish Communications Regulatory Authority (Viestintävirasto, FICORA) have jointly confirmed the conclusion of the state's auction of 5G-suitable spectrum, with three companies securing frequencies in the 3.5GHz (3410MHz-3800MHz) band. Telia Finland emerged as the biggest spender, having bid EUR30.258 million (USD35.1 million) for block 'A' (3410MHz-3540MHz). For its part, Elisa Corporation has agreed to pay EUR26.347 million for its new spectrum (block 'B', 3540MHz-3670MHz), while DNA rounded out the

winners with a EUR21.000 million bid for block 'C' (3670MHz-3800MHz). In a press release confirming the outcome of the sale, the FICORA noted: 'this auction is a concrete step towards the most advanced digital society in the world: Finland needs efficient, secure and increasingly faster communications connections to enable new services. One of FICORA's key performance targets is to support Finland in becoming the 5G technology leader and thereby ensure access to advanced electronic services for every member of society.'

(October 2, 2018) [telegeography.com](#)



France

Arcep has published its latest dashboard on the transition to IPv6 in France. While showing ongoing progress, the indicators collected from the country's main network operators point to the risk that the migration may not be completed before the anticipated depletion of IPv4 addresses, expected by 2021. Free and Orange have remained ahead of competitors Bouygues Telecom and SFR in rolling out IPv6 across their fixed networks. Free's deployment rate progressed to 50 percent as of June, closely followed by Orange with 45 percent of customers active on IPv6. Bouygues Telecom and SFR trailed at a distance with rates of 2.5 percent and 0.9 percent respectively. On mobile networks, the roll-out of IPv6 has not made much progress so far. Bouygues Telecom led rivals with a rate of 7 percent of customers active on IPv6, while the comparable take-up for Orange, Free and SFR was close to zero. As in the previous years, the regulator is calling for all market players, including those providing hosting and DNS infrastructure, to step up their efforts and accelerate the migration from IPv4.

(October 10, 2018) [telecompaper.com](#)

The telecoms regulator Arcep has revealed that it has

received applications for its forthcoming spectrum award procedures as follows:

- 900MHz band: Bouygues Telecom, Free Mobile, Orange and Altice France (SFR)
- 1800MHz band: Bouygues Telecom, Orange and Altice
- 2100MHz band: Bouygues Telecom, Free Mobile, Orange and Altice.

Arcep will now study the applications to ensure that they meet the criteria of admissibility, with a list of qualified candidates for each procedure scheduled to be released shortly. The new licenses will come with obligations to ensure that all 'white spaces' (areas with no mobile services) are covered by high speed wireless networks. Each successful bidder will be required to construct 5,000 new 4G sites in areas identified by the Minister for Electronic Communications, while also equipping all 2G/3G sites to support 4G technology (covering an additional one million people in 10,000 communes). The original authorizations in the 900MHz and 1800MHz bands awarded to Orange, Altice and Bouygues Telecom in 2006 and 2009 expire in 2021 and 2024, while their 2100MHz concessions are valid until 2021 and 2022. (October 5, 2018) [telegeography.com](#)



Greece

The deadline for binding bids to acquire a majority stake in Greek ISP Forthnet has been set for 19 October. According to a report from Capital, potential investors which made it through to the second stage of bidding have now completed due diligence and are preparing their final offers. In November 2017 a group of four Greek banks, including Piraeus Bank, National Bank and Alpha Bank, took a combined 32.7% stake

in Forthnet after converting Forthnet bonds to shares. They immediately appointed Nomura International of Japan as an advisor to help find a strategic investor to buy up their interest in the telco. Forthnet offers internet and pay-TV services under the Nova brand, while business services are marketed under its own name. (October 4, 2018) [telegeography.com](#)



Guinea

The Ministry of Posts, Telecommunications and Digital Economy (MPTEN) has announced the launch of the country's first national internet exchange point (IXP). The ministry stated that the objective of the IXP is to make Guinea part of the African interconnection network, with national, sub-regional and regional

concentrations. The exchange will also ensure that all local mobile internet traffic will no longer have to pass through expensive international links, thereby improving the efficiency of network operators in the country.

