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BUILDING DIGITAL ECONOMIES



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Security: The Vital Element of The Internet Of Things

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Exclusive Interview

Amr Eid
Chief Executive Officer
Gulf Bridge International

“CROSSING THE CHASM” - CONTINUOUS TRANSFORMATION OF THE BUSINESS IS THE BEST APPROACH FOR SUSTAINABLE GROWTH

SAMENA TRENDS

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EXCLUSIVE INTERVIEW

Amr Eid
Chief Executive Officer
Gulf Bridge International



05.

SAMENA COUNCIL ACTIVITY

TRA Hosts a Strategic Workshop on the Future of Mobile Markets in Collaboration with SAMENA Council

Risk Assessment and New Growth Streams in Telecoms

Our industry has much to look forward to. However, it faces many risks as well. For instance, further delay or failure to see evolving roles in the evolving value-chain, not doing enough promptly to realize organizational agility, insufficient understanding of what customers see and demand, inability to extract value from heavily-invested network assets, delaying strategizing over inorganic growth, not fostering innovation, to name a few critical ones, are some of the biggest issues and risk factors that can impede new growth in telecoms.

In a world where things continue to connect and where stakeholders are growing much more sensitive to the need to work together and close communication gaps in our understanding of what impedes our collective growth, and what accelerates it, risk assessment and finding new growth streams in the business have become imperative to achieving long-term success and shareholder value. Both of these needs are interconnected and have surfaced at times when operators are investing into software-based network functions and are moving away from legacy proprietary network equipment in order to achieve new efficiencies in the business.

Influence of macroeconomics will continue to prevail, and so will of market competition and other challenges to business continuity and growth. In any case, despite the sheer size of the industry, some risk factors that remain almost totally in the control of operators relate to its operations, internal processes, and the security and protection of sensitive data, systems, and network platforms. While unexpected problems always arise across the network, revamping service delivery processes and strengthening intra-organizational focus on customer experience management, while taking initiatives to invite, foster, and enable innovation across the business would help improve intra-organizational focus on sustainable growth.

Operators are operating in times when fiber has overtaken DSL technologies around the globe in terms of access quality, bandwidth, and predictability. For limited usage, 4G wireless technologies are also providing excellent and cost-effective broadband services. Both fiber and wireless technologies are enabling high-

demand entertainment services, which are being consumed in place of traditional TV and will replace the latter. For the fixed-line industry segment, fiber carries much potential for content-driven opportunities, but the wireless industry has to push the boundaries and the value-proposition on the mobility and ubiquity ends.

Among the greatest steps that can be taken to conduct successful risk assessment and uncover new growth streams, is to challenge traditional business models and transform the business, centered on a core differentiating factor or a value-add. Everything has to be looked at from sustainability and relevance points of view. Everything ranging from cloud-based computing, big data, IoT, M2M, emerging IA and VR, and a host of other strategic and operations business areas, carries potential for innovation and revenue for operators.

As operators concentrate on converting technology resources - that is network assets and experience in providing services to large customer bases while managing customer experience related challenges -- into revenue generating services, operators must exercise astuteness as well as courage to convert possibilities into realities. Some of the revenue streams to concentrate on, include high-quality content at affordable prices, high-definition voice service similar to existing OTT voice, M2M offerings, smart-home offerings, etc. A total focus on customer experience management and addressing it at deep-down organizational levels could be considered among the most important factors that can help operators mitigate market, operations, and regulatory risks, while opening new windows for revenue opportunities.

In the emerging world of IoT, and the possibilities associated with it, risk assessment, the ability and the willingness to take new risks, and the wisdom to balance revenue growth needs with far-reaching and more pronounced roles within the industry, are something every telecom operator must invest in.



Bocar A. BA
Chief Executive Officer
SAMENA Telecommunications Council



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SAMENA COUNCIL ACTIVITY



هيئة تنظيم الاتصالات
Telecommunications Regulatory Authority

Sh. Nasser Al Khalifa,
Deputy General Director, TRA

TRA Hosts a Strategic Workshop on the Future of Mobile Markets in Collaboration with SAMENA Council

The Telecommunications Regulatory Authority (TRA) held a one-day workshop for its staff members at its headquarters in Seef area on the mobile market competition, in collaboration with SAMENA Telecommunication Council, a regional telecoms industry association.

"TRA is very involved at the international level and collaborates with industry experts on discussions regarding the market's future needs. Sharing perspectives with industry groups such as SAMENA Council is key to bridging the gap between regulatory and operator viewpoints, as SAMENA represents the voice of operators not only in Bahrain but also across the whole region" said TRA's Deputy General Director, Sh. Nasser bin Mohamed Al Khalifa. He continued, "The workshop aimed to discuss what has been accomplished regionally and internationally. We have also discussed matters related to aspects the of future of mobile market competition, technologies and services



from an operator standpoint and how the industry regionally and internationally is dealing with digital services, big data, future technologies such as 5G and the use of mobile radio spectrum."

The workshop aimed at familiarizing TRA staff with the industry's international developments in the mobile market, focusing on services such as machine-to-machine communications, Smart Cities, and advances of telecommunications to support other sectors such as Finance, Education, Transportation, Health, and Energy. Future technologies and services such as 5G and the management of mobile radio spectrum were also discussed during the workshop.

Mr. Bocar BA, CEO of SAMENA Council stated that "This workshop provided an opportunity to understand the vision of TRA Bahrain and how its esteemed leadership views the TRA's transforming role in leading digital development both in Bahrain as well as in the SAMENA region. All stakeholders realize that potential exists to enable public and private telecom sectors to support each other by leveraging, combining and capitalizing on

each other's complementary strengths and capabilities. The workshop between TRA Bahrain and SAMENA Council has set a new example of synergy created through constructive collaboration of both sectors. SAMENA Council shall remain closely attentive to the TRA's strategic needs and priorities, to further help bring private-sector perspectives to the regulatory sight, and shall continue to serve TRA Bahrain as a reliable sector development partner. We extend our thank-you to the TRA team for their warm welcome and collaboration with SAMENA Council."