(October 15, 2018) telegeography.com



Hungary

The country's National Media and Infocommunications Authority (NMHH) said it has begun work on the sale process that will see it allocate licenses for 700MHz and 3.4GHz-3.8GHz frequencies. NMHH President Monika Karas said the authority will establish the terms and conditions surrounding the spectrum as soon as possible; it aims to ensure draft legislation is ready by the end of this year. Karas said the regulator's main aim is to facilitate the provision of high-quality, versatile and innovative 5G services at affordable prices, ensuring that telcos can rely on a secure and predictable regulatory environment. The news came

as Vodafone demonstrated a live video broadcast over 5G for what it claimed was the first time in Hungary. The trial used spectrum in the 3.5GHz band. Vodafone noted that it is the only provider in the country to currently hold 5G frequencies. The operator said it used a standalone infrastructure to carry out the test, comprising a core network and 5G modem, independent of the 4G network, and a base station equipped with a Massive MIMO active antenna. It is almost a year since Magyar Telekom and Ericsson demonstrated what they claimed was the first 5G radio link in Hungary.

(September 27, 2018) mobileurope.co.uk



India

India's Telecom Disputes Settlement and Appellate Tribunal (TDSAT) has issued an interim order requesting that the Department of Telecommunications (DoT) 'expeditiously' approve Reliance Communications' (RCOM's) planned spectrum sale. The Economic Times writes that the order also instructs RCOM not to sell a parcel of land worth around INR14 billion (USD190.4 million), as the asset will be used as a guarantee against the government's demand for dues totaling INR29.5 billion. RCOM plans to use proceeds from the sale to pay Swedish vendor Ericsson dues totaling INR5.5 billion, whilst minority shareholders in Infrastructure unit Reliance Infratel would receive a combined INR2.3 billion from the returns. The paper notes, however, that the DoT may appeal the TDSAT's decision, postponing the completion of the sale until after the next hearing, scheduled for October 16. Meanwhile, Ericsson has filed for contempt of court against RCOM chairman Anil Ambani, after RCOM missed the previously-agreed deadline of September 30 for its payment to the manufacturer. In its petition, Ericsson notes that equipment sales already completed by RCOM had raised sufficient funds to pay the vendor and in not doing so, the telco was not complying with a Supreme Court ruling from August this year.

(October 4, 2018) telegeography.com

India's cabinet has approved the government's ambitious National Digital Communications Policy 2018, which aims to drive USD100 billion of investments to the sector by 2022, increase the industry's contribution to GDP from 6% to 8% and create around four million jobs. Telecom Minister Manoj Sinha was

quoted as saying of the move: 'The government felt the need to come up with a new telecom policy that is both customer-focused and application-driven, given the pace of global transformation in the sector, particularly in emerging technologies such as 5G, IoT and M2M'. The new policy promises to alter the state's approach to the industry from treating telecoms as a revenue generator to driver of socio-economic development, the minister added, claiming that the financially-stressed sector would be granted some relief. Amongst the other changes highlighted in the policy is a shift in the regulator's approach to the financial and regulatory burden it places on the industry, with the government set to review spectrum pricing and license fees, as well as merger and acquisition rules and spectrum sharing. Meanwhile, sector watchdog the Telecom Regulatory Authority of India (TRAI) will be renamed the Digital Communications Regulatory Authority of India (DCRAI), whilst the Telecom Commission – the Department of Telecommunications' (DoT's) highest decision-making body – will also be relabeled as the Digital Communications Commission (DCC). Despite the government's optimism for the sector, the industry's response has been comparatively muted, with the DG of industry group the Cellular Operators Association of India (COAI) Rajan Matthews commenting: 'The most important and urgent requirement is to restore financial health of the sector for which the policy document envisages the reduction in levies and ease of doing business. This will help the industry in achieving the goals of and fulfilling the objectives outlined in the policy.'

(September 27, 2018) [The Economic Times](http://TheEconomicTimes.com)