About TRA

Since its establishment in 2002, the Telecommunications Regulatory Authority (TRA) of the Kingdom of Bahrain has been working with government, consumers, operators and investors to develop the country into the region's most modern communications hub and to facilitate the growth of the market. As an exemplary Regulator for the region, TRA Bahrain independently carries out its duties in a transparent and non-discriminatory manner. More information about TRA can be viewed at www.tra.org.bh.

About SAMENA Telecommunications Council

SAMENA Telecommunications Council is South Asia - Middle East - North Africa (SAMENA) region's premier industry council of telecom operators and service providers. SAMENA Council voices network operators' issues and needs to regulators, policymakers, and international institutions.

MEMBERS NEWS



CEO of STC Group named Teletimes' CEO of the Year during GITEX

The award was presented to Dr. Khaled by Mr. Bocar Ba, CEO of SAMENA Council along with Mr. Khalid Athar, Chief Editor, Teletimes International during a ceremony at GITEX Technology Week. Dr. Biyari serves currently as the Senior Vice President for Technology and Operations at STC. He is also the Chairman of STC Advanced Solutions, Vice Chairman of STC VIVA Kuwait, Vice Chairman of OTL, and a Board member of both Turk Telecom and Avea. Prior to joining STC, he served as the Senior Vice President and General Manager at Advanced Electronics Company (AEC). From 1990 until 1995, Dr. Biyari was a Professor of Communication Systems at the Electrical Engineering Department at King Fahad University of Petroleum & Minerals (KFUPM). Professionally, Dr. Biyari is an active member of a number of professional organizations and has lectured and published papers on Communication and Information systems. He has also lectured on numerous occasions on Technology Management, Innovation, as well as ICT industry-related issues. He was twice-elected Chairman of the IEEE Saudi Section. Dr. Biyari also served as a member of the Committee



responsible for developing the Long Term National Plan for Electronics Industry in the Kingdom. He was also a member of KFUPM Executive Committee responsible for KFUPM's long-term strategic plan. In 2009, he was elected by the Council of Ministers to the BoD of the Electricity and Cogeneration Regulatory Authority (ECRA) in Saudi Arabia. Dr. Biyari obtained

his Ph.D. in Electrical Engineering from the University of Southern California, Los Angeles, USA in 1990 and his B.S. and M.S. in Electrical Engineering from KFUPM in 1983 and 1985, respectively.

STC showcasing latest innovative solutions at GITEX 2016

Saudi Telecom Company (STC) will be unveiling a variety of advanced information communication technology (ICT) solutions during its participation at GITEX 2016, in Dubai between October 16 to 20. STC Business, the national operator's enterprise business unit, will be showcasing the latest state of the art mission critical communication solutions, cloud-based services, IoT and managed services, as well as its small to medium enterprise (SME) focused retail in a box concept at its booth

services to government agencies so as to enable Vision 2030. "For us, GITEX is about seeing our customers from inside and outside the Kingdom, hearing out their ambitions and plans for the year ahead, and showing them what new solutions we have to address those ambitions and plans," said Dr. Tarig M. Enaya, STC Senior Vice President of Enterprise. Driving STC is Vision 2030, the Kingdom's blueprint for transformation of the Saudi economy for the coming decade. For STC, this means

services tailored towards the needs and requirements of government agencies and enterprises of all sizes through a series of the largest data centers in the Kingdom and a variety of digital, managed and cloud services. Tying these data centers together is a 147,000 kilometer long fiber optic network, augmented by a mobile network covering 96% of populated areas with 2G and 3G mobile services and 85% of populated areas enjoying 4G LTE coverage. Connecting these national networks to



inside Zabeel Hall (Z-G45). Furthermore, STC is also expected to reveal more details about its partnership with ELM, under the patronage of the National Information Center, for the provision of cloud computing

it is focused on digitization as enabling force for bringing more public and private sector services online. STC Business, the national operator's enterprise focused business unit, delivers ICT solutions and

the globe are a series of cross-border overland and submarine cables feeding the Kingdom with 1.5 terabits/second of Internet bandwidth and passing through over 12 petabytes of traffic a day.

STC forms national alliance for Cloud Services

A strategic alliance between Elm Company and STC has been announced under the supervision of the National Information Center, to provide cloud computing services, to subscribers of governmental, business entities, and individuals.



Expresso Telecom Group and EDCH join forces to bring mobile financial services to West Africa

Expresso Telecom Group (ETG) and Etisalat's Emirates Data Clearing House (EDCH) announced, on the 19th of October 2016, the imminent launch of a new family of mobile financial services for its customers in West Africa;

Senegal, Mauritania and Guinea Conakry. ETG's rollout of Mobile Financial Services is not only aimed at improving financial inclusion levels and providing a complete system for the unbanked, but also delivering non-traditional transformational services to the banked population and businesses requiring more flexible services. EDCH was granted multiple awards from the GSMA, FT/IFC and GTB innovation awards for delivering truly innovative services in this field and its award-winning Mobile Financial Services systems have been deployed across Etisalat and Maroc Telecom subsidiaries in more than 14 countries. ETG will be providing customers with a variety of services including:

- m-wallets (cash-in, cash-out services)
- m-payments (merchants, utility, transportation, etc)
- money transfer (domestic and international remittances)
- bank accounts/payment cards management
- secure access and ticketing
- merchant payment acceptance (mobile cashier)