Indonesia

Forty-two years after Indonesia launched Palapa A1 to become the world's first developing country to use satellite communications, it is now on the verge of completing the Palapa Ring, a 67,887-kilometer broadband fiber optic cable network stretching the length and breadth of the sprawling archipelago. It has been a long time coming, starting as the less ambitious Nusantara 21 project in 1998, and then expanding from an originally conceived east-west backbone into a national grid reaching all 34 provinces and 440 out of 514 cities and districts. With fiber optic networks currently covering only the islands of Java, Sumatra and parts of Kalimantan, the Palapa Ring will be another feather in the cap of President Joko Widodo, whose bid for re-election next April has been boosted by a vast infrastructure program which planners hope will inject new life into the Indonesian economy. "It is a fantastic concept, but a lot now depends on radio and cellular networks for delivery," says one foreign telecom executive, who believes involving independent service providers outside of the big three – state-run PT Telkom and PT Indosat and publicly-owned XL-Axiata – will help keep costs competitive. Crossing 35,280 kilometers of seabed and 21,807 kilometers over land, the US\$1.3 billion Palapa Ring encircles all the seven main islands of Sumatra, Java, Kalimantan, Nusa Tenggara, Sulawesi, Maluku and Papua, and incorporates eight different connecting networks. Information Minister Rudiantara says connectivity is vital with the economy projected to double to US\$2.2 trillion by 2030, more than for all of the ten Association of Southeast Asian Nations (Asean) states combined. By then, too, Indonesia is expected to have 135 million new consumers and, more importantly, a population at peak productivity. Indonesia ranks fourth behind Singapore, Malaysia and Thailand in broadband coverage, but as a much larger, non-contiguous nation it has greater challenges to overcome, particularly in bringing the Internet to the remainder of its 246,000 schools and 4,000 health clinics. Government data shows that 73% of rural areas across Indonesia, or 83,200 villages, currently enjoy 3G broadband Internet coverage, while 55% now have access to the 4G long-term evolution (LTE) network, even if the speeds are not much more than 3G. It was concerns about Indonesia's unity that encouraged former president Suharto to take the visionary step of acquiring Asia's first communications satellite, launched from Florida's Kennedy Space Center in July 1976 – 14 years after America's Telesat I pioneered satellite television and phone links. Since then, Indonesia has been served over time by eight US-built A, B and C-series satellites and now a Franco-Italian Palapa D, which was powered into orbit from China's Xichang launch center in 2009 and is expected to stay operational till 2024. The Palapa project has been complemented since 1999 by PT Telkom, the country's largest telecommunications company, which only last August launched a fourth satellite whose 60

transponders will serve both domestic customers and others in Southeast and South Asia. It isn't the only pioneer. In 2016, state-owned Bank Rakyat Indonesia (BRI) became the world's first bank to own and operate its own satellite, allowing the country's second biggest lender to digitally connect all of its 10,650 branches. The government is currently in the process of acquiring a high through-put satellite (HTS) that is scheduled to enter service in 2021 and connect 145,000 far-flung sites in eastern Indonesia that are too expensive to include in the Palapa Ring network. First developed in 2004, HTS provides greater data access with a capacity of up to 155 megabytes per second, 100 times higher than those offered by conventional Ku-band satellites, and applicable to all types of transponders. Although the Palapa Ring project was launched in 2007, the global economic downturn the following year was a major setback for Telkom, Indosat and PT Bakrie Telecom, the original partners in a venture that now includes XL-Axiata, PT Infokom Elektrindo, PT Macca System Infocom and PT Powertek Utama Internusa. In the end, the actual construction of the network finally began in 2016. Divided into three packages – west, central and east – it will function as an information toll, with particular benefits for areas that are not commercially profitable. Already in operation, the 2,000-kilometer Palapa Ring Barat (West), built by a consortium comprising Sinar Mas subsidiary PT Mora Telematika (Moratelindo) and PT Ketrosden Triasmitra, connects Sumatra to the outlying Riau islands in the South China Sea. The 2,700 kilometer middle package, linking Kalimantan, Sulawesi and North Maluku, is being built by state-owned PT LEN Telekomunikasi Indonesia, subsidiary PT Global Research Technology Investama and three other minority partners and is now about 80% complete. In the east, the more difficult US\$920 million project covering southern Maluku, Papua and Nusa Tenggara, a consortium made up of Moratelindo, Sinar Mas stablemate Smart Telecom and PT Bangun Sejahtera, is also close to completion. Equality of service is the main goal. For example, once the Palapa Ring is in place, easternmost Papua's average Internet through-put speed of three megabytes per second (mgps) is expected to ramp up to seven mgps, similar to Jakarta's speed. Industry regulator Telecommunications and Information Services Agency (BAKTI) has already implemented a tariff scheme under which bandwidth capacity will be measured by the value of the investment, market price and the number of service users. At the more expensive western end of the Palapa Ring, pricing ranges from 20 million rupiah (US\$1,316) a month for one gigabyte to as much as 445.6 million rupiah (US\$29,333) for 10 gigabytes, the maximum permitted for one user. A second scheme for passive dark fiber or unused optical cable available for leasing from a network service provider, sets tariffs of 12 million rupiah (US\$790) and 36 million rupiah (US\$2,370) per kilometer a month for land and sea

routes respectively. BAKTI manages the Universal Service Obligation (USO), an annual 2.5 trillion rupiah (US\$164.5 million) fund raised from a 1.5% levy on the gross revenues charged to all carriers, which is being used to partly fund the Palapa Ring. Industry sources say while the principle behind USO projects is sound and results in large amounts of bandwidth previously unavailable in more remote areas, the challenge lies in the distribution of services which in the past has often been stalled by red tape and corruption. This so-called "last-mile" to the customer can be more expensive than the last 100 miles, due to a number of reasons,

ranging from constructing infrastructure in rough terrain to obtaining permits to access or cross private or government land. Even in city centers and populated areas there are significant last-mile obstacles because of the additional problem of gaining entry to buildings and industrial parks, where the owners can often charge exorbitantly for the privilege. As it is, the government provides little or no support to providers in the building of infrastructure, particularly where they have to pay fees for road access with no protection against the vagaries of local regulations and no certainty of rights.