Most importantly, customers will be able to use the ETG's Mobile Financial Services outside the ETG network, for example,

they will be able to recharge their mobile accounts via other networks when they are abroad. In particular, ETG is anticipating that the ability to transfer money between countries will be very popular due to the

majority of our customers in West Africa are unbanked. We are investing heavily in our mobile money service because it will help them better manage their finances, save and invest." He continued: "Our



widespread diaspora in West Africa and growing cross-border trade. In its "Mobile Money: Lessons for West Africa" briefing published in March 2016, The International Growth Centre, wrote that "The speed and scale of mobile money take-up in East Africa has been unprecedented and the impact considerable," however: " While mobile phone penetration is increasing in West Africa, the region has far lower levels of financial inclusion and mobile money usage than East Africa... Cross-border remittance capability is of particular importance in West Africa as it has the potential to boost regional cross-border trade." Eng. Tarig Zain Elabdein, Chairman of ETG said: "We know that the

partnership with EDCH provides us with a market-proven back-end that will enable us to roll out the service rapidly over the next few months. Together we will ensure that the people of West Africa have the tools needed for sustained economic growth - and that this region has the capability to be Africa's gateway to the world." Mr. Nasser Salim, CEO of EDCH, said: "ETG will help West Africa emulate the success of Mobile Financial Services across East Africa. ETG's customers and regulatory bodies can be assured that our systems have been developed to address all security and identity issues."



Zain crowned 'Best Telecom Brand' at Telecom World Middle East Awards 2016 for third consecutive year

Zain Group, a leading mobile telecom innovator in eight markets across the Middle East and Africa, is proud to announce that its brand has been identified as the 'Best Brand' for telecom in 2016 at the prestigious Telecoms World Middle East Awards gala event in Dubai earlier this week. Additionally, Zain's operation in Saudi Arabia was presented with the 'Best Customer Experience' service award, while Zain Jordan and Zain Iraq jointly received an award for 'Best Consumer Service' for their life-enhancing 'Zain Cash' mobile money offering, which has brought the benefits of banking to millions of unbanked people across the two countries. Impressively, for a third consecutive year the honor of the 'Best Brand' was bestowed on Zain Group by a

panel of judges assembled by Terrapinn, the organizers of the annual Telecoms World Middle East Conference and Awards. The awards recognize outstanding performance in key areas throughout the Middle East telecom industry and shine a spotlight on key players that have contributed to making the sector one of the most dynamic globally. Zain has been a recipient of the 'Best Brand' award on numerous previous occasions since the introduction of its inspiring brand in 2007. This year's success has been driven by the tangible developments occurring within the company, where heavy investment in network upgrades, and technology innovation is positively impacting customer experience. Additionally, Zain's

Corporate Sustainability programs and eye-catching marketing and widespread social media campaigns have captured the imagination of the whole region, reflecting the company's aspirations. Commenting on the award of the latest accolades, Zain Group CEO Scott Gegenheimer said, "We are always appreciative to receive positive

which has been executed with impressive results. The strategy engaged Zain Saudi personnel across the organization as active participants in the attainment of Customer Experience Excellence, achieving success via combining the adoption of the latest trends in customer retention programs with employee passion, achieving highly

positive results. Zain Jordan and Zain Iraq were jointly recognized at the Awards for their efforts to expand access to financial services, aimed at providing a mobile wallet to millions of unbanked people across the two countries. Earlier this year, Zain operations in the two countries relaunched their mobile banking services under the brand "Zain Cash", featuring a richer portfolio, and a more integrated ecosystem



confirmation from our industry on the work we are undertaking. Our brand represents a promise that we always strive to offer the best, life-enriching mobile solutions to our customers and are looking to deal with all of our various stakeholders in a professional and highly positive manner." Gegenheimer continued, "The range of the prizes we have been awarded this year across several of our operations signifies that we are not just innovating for innovation's sake, but that the services and initiatives we are developing are really impacting people's lives for the better." Zain Saudi Arabia was singled out for the 'Best Customer Experience' award for the year as a mark of the company's innovative and engaging customer experience strategy,

including more secure and convenient transactions within a comprehensive network. The life-enhancing mobile service was launched in partnership with eServGlobal. These awards highlight the scope of success Zain Group operations continue to garner, as they follow a strategy to deliver a raft of digital lifestyle products and services to customers, while helping uplift communities and economic development across the region.

MIT Enterprise Forum Pan Arab, in partnership with Community Jameel and Zain Group, launch 10th edition of the MIT Enterprise Forum Arab Startup Competition

The MIT Enterprise Forum (MITEF) for the Pan Arab Region, in partnership with Community Jameel, a social enterprise organization that operates a wide range of initiatives to promote a positive society and economic sustainability, and Zain Group, a leading mobile telecom innovator across the Middle East and Africa, announces the launch of the tenth edition of the MIT Enterprise Forum Arab Startup Competition. Similar to the proceedings in previous years, this year's competition includes three different tracks: Ideas, Startups, and Social Entrepreneurship, with total prize money on offer totaling USD \$160,000. Each of the three tracks will award the first three ranked winners with cash prizes in addition to many other benefits including:

top tier training, mentorship, coaching, media exposure, and great networking opportunities. The competition's website www.mitefarab.org opens for applications on October 17, 2016 with the deadline for receipt of applications being January 4, 2017. Informative roadshows promoting the competition are planned for Bahrain, Egypt, Kuwait, Jordan, Lebanon, Morocco, Qatar and the UAE, and 79 semi-finalist teams will be announced on February 10, 2017. The semi-finalists will be invited to attend pre-bootcamp activities scheduled for February and March, 2017 in Egypt, Jordan, Morocco, Saudi Arabia and the UAE. The competition will culminate in a four-day event from April 24 to April 27, 2017, with the announcement of the competition winners set to take place during the final award ceremony on April