(October 17, 2018) atimes.com



Ireland

A report on Ireland's National Broadband Plan (NBP), which was ordered by Taoiseach Leo Varadkar following the resignation of Denis Naughten as communications minister last week, is expected to be published within three weeks. According to The Irish Times, the examination of the matter is being undertaken by Peter Smyth, the independent auditor of the NBP, and the report is designed to assess whether the NBP – under which around 540,000 premises in rural locations would gain access to high speed broadband – has been 'compromised'. A decision to commission the report was taken after Mr Naughten resigned following revelations that he had held private meetings with David McCourt of private investment firm Granahan McCourt, which is heading up the sole remaining bidder for the contract to for the NBP rollout, the National Broadband Ireland consortium. A government statement regarding the matter said the planned report would 'consider any implications for the procurement process of the meetings between the former minister...and representatives of the remaining tendering consortium', while it will also aim to allow the government to 'assess whether or not the integrity of the procurement process has been undermined by these meetings'. (October 19, 2018) telegeography.com

The Commission for Communications Regulation (ComReg) has launched a consultation aimed at determining whether a universal service obligation (USO) should continue to apply for public payphones. With fixed line incumbent eir's designation as the universal service provider (USP) for payphone services having been set to expire at the end of June 2018, that month ComReg proposed extending the designation for a three-month period. Having subsequently confirmed the extension – eir's role as USP now scheduled to run until October 15 – the regulator is currently working to determine what should happen after that date. According to ComReg, the purpose of the latest consultation is to 'ensure that the reasonable needs of end users will continue to be met', and it is seeking the views of stakeholders on whether a USO should continue to apply for public payphone services, and if so what approach is likely to provide the 'most optimum safety net to meet the reasonable needs of end-users'. In addition, ComReg is also seeking expressions of interest for being a USP for these services beyond the interim designation period, should a USO continue to apply. With a deadline of October 5 having been set for responses, the watchdog has said that once it has considered these it many consult further on the matter, or issue a final decision. (October 1, 2018) telegeography.com



Italy

Italy's auction of 5G wireless spectrum ended having raised a total of over EUR6.55 billion (USD7.56 billion), more than EUR4 billion higher than the government's minimum target. The competitive phase of the auction ran for 14 days and saw 171 rounds of bidding. Licenses in the 3600MHz-3800MHz band were the most sought after, attracting combined bids of EUR4.35 billion. The two largest packets of frequencies in this band were won by Telecom Italia (TIM) and Vodafone, while Wind Tre and Iliad acquired smaller allocations. The 700MHz auction, which was completed in the first days of the sale process, brought in EUR2.04 billion, with the spectrum won by TIM, Vodafone and Iliad. All five participants – the four cellcos plus ISP Fastweb –

were successful in securing 26GHz frequencies, with the five available blocks raising EUR163.7 million. TIM was the highest bidder across the three frequency bands, agreeing to pay a total of EUR2.41 billion for its allocation, while Vodafone was not far behind, with bids of EUR2.40 billion. Newcomer Iliad offered EUR1.19 billion, while Wind Tre was well behind with combined bids of EUR516.5 million. Fastweb paid EUR32.6 million for its 26GHz license. A number of blocks of 700MHz supplemental downlink spectrum attracted no bids in the initial auction, so the Ministry of Economic Development (Ministero dello Sviluppo Economico, MiSE) says that offers for the frequencies will be accepted in a second stage of bidding from

Friday 5 October. There has been some concern that the high prices could jeopardize the future of operators, while consumer groups fear that end users will be hit

hard as operators look to recoup their outlay via higher tariffs. License fees are due in instalments between 2018-2022. (October 3, 2018) [telegeography.com](#)



Lithuania

The Communications Regulatory Authority (RRT) has published a new public consultation on the development of 5G mobile communication services in the 3400MHz-3800MHz frequency range. The regulator has invited telecoms industry participants and other interested parties to submit their views and opinions on the plans and conditions for the reallocation of the 3400MHz-3800MHz band for 5G by 5 November. 'We are announcing this survey by continuing the preparations for the introduction of the new generation of terrestrial mobile radio communications 5G in