27, 2017. Hala Fadel, Chair of the board of MITEF Pan Arab, said, "This year, we are celebrating 10 years of entrepreneurial success in the region by bringing together our biggest edition to date. For this 10th edition, we are expecting more and more technology innovations from the MENA

in becoming a digital lifestyle operator." "This is the tenth consecutive year that Community Jameel has supported the MIT Enterprise Forum Pan Arab," said Fady Jameel, President of Community Jameel International. "The continuation of our support for this project underscores our



region and we aim to take the most innovative entrepreneurs from the region to new heights." Commenting on Zain Group's support of the latest MITEF Arab Startup Competition, CEO Scott Gegenheimer said, "We are excited to support the competition again this year, and congratulate the MIT Enterprise Forum Arab for the milestone 10th year of running this important regional event. For Zain, the reasons for continued involvement are simple – this competition supports young aspiring entrepreneurs to achieve their dreams and appeals to a number of our core constituents, aligning with our outlook and values perfectly. Again we look forward to seeing the face of innovation being revealed throughout the course of the competition and shall take the opportunity to capitalize on the most promising ideas, supporting our evolution

commitment to helping the next generation of young entrepreneurs realize their hopes and aspirations." Stressing the importance of competitions like this and their growing popularity, Mr. Jameel also noted: "We have witnessed the tremendous success stories that MITEF Pan Arab has brought about in our region over the past nine years and anticipate even greater achievements for the upcoming tenth edition and in the future."



Sudatel signs MoU with Egypt Telecom

Sudatel Telecom Group and Egypt Telecom announced that they have signed a Memorandum of Understanding which will improve connectivity between Sudan and Egypt. In addition, the two companies will collaborate to increase QoS, explore new business opportunities within Africa and internationally, and share expertise. The MoU was signed by Eng. Tarig Hamza Zeinelabdin, CEO of Sudatel and Eng. Tamir Gad Allah, President and Managing Director of Egypt Telecom. Mr.



Zeinelabdin said "Sudatel is investing heavily to improve and expand its networks and service offering. Today we are formalizing and strengthening our relationship with Egypt Telecom. Together we will ensure that our countries have the connectivity needed for sustained economic growth - and that this region has the capability to be Africa's gateway to the world."



Cisco delivers IP/optical for Iraqi national backbone

Cisco is providing optical transport systems for rebuilding the Iraqi National Backbone, a multi-layer IP and optical network that spans the long terrestrial route from Iraq to Turkey. The Iraqi National Backbone is a joint venture between Symphony and EarthLink JLT, reaching most major Iraqi cities. Commercial launch is expected in March 2017. Cisco said it is supplying a mix networking technologies for the project, including the Cisco NCS 5500 and ASR 9000 router platforms and the NCS 2000 for DWDM. The entire solution is based on industry standard protocols, including WSON in the optical

layer. Cisco Software Defined Networking (SDN) coordinates restoration events between the optical and IP portions of the network. A common management solution with Cisco Evolved Programmable Network (EPN) Manager is also critical for the multi-layer network views into each event. The IOS XR operating system powering the Iraqi Backbone network will be capable of supporting advanced operational capabilities such as segment routing, real-time model driven telemetry and standards-based programmability using NETCONF and YANG. "Creative thinking by the leaders of Symphony and EarthLink will

soon be changing the lives of the people of Iraq," said Mike Weston, vice president, Middle East, Cisco. "The extended reach of the network and its advanced capabilities unleashes the transformational power of connectivity and sets a solid foundation for achieving Iraq's development goals. With this project, Cisco further establishes its leadership with IP and optical networks that require multi-layer restoration and automation, and industry leading performance in long haul applications."



Batelco demonstrates smart living solutions at GITEX 2016

Batelco, Bahrain's leading digital solutions provider in collaboration with Ericsson, a world leading telecoms technology provider and Net4Things, a leading company enabling end-to-end IoT solutions, is demonstrating a range of Smart Solutions at the Batelco Stand which is part of the Bahrain Pavilion, at GITEX 2016. The 5 day event is taking place at the Dubai World Trade Centre from October 16 to 20. The three leading companies are partnering to demonstrate a variety of Cloud and Sustainability solutions in line with the topic of the event; Re-imagining realities. The range of advanced technologies, designed to enable the development of the Networked Society's smart cities, will showcase how life experiences in a smart city are enhanced through more connectivity, with a particular focus on working life, city life and home life,

allowing citizens to live and work in more sustainable societies. Among the solutions being showcased is Connected Print along with smart solutions for homes and hospitals. Batelco Bahrain CEO Eng. Muna Al Hashemi said that Batelco was very pleased to be working alongside Ericsson and Net4Things to demonstrate Batelco's and Bahrain's capabilities in front of ICT experts attending the prestigious GITEX event. "Batelco's strategy is aligned with the Kingdom of Bahrain's vision for a networked society and accordingly is focused on the growth of digitisation and its crucial place in the development of smart city living," Eng. Al Hashemi noted. Ericsson Region Middle East and East Africa President, Rafiah Ibrahim said: "We are proud to collaborate with our partner Batelco to promote smart living and demonstrate the power of connectivity.

Smart and connected products provide us with information and data that can be analyzed to make better decisions and improve the customer experience. Together with Batelco we will showcase, at this year's GITEX, the power of Internet of Things IoT and smart living." Net4Things CEO Joaquín García-Baquero says: "We at Net4Things are really excited by this opportunity. The fact that a renowned world class leader and a top worldwide telecommunications company have chosen us confirms that our products, our technology and our team can meet the highest expectations." "We acknowledge that the business potential of this alliance is exceptional, but what we are really proud of is to contribute to the well-being of our customers through technology that makes their lives simpler and better," added Mr. García-Baquero.