Lithuania in the spring,' commented the director of the RRT's Radiocommunication Department, Augustis Cesna, adding: 'As the results of the first survey showed, the market shows interest in using the 3400MHz-3800MHz band to develop its existing infrastructure and provide even more advanced, innovative and high-quality services to consumers. In consultation with the market we seek to reconcile the needs of the public and private sectors and prepare for the forthcoming frequency auction, which we are planning to publish in 2019.' (October 5, 2018) [telegeography.com](#)



Luxembourg

The regulator ILR is seeking stakeholders' views on an updated version of the datasheet detailing contractual information for retail telecom services. The country's operators have an obligation to use the datasheet for

each of their commercial plans. A published online copy must be kept up to date, listing the required information on the plans' contract terms, availability, main features, and costs associated with the service. (October 9, 2018) [telecompaper.com](#)



Malaysia

A government initiative designed to reduce fixed broadband prices while increasing speeds at the same time is 'on track', according to the Malaysian Communications and Multimedia Commission (MCMC). In a press release the regulator said that all of what it referred to as the nation's 'key telcos' – namely, Telekom Malaysia, Maxis, Time dotCom and Celcom – have reached agreements that will result in the reduction of prices for fixed broadband services. The move comes in the wake of the MCMC issuing its 'Mandatory Standard Access Pricing' ('MSAP'), which came into effect on January 1, 2018 and was fully implemented by June 8. Per the MSAP, all Malaysian telcos were required to submit access agreements to

the MCMC by August 31 with a view to reducing fixed broadband prices. The deadline was subsequently extended to September 30, however, due to the implementation of the Sales and Service Tax (SST) on September 1, which the watchdog reported had an impact on the pricing of broadband services. With all of the major providers now having submitted their access agreements, the MCMC noted that some 'have already rolled out packages which have seen prices being lowered and increased speeds well before September 30, 2018'. Looking ahead, the regulator said it 'expects to make [an] announcement on reduced prices for fixed broadband in the immediate future'.

(October 4, 2018) [telegeography.com](#)



Mexico

The Federal Telecommunications Institute (Instituto Federal de Telecomunicaciones, IFT) has confirmed that it has successfully freed up the 600MHz band, paving the way for the frequencies to be repurposed for 5G mobile use. More than 200 TV channels have been relocated since 2015, freeing up around 70MHz of mobile-ready 600MHz spectrum. The release of the

band – which has been described as a 'second digital dividend' – has prompted the Mexican watchdog to claim that it is the first country in the world to fully free up the 600MHz band for mobile broadband use. The 600MHz band could be distributed as early as 1Q19, local reports have suggested.

(October 11, 2018) [telegeography.com](#)



Netherlands

The Dutch regulator ACM has confirmed regulation opening up VodafoneZiggo's network to competitors will take effect from 01 October. The final decision on wholesale fixed access, also covering access to KPN's

fiber and copper networks, incorporates the earlier comments from the European Commission in August. VodafoneZiggo announced that it plans to appeal the decision. (September 28, 2018) [telecompaper.com](#)



Philippines

The Department of Information and Communications Technology (DICT) in the Philippines, working with the National Telecommunications Commission (NTC) revealed the official timeline for the selection of the New Major Player (NMP), aka the so-called 'third telco' slot. The decision to publish comes roughly a fortnight after the two agencies published the final terms of reference (TOR) for selecting the NMP. In short, the government aims to complete the selection process between October 6 and November 7. Interested bidders can begin buying bidding documents costing up to PHP1 million (USD18,430) after the official invitation to bid is published on October 7, 2018. Despite concerns on the relatively short timeline, DICT's Eliseo Rio Jr. is confident there will be enough time to select a new telco player by November. 'Considering that this has been going on since November last year, and [domestic] and foreign telcos have been doing due diligence since February ... they can do it by November 7, he said.

(October 5, 2018) [telegeography.com](#)

The Department of Information and Communications Technology (DICT) outlined a new policy on infrastructure

sharing to a group of potential stakeholders including operators, tower companies and other private groups, and opened a public consultation on the draft rules. Ramon Jacinto, presidential adviser on economic affairs and ICT said: "We have carefully reviewed the policies to see what will benefit the Philippine setting given our local scenarios." In addition to naming a third operator, the common tower and pole sharing policy had been identified by the administration of President Rodrigo Duterte as another step to providing faster and more affordable telecoms services in the country, DICT said in a statement. Eliseo Rio, DICT's acting secretary (pictured, right), said it is important to gather the input and support of operators and tower companies on the initiative: "We will get these (comments and suggestions) altogether and come up with a policy that is now being required by the president". Once finalized, DICT will instruct the National Telecommunications Commission (NTC) to implement the policies by drafting the rules and regulations. The deadline for submitting comments on the infrastructure sharing plan is October 5.