Batelco Bahrain and Ericsson sign 5G agreement

Bahrain's leading telecoms operator Bahrain Telecommunications Company (Batelco) has signed a Memorandum of Understanding (MoU) with technology solutions provider Ericsson which will help drive early Internet of Things (IoT) applications on 5G mobile network technology. The main purpose of this collaboration is for both companies to develop a joint understanding of 5G use cases and requirements, as well as to evaluate the performance of potential 5G technological components. 'As 5G technology expands and evolves over the coming years, collaboration amongst the industry players is key to set the foundation for the Networked Society, where anything that can benefit from a connection, will be connected,' said Ericsson Middle East and Africa President Rafiah Ibrahim.





Huawei outlines the UBB roadmap for Telecom operators & the FMC 3.0 business proposition

An intelligent world, in which all things are connected, smart and can be sensed, is coming towards us. As a result, telecom operators' business is fundamentally changing. David Wang, President of Huawei Network Solutions, said: "In the intelligent world, telecom operators should rethink their role and business model in the B2C, B2B and IoT markets. Huawei believes that telecom operators' core business proposition should be centered on the concept of FMC 3.0. By building up a ubiquitous, experience-driven, agile and on-demand ultra-broadband network, telecom operators will be able to monetize the business opportunities created by vertical market digital transformation." The emergence of Gigaband connectivity is an accepted trend. The industry is witnessing the accelerating growth of 4K and VR along with large-scale enterprise digitalization and cloudification and the deepening development of industry IoT. The ultra-broadband all-connected network is going to be the major driving force of the emergence of all things sensing and all

things connected and the fundamental building blocks of the intelligent world. From telecom operators' point of view, FMC 1.0 was more about the broadband connection services which converged the fixed and mobile broadband networks. FMC 2.0 focused on the monetization of UBB through continuous optimization and development of content services, which are positioned as the basic service. On top of FMC 1.0 and 2.0, Huawei now releases the FMC 3.0 concept to facilitate operators redefining the scope of their business: In B2C markets, operators need to position video as the core basic service to fulfill their customers' continuously growing expectations in user experience. In B2B markets, since enterprise customers require integrated ICT services which can provide the "R.O.A.D.S" experience instead of basic communications services, operators need to cloudify themselves completely so as to meet enterprise customers' ever-growing demand of digitalization. Based on the FMC3.0-centric business proposition, Huawei defines three directions for the

development of telecom operators' ultra-broadband network: Beyond human beings, connect everything: forging a network that compels the business success of the Smart Home and the Agile IoT by extending network coverage from "the last mile" to "the last inch". Beyond bandwidth, focus on user experience: engineering the unified bearer transport network to enable the best possible experiences for families, individuals and enterprise customers. Beyond network, embrace the cloud: building an end-to-end agile on-demand network which not only meets customers' needs of agile VPN and customized cloud services, but also enables operators to monetize the new cloud-based services. The UBBF is jointly organized by the UN Broadband Commission and Huawei, to create a platform for communications between carriers, content providers, consumer electronics vendors, Internet service providers, and regulatory agencies worldwide.



PTCL Group net profit increased by 42%

Pakistan Telecommunication Company Limited (PTCL) bounced back to record a tremendous profit growth of 42 percent by the end of third quarter of 2016 as compared to same duration last year. Financial results for the nine months ended September 30, 2016 were announced during a Board of Directors meeting held in Islamabad on October 13, 2016. The improvement in financial numbers were mainly because of the profit the group made during third quarter where it succeeded to book the bottomline of Rs 876 million as against loss it made in the same quarter of last year which had stood at Rs 371 million. The Group revenue stood at Rs. 88.8 billion and with effective cost optimization measures, the operating expenses of the Group were

reduced by 3% resulting into a net profit of Rs. 3.9 billion. PTCL's revenue for the period was Rs. 54.3 billion with growth in DSL broadband revenue. The Company's operating expenses during the period were reduced by 6% resulting into the net profit of Rs. 7.6 billion. Telecom analysts said that improvement in profitability of the Group was seen due to performance of its subsidiary, Ufone which sustained its earning in the highly competitive market. On the other hand, the balance sheet showed the effective cost saving of the operations on different accounts which translated into profitability of the Group. For instance, group expenses for administration, selling and marketing stood at Rs 18.3 billion so far in 2016 as compared to Rs 19.8 billion

recorded in the same period of last year. The finance cost greatly reduced to Rs 2.74 billion in three quarters of 2016 which stood at Rs 4.23 billion in the three quarters of 2015. The overall group performance reflected the change of strategy by the new management which assumed the office earlier in 2016. The effective operational management and growth in earnings through services may bode well to the company's financial health, however, for a sustained performance, as a company as well as a group, PTCL will have to innovate itself in terms of services and will have to introduce new revenue streams in the future.



DE-CIX Madrid becomes the fastest growing Internet Exchange worldwide

With just four months in operations, the DE-CIX Internet exchange (IX) in Madrid (Spain) - managed by DE-CIX, the world's leading Internet exchange operator - has become the fastest growing IX globally. From the start in June, 60 networks have already signed-up for the DE-CIX peering and interconnection services and the data traffic has broken records on a week-to-week basis. "This is clear evidence that there is a tremendous

need for an Internet exchange in Spain that provides a neutral, reliable, quality interconnection and peering point – such as DE-CIX. With the high interest of many carriers, international content networks, Internet service providers in Spain and Portugal, as well as from West African ISPs reaching Madrid via Lisbon, we anticipate even more growth going forward", says Harald A. Summa, CEO of DE-CIX. DE-CIX Madrid started operations in June 2016 at

the carrier-neutral Interxion data center in Madrid, which offers a high density of carriers and ISPs. Most recently, DE-CIX signed an agreement with Interoute Spain, under which DE-CIX will open a second DE-CIX Madrid enabled site at Interoute's data center in Madrid. The DE-CIX set-up will be extended to more data centers in due time.



du and Qualcomm introduce next-gen Wi-Fi technology to the Middle East region

du, and Qualcomm Technologies, Inc., a subsidiary of Qualcomm Incorporated, announced today that the Companies have successfully showcased 802.11ad Multi-gigabit Wi-Fi technology (also known as WiGig), a first in the Middle East region. The demonstration took place during GITEX Technology Week in Dubai, paving the way for rapid deployment of 802.11ad in the region. 802.11ad delivers peak speeds of up to 4.6Gbps, lower latency, and improved network capacity. Utilizing millimeter-wave spectrum (mmWave) at 60GHz, 802.11ad serves as a foundational technology for 5G. du is proud to have been selected as smart city partner for Wi-Fi in Dubai and has recently launched "WiFi UAE" with 300+ hotspots. 802.11ad will be a crucial addition to du's already impressive technology portfolio, providing a step-up in Wi-Fi capacity and addressing the ever-increasing demand for data while offering enhanced user experiences. Together with 5G technologies, 802.11ad will enable du to provide multi-gigabit wireless connectivity across its networks.

As an important step in the evolution of Wi-Fi, 802.11ad is designed to enable a new class of applications and services such as wire-equivalent docking, low-latency video streaming, multimedia kiosks, untethered VR glasses and more. Working seamlessly with 802.11ac Wave 2, 802.11ad is designed to transform the experiences for Wi-Fi users, whether it be it in the office, home or public venues. "As proud partners of the Smart Dubai Platform, it is up to us to ensure that our networks are well-equipped to handle the growing traffic as we begin to venture into a future where the Internet of Things (IoT) and 5G is a norm. Working with Qualcomm Technologies has enabled us to introduce yet another first in the Middle East, with the successful testing of 802.11ad technology. We are currently working with other companies to add this technology to our Wi-Fi portfolio and make it available for all users in UAE," said Saleem AlBlooshi, Executive Vice President of Network Development and Operations at du. "This successful demonstration adds further impetus

to the initiative of His Highness Sheikh Mohammed Bin Rashid Al Maktoum, Vice-President and Prime Minister of UAE and Ruler of Dubai, in establishing the UAE as a global leader in all aspects and as an innovator in technology in the Middle East region." "We are proud to have worked with du to successfully showcase 802.11ad technology in the Middle-East as the introduction of the technology in the region will not only substantially enhance Wi-Fi user experiences, but pave the way for 5G development in the region," said Rahul Patel, Senior Vice President and General Manager, Connectivity, Qualcomm Technologies. "Powering the industry's first commercial 802.11ad-enabled access point, laptop and smartphone products, Qualcomm Technologies prides ourselves in continuing to play an instrumental role in bringing advanced Wi-Fi technologies to life and with working alongside innovative companies like du in building a strong 802.11ad end-to-end ecosystem."



Ooredoo wins global award



Ooredoo has been awarded the 2016 People's Choice Stevie Awards for Telecommunications. A global public vote was conducted over the summer,

with the highest number of votes deciding the "people's choice" winners across a range of industries. More than 33,000 votes were cast overall, with Ooredoo Qatar receiving the most votes for the Telecommunications category. Fatima Sultan Al Kuwari, Director, Community and Public Relations, Ooredoo Qatar, said: "Receiving this award is a great honor for Ooredoo, as it was voted for by the people and because we triumphed against international competition. This award is confirmation that our dedication to our users, country and services is working. Our thanks go out to everyone who voted."

The People's Choice Stevie Awards will be presented to winners at The International Business Awards banquet on October 21 in Rome, Italy. Ooredoo is also nominated for other significant awards at the event, including 'Social Media Campaign of the Year' for the Supernet campaign and 'Telecommunications Company of the Year'. This is the latest in a series of high-profile awards for Ooredoo, with the Chief Executive Officer, Waleed Mohamed Ebrahim Al Sayed, most recently receiving the 'Telecoms CEO of the Year' at the CEO Middle East Awards. The 2016 People's Choice Stevie Awards for Favourite Companies, is a highlight award in The International Business Awards, the world's only international, all-encompassing business awards program which is now in its 13th year.

Ooredoo Kuwait finalizes FAST telco takeover

Ooredoo Kuwait (Wataniya Telecom) has finalized the acquisition of 99% of ISP FAST Telecommunication Company (FASTtelco) for a total of KWD11 million (USD36 million). Following the transaction, Ooredoo and FASTtelco will continue to co-exist as separate legal entities, though customers

will benefit from new products and services as well as from increased service delivery due to improved infrastructure. Qatari telecoms group Ooredoo agreed to acquire FASTtelco via its Ooredoo Kuwait unit in March 2016. FASTtelco was licensed in 1999 and launched local and international

data services in August 2002 over its nationwide fibre-optic network. The company offers DSL and GPON fiber-based services to residential users and a full portfolio of data offerings for corporate clients.