(September 28, 2018) [telegeography.com](#)



Slovenia

The council of Slovenian telecoms regulator Akos has called for the dismissal of its Managing Director Tanja Muhl, saying she misled the council over the award of a 5G test license to the development company BTC. The unanimous decision of the council was sent to the government to act upon. (October 17, 2018) [telecompaper.com](#)

A controversy has broken out in Slovenia regarding the allocation of frequencies for testing 5G technology. Former Minister of Public Administration Boris Koprivnikar is resigning his position as Executive Director of Business Transformation at local industrial group BTC following press allegations that he had

influenced the award of 5G trial frequencies. While Mr. Koprivnikar denies any wrongdoing and BTC has said it will return its trial permits, local regulator the Agency for Communications Networks & Services (Agencija za komunikacijska omrežja in storitve, AKOS) is to carry out an extraordinary external review of the frequency allocation procedure. In a statement, AKOS clarified that BTC had been awarded trial spectrum in the 700MHz and 3.6GHz bands, but said that all awards had been processed in accordance with regulations. Other recipients of 5G test permits include AMZS, Elektro Gorenjska, Internet Institute and Telekom Slovenije. (October 10, 2018) [telegeography.com](#)



South Africa

The Independent Communications Authority of South Africa (ICASA) has formally withdrawn July 2016's Invitation to Apply (ITA) for LTE-suitable spectrum in the 700MHz, 800MHz and 2.6GHz bands, as published in General Notice number 438 of 2016 under Government Gazette number 40145. The move paves the way for a fresh auction in the coming months. Last month, ICASA and Minister of Telecommunications Siyabonga Cwele

agreed to settle a 2016 legal dispute that derailed plans to stage a multi-band spectrum auction. Back in August 2016, Minister Cwele filed an application to block the proposed auction after objecting to the terms of the ITA. Going forward, the watchdog is expected to stage a new auction before the end of March 2019. Last week ICASA spokesperson Paseka Maleka told ITWeb: 'There is no specific date for the

auctioning of spectrum; however, it is ICASA's intention to license the International Mobile Telecommunication (IMT) spectrum by no later than the end of the current financial year [March 31, 2019]. We will share more information as the process unfolds.'

(October 19, 2018) telegeography.com

The Council for Scientific and Industrial Research's (CSIR's) report on how much spectrum should be reserved for the planned wholesale open access network (WOAN) operator has been released. The CSIR has suggested that the minimum spectrum to be made available to the WOAN (based on 20% market share, or around ten million customers) should be 2x25MHz in the 800MHz band, 2x20MHz of paired (FDD) spectrum at 2600MHz and 25MHz of unpaired (TDD) spectrum at 2600MHz, with all excess capacity to be distributed among other industry players. The South African government wants to create the WOAN to increase competition in South Africa's wireless market, though the decision has drawn heavy criticism from a number of industry players, with the GSMA stating in August 2017 that 'a move to wholesale networks will harm consumers, as history has demonstrated that network monopolies normally result in high prices and lower investment in infrastructure'. Last week the Independent Communications Authority of South Africa (ICASA) and Minister of Telecommunications

Siyabonga Cwele agreed to settle a 2016 legal dispute that derailed plans to stage a multi-band spectrum auction. Back in August 2016, Minister Cwele filed an application to block the proposed auction of LTE-suitable spectrum in the 700MHz, 800MHz and 2600MHz bands, after objecting to the invitation to apply (ITA) which the watchdog issued on 15 July 2016. Following the belated resolution of the situation, a new draft policy governing the spectrum auction has been put out for consultation, with public comments invited until November 8. (October 1, 2018) TechCentral

The Independent Communications Authority of South Africa (ICASA) and Minister of Telecommunications Siyabonga Cwele have agreed to settle a 2016 legal dispute that derailed plans to stage a multi-band spectrum auction. Back in August 2016, Minister Cwele filed an application to block the proposed auction of LTE-suitable spectrum in the 700MHz, 800MHz and 2600MHz bands, after objecting to the invitation to apply (ITA) which the watchdog issued on July 15, 2016. The belated resolution of the situation follows President Cyril Ramaphosa's recent call to accelerate the suspended licensing process. Cwele is now said to be consulting with ICASA on a new draft policy governing the spectrum auction, which will be issued for public comment once completed.