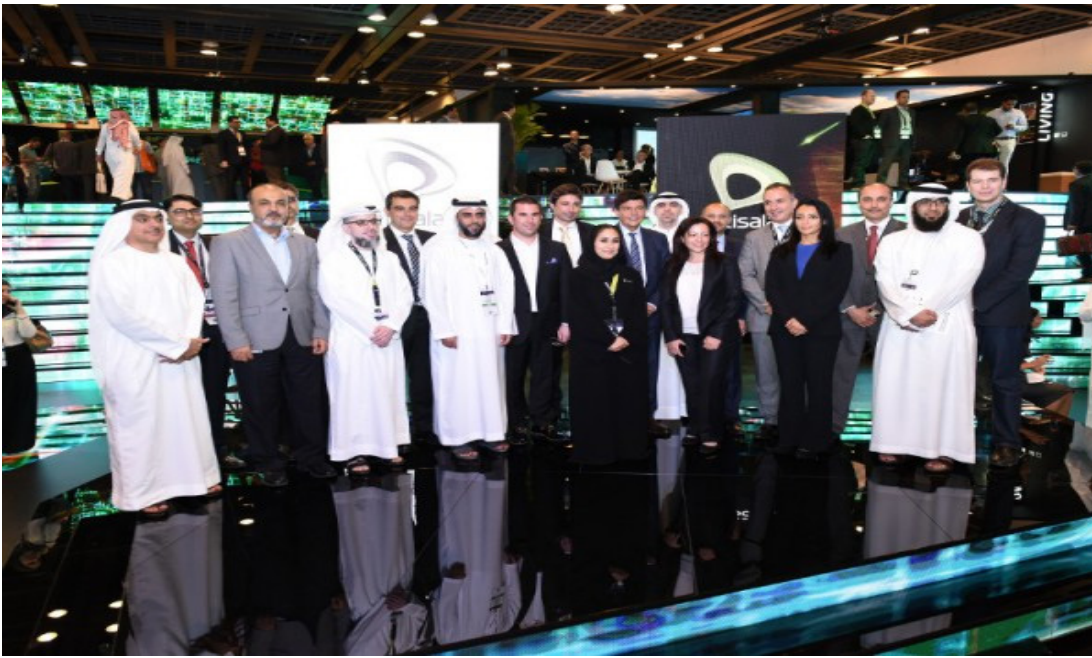


Etisalat UAE launches 'Etisalat Digital' to help governments and businesses lead in the digital space

Etisalat announced today the launch of "Etisalat Digital", its new business unit to help drive digital transformation and to enable enterprises and governments to become smarter through the use of the latest technologies. Today, the pace of digitally driven change is accelerating through every business, irrespective of industry, geographical location or

company size. Digital transformation is a top strategic priority for more than 77 percent of global companies, according to the latest survey from 'The Economist Intelligence Unit'. Organizations are reinventing business practices to gain maximum value from digital technologies such as Cloud Computing, Internet of Things (IoT), Mobile Applications and Big

Data. Digital transformation presents a lucrative market opportunity in the UAE, worth AED50 billion over the next 5-7 years. Etisalat's launch of the new business unit will address this opportunity and will support UAE's leadership objectives to achieve digital transformation in the country. Etisalat Digital's unique value lies in combining the scale, strength and



robust network of the Leading Regional Telco with the agility, skills and platforms of a digital player. Etisalat Digital will rely on the following pillars:

- Worldwide and National talent, including the industry's best Digital Experts, Solution Architects, Project Managers, Data Scientists, and Digital Engineers.
- State-of-the-art digital assets such as Data Centers, Cloud, Cybersecurity,

M2M and IoT platforms, Analytics & Big Data engines as well as digital payment gateways.

- 24x7 Cloud, Security and IoT Command and Control Centers in Abu Dhabi and Dubai for fully managed solutions and proactive monitoring.
- Salvador Anglada, Chief Business Officer, Etisalat said: "With Etisalat Digital we want to accelerate in the digital business. Etisalat is already playing in various

digital domains with strong references such as Dubai Parks and Resorts and the upcoming Dubai Expo 2020. We want to further strengthen our capabilities and processes with a unique service model to better serve our customers in their digital transformation journey." Francisco Salcedo, SVP Digital Solutions, Etisalat said: "We are here to enable a smarter today. This is our purpose and our commitment to our customers. We strongly believe that a smarter education, healthcare, government, industry and economy are possible with the right use of technology.

Together with our customers and partners, we are helping to build a brilliant reality in the UAE." The unit will operate prioritizing customer experience, organizational agility, open innovation and growth. Initially, the unit will center its efforts in the UAE and in the future offer its capabilities to the rest of Etisalat's footprint.

Etisalat gathers world-renowned disruptors under one platform to empower start-ups and SMBs

Etisalat is pleased to announce SME Beyond Borders 2016 – a unique platform created just for the Small and Medium Business (SMB) community to foster awareness on disruptive business models from around the world. This is in line with the UAE government's commitment to fuel growth in the SMB sector. SME Beyond Borders 2016 is an annual event that will bring together entrepreneurs, industry disruptors and investors in a large-scale gathering on October 27th, at the Atlantis Hotel, Palm. Etisalat, as lead content curator of SME Beyond Borders 2016, conceptualized and developed a platform with SME Advisor that is in line with the needs of SMBs to ensure they get meaningful and relevant content to help

them grow their business. John Lincoln, Senior Vice President-SMB, Etisalat, said, "SME Beyond Borders 2016 is an innovative and first-of-its-kind platform that brings together a blend of local and international SMB innovators who are disrupting traditional business models. Etisalat has joined forces with its partners to support this sector by bringing beneficial content to drive incremental value for SMBs. Etisalat's primary objective is to empower start-ups and SMBs with knowledge of global best practices that will help increase productivity and profitability." Gina Larsen, Co-Founder and COO, CPI Business, said: "In a country that sees an average of three events a day, there is a need for Etisalat and SME Advisor, as content co-curators

of SME Beyond Borders 2016, to bring a relevant platform for SMBs. That's exactly why we have to constantly raise the bar and set new benchmarks of excellence so that SMBs can take away real examples and relevant knowledge to help them grow their business." The event is dotted with keynote presentations from distinguished personalities including entrepreneur and best-selling book author, Peter Voogd; and elevator pitch master for business executives world over, Nathan Gold. It will also be debuting a first-ever "Hello Business" pitch competition that enables entrepreneurs and start-ups to pitch for funding in front of the region's top venture capitalists and investors.

Etisalat conducts 5G trial

Etisalat of the United Arab Emirates (UAE) has demonstrated 5G technology offering peak download rates of up to 36Gbps. The telco claimed the test was the first live trial using millimeter wave (mmWave) technology in the Middle East region. Earlier this week UAE rival Du demonstrated 360-degree virtual reality video over 5G in conjunction with Nokia. Both operators say they are hoping to have commercial 5G systems up and running in time for the Expo 2020 in Dubai.