(September 27, 2018) telegeography.com



Sweden

Sweden's Post and Telecom Agency (Post & Telestyrelsen, PTS) is requesting all holders of unused or under-used frequency licenses in the 3.4GHz-3.8GHz band to return them. The regulator is looking to redistribute unused spectrum in 2019 for future 5G services, and says it can help licensees which only utilize the spectrum on a limited basis to find alternative solutions for their needs. The band is

currently licensed on a municipal and regional basis, with existing permits expiring at various dates between March 2021 and March 2023. Anna-Maria Lann, project manager at the spectrum department of PTS, commented: 'A number of licenses have already been returned to us after our call for permission holders, which is very positive for the ongoing allocation in the band.' (October 17, 2018) telegeography.com



Thailand

DTAC TriNet, a subsidiary of Total Access Communication (DTAC), has submitted its bid for spectrum in the 900MHz band being sold by the National Broadcasting and Telecommunications Commission (NBTC) later this month. TriNet's application means that its parent is currently the sole bidder for the frequencies in question; as previously reported by CommsUpdate, earlier this month Advanced Info Service (AIS) and True Move confirmed that they would not be participating in the auction as they say they have sufficient bandwidth across several spectrum bands with which to provide services. With the auction itself set to begin on 28 October, the authorities are offering 2x5MHz in the 900MHz band, and have set a reserve of THB37.99 billion (USD1.16 billion) on the frequencies on offer. Meanwhile, it has also been confirmed that – as a result

of DTAC's decision to bid for 900MHz spectrum – the NBTC has decided not to launch an appeal against a recent Central Administrative Court ruling that gave the operator's subscribers the right to continue using its 850MHz-based service until 15 December. The regulator had previously said it was planning to lodge an appeal should DTAC fail to submit a bid for the 900MHz spectrum it was selling off. Commenting on the matter, DTAC chairman Boonchai Bencharongkul was cited as saying: 'Joining the 900MHz frequency band auction is an important decision which underpins DTAC's long-term strategy to enhance network quality and provide competitive services to all mobile users nationwide. We are confident this decision will enable DTAC to strengthen its market position and secure future value creation.' (October 17, 2018) The Nation



United Kingdom

The U.K. is sponsoring research into organizing and managing phone numbers by the national telecom regulator. The Regulators' Pioneer Fund announced that it would award nearly £700,000 (just under \$915,000) to Ofcom, the national telecommunications regulatory authority, "for a project that uses blockchain technology to improve U.K. telephone number management." Ofcom provided more details about the project Monday, saying in a press release that there are roughly 1 billion phone numbers available to U.K. residents, "either already in use or reserved for allocation." "We issue blocks of these numbers to telecoms operators, who manage the numbers and movement (porting) of them into and out of their control," it explained. However, as the country moves from traditional analog phone lines to an internet-based infrastructure, current systems may face issues. As such, blockchain technology could be used to lower costs, make porting more efficient, and streamline fraud or "nuisance" call management and provide customers with a better experience. Ofcom

Chief Technology Officer Mansoor Hanif said in a statement that the regulator would work with industry members, explaining: "We will be working with industry to explore how blockchain could make it quicker and easier for landline customers to switch providers while keeping their number – as well as reducing nuisance calls. And we'll expand our research into other areas where innovative technologies such as blockchain could be applied to benefit consumers." The entity has been looking to develop a new database to create these improvements, but past attempts have failed, the release explained. In particular, centralized databases are expensive and put up "barriers to collaboration," but a blockchain platform "offers an opportunity to build a cost-effective and future-proof solution." Any solution built as a result of the project will be tested prior to an industry rollout, the release noted. Further, the regulators intend to "share key learnings, best practices, and the underlying code base, where applicable, with other regulators."

(October 8, 2018) coindesk.com



United States


The Federal Communications Commission (FCC) has received a total of 110 applications from bidders interested in taking part in November's dual auctions of 5G-suitable millimeter wave (mmWave) spectrum. Auction 101, which is scheduled to begin on 14 November 2018, will offer 3,072 Upper Microwave Flexible Use Service (UMFUS) licenses in the 27.5GHz–28.35GHz (28GHz) band, while Auction 102, which will be scheduled to commence after the conclusion of bidding in Auction 101, will offer 2,909 UMFUS licenses in the 24.25GHz–24.45GHz and 24.75GHz–25.25GHz (24GHz) band. A total of 26 complete applications have been received for Auction 101, with a further 24 applications currently listed as incomplete. AT&T Mobility – bidding as AT&T Spectrum Frontiers LLC – is the sole household name with a completed application. Incomplete applications have been lodged by the likes of Verizon Wireless (bidding as Cellco Partnership), Frontier Communications, Windstream Communications, US Cellular and T-Mobile US. Meanwhile, 34 complete applications have been received for Auction 102, alongside 26 incomplete applications. Complete applications have been filed by AT&T, Verizon and Cox Communications, alongside Guam-based DOCOMO Pacific and TeleGuam Holdings. Incomplete applications have been lodged by the likes of Frontier Communications, Windstream, US Cellular and T-Mobile US. Incomplete applications for both auctions can be resubmitted by October 23, the FCC notes. (October 11, 2018) telegeography.com

The Federal Communications Commission (FCC) approved the imposition of strict guidelines on local authorities, in a bid to speed the installation of small

cells and slash operator administration costs. New rules introduce tight deadlines on local government agencies when reviewing applications for wireless infrastructure and restrict fees to "reasonable costs" for processing the paperwork and managing deployments around public spaces. The policy was outlined in early September as part of a number of statements from commissioners calling for updated planning rules to ease 5G rollout, with the ultimate aim of helping the US win the race to 5G. However, the FCC's proposal provoked the ire of local authorities. Several lodged formal complaints against the plan, arguing the rules were too extreme and placed an unreasonable burden on them. In a statement welcoming the new rules, FCC Chairman Ajit Pai said: "There are some local governments that don't like this order. They would like to continue extracting as much money as possible in fees from the private sector and forcing companies to navigate a maze of regulatory hurdles in order to deploy wireless infrastructure. But these actions are not only unlawful, they're also short-sighted." "They slow the construction of 5G networks and will delay if not prevent the benefits of 5G from reaching American consumers," he added. "When you raise the cost of deploying wireless infrastructure, it is those who live in areas where the investment case is the most marginal – rural areas or lower-income urban areas – who are most at risk of losing out." Three of the four FCC Commissioners backed the new rules in their entirety, with Jessica Rosenworcel agreeing "in part" with the regulation. She noted the decision "cut out" local authorities, many of which would have existing agreements and deployments "interfered with" as a result of the new policy. (September 27, 2018) mobileworldlive.com

The FCC concluded its September open meeting with no new action on the CBRS band—which wasn't surprising because it wasn't on the agenda. But it's been one of those subjects that comes up repeatedly, in part because the band was lauded as the "innovation band" and it's seen as crucial midband spectrum for 5G. Yet it's still in limbo. When asked about the timing of the 3.5 GHz item during a press conference after the FCC's meeting, FCC Commissioner Michael O'Rielly deferred to the chairman, who determines those things. "I think we're getting really close to, imminent to [there] being decisions and ready for action on the final remaining pieces that we contemplated in the item," O'Rielly said in response to a reporter's question. "None of the debates that I have heard so far ... suggest that we're not sufficiently ready to move forward in the near future." O'Rielly, a Republican, has been FCC Chairman Ajit Pai's point person on the 3.5 GHz band proceeding. Back when the CBRS band was initially set up under former Chairman Tom Wheeler in 2015, both then-commissioners expressed their displeasure with parts of the proceeding. Under Pai's leadership, the CBRS band was afforded the chance for reform, particularly in the licensed portion of the band, which is the most contentious. Separately during press briefing, Democratic Commissioner Jessica Rosenworcel answered the same reporter's question with a decidedly different tone, but one that reiterated her previous level of frustration at the lack of movement on the issue. "We have a serious deficit of midband spectrum in the United States. South Korea, Italy, the United Kingdom,

Spain have already set out midband spectrum for auction. China has already cleared airwaves as well," she said. "But somehow, we are sitting here many years after our initial proposal in the 3.5 GHz band and we're stuck in some kind of bureaucratic quagmire," she said. "I do not understand. We should have moved ahead a long time ago. I don't have any insight, but I am exasperated. We should have done this a long time ago." The 3.5 GHz band has been identified as a key band for 5G. In the U.S., the band is also unique in that it offers 150 megahertz of spectrum for a mix of government, licensed and unlicensed uses. Spectrum Access System administrators and Environmental Sensing Capabilities are all part of the program to make dynamic spectrum sharing function and work toward setting those systems up continues even while the commission reviews the rules for Priority Access Licenses. The General Authorized Access portion of the band is expected to be ready to go commercial before the end of this year if all goes as planned. All this comes as calls for more 5G midband spectrum ramp-up. Nokia CEO Rajeev Suri, for example, told FierceWirelessTech on the sidelines of Mobile World Congress Americas 2018 earlier this month that 3.5 GHz will be an incremental opportunity and the U.S. needs to finalize the rules. Then it needs to get focused on the 3.7-4.2 GHz, or C-Band, in part because it has the potential of offering 100 megahertz of spectrum per carrier, which is the amount that makes it worthwhile for 5G. "It's the sweet spot in spectrum," he said.

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