Microsoft doubles cloud investment in Europe to USD 3 bln

Microsoft wants to push the development of cloud computing in Europe and will more than double investment to USD 3 billion. CEO Satya Nadella and President Brad Smith have unveiled a plan which starts with the intention to deliver Microsoft Cloud services from datacenters in France from next year. Cloud services include Microsoft Azure, Office 365, Dynamics 365. The executives also unveiled 78 public policy recommendations in "A Cloud for Global Good", with topic running from next-generational skills, enhancing security and privacy in the digital age, to environmental sustainability, keeping communities safe, and securing a bright future for all children. The book's specific proposals tackle challenges like data flow disruptions that can interrupt critical services, protecting people from online

exploitation and fraud, and ensuring those with disabilities can access e-government services. Embarking on a four day visit to Europe, Nadella and Smith highlighted the importance of ensuring that the cloud is a cloud for global good, and acknowledged the need for tech companies, the community and governments to work together to achieve this. The company already provides cloud services from data centers in the UK -Microsoft Azure and Office 365- and Germany -Microsoft Azure, with Office 365 planned for early 2017. In Germany, access to customer data is controlled by a data trustee, T-Systems International, part of Deutsche Telekom. The collective investments, including data centre hubs in the Netherlands and Ireland, and locations in Austria and Finland, will enable Microsoft to meet anticipated

customer demand in Europe. Customers for Microsoft Cloud include the UK Ministry of Defence, the Renault-Nissan Alliance, Ireland's Health Service Executive and ZF from Germany. The tour will include stops in Dublin, Paris, Berlin and London, with the executives scheduled to meet with European customers, partners, developers and government leaders. Events include keynote presentations in each market and meetings with youth, including young female coders in Paris and refugee children from a Berlin primary school who are using Microsoft software to learn German, and a discussion with teachers in Dublin.

Microsoft creates AI and Research Group

Microsoft has formed a new research organization with more than 5,000 computer scientists and engineers focused on the company's AI product efforts.001 The Microsoft AI and Research Group, which will be led by computer vision luminary Harry Shum, is dedicated "to democratizing AI for every person and

organization, making it more accessible and valuable to everyone and ultimately enabling new ways to solve some of society's toughest challenges." "We live in a time when digital technology is transforming our lives, businesses and the world, but also generating an exponential growth in data and information," said Satya

Nadella, CEO, Microsoft. "At Microsoft, we are focused on empowering both people and organizations, by democratizing access to intelligence to help solve our most pressing challenges. To do this, we are infusing AI into everything we deliver across our computing platforms and experiences."



Orange Business Services improves patient care and infant safety in KSA with e-health solutions

Orange Business Services has signed an ICT contract with the Dr. Samir Abbas Hospital in Jeddah, Saudi Arabia to deliver a range of advanced IT e-Health solutions. The contract aims at improving patient care, decreasing cost and enhancing the working environment within the hospital. Dr. Samir Abbas Group is one of the largest and most established medical groups in Saudi Arabia in the field of Assisted Reproductive Technology (ART) and Women Wellness with four centers in the Kingdom. The new Dr. Abbas Hospital is a 140-bed private hospital providing specialized services in a prime location in Jeddah. Dr. Samir Abbas Hospital in Jeddah is at the forefront of the digital wave that is changing the way services are delivered in the Kingdom. The ICT contract with Orange paved the way for a recently implemented infant protection and tracking solution. A tamper-proof RFID ankle band is attached to the baby which enables location tracking of the infant and sets off an alarm if the infant is moved out of a predefined area within the hospital. This reassures parents and eliminates the risks of abduction and baby swapping. Orange will also implement an information and entertainment solution called "patient infotainment". It provides bedside terminals that incorporate on-demand movies and TV, phone and Internet access, including email, web browsing, hospital intranet, staff alerts, and calls for assistance. Patients can also view their files and their individualized educational material. The system also enables medical and nursing staff to browse medical files and investigations, and input their findings and orders electronically.

ICT key enabler for healthcare in Saudi Arabia

Saudi Arabia is building new hospitals and medical cities to meet the needs of growing populations. With the healthcare sector seeing ICT as a key enabler, Saudi Arabia is a strategic market for Orange Business Services in the region. Orange

addresses the healthcare sector in the Kingdom through the local team operating through the local company - Orange Business Services - with the support of the strategic business unit Orange Healthcare, which is dedicated to supporting the digital transformation of the healthcare sector. Laurent Marini, Managing Director Saudi Arabia, Bahrain and Oman for Orange Business Services/Arabia, said: "Dr. Samir Abbas Group is undergoing a digital transformation and adopting the latest advanced technology to enhance the patient experience. Saudi Arabia is one of the most dynamic and exciting markets in the entire Middle East, where digital transformation is having a major impact and creating the need for a digital partner such as Orange. Our aim is to support Saudi Arabia's achievement of its 2030 vision and its 2020 National Transformation Program, and to be the digital partner of choice to the government, major infrastructure projects and enterprise sector." Professor Samir Abbas, Director of the Board of Dr. Samir Abbas Hospital, Senior Consultant Obstetrician and Gynecologist and Assisted Reproductive Technology Subspecialist, said: "Our hospital is providing the state of the art specialized medical services and has built a very strong and innovative information technology infrastructure. This infrastructure relies upon the latest in virtualization hardware and internet protocol (IP) software, such as nurse call, IP telecommunication, IP television, IP signage, infant abduction protection, hospital information system and picture



archiving and communication system. The hospital contracted with Orange Business Services to integrate the various software applications in order to enhance patient safety and provide an enjoyable and comfortable patient experience." In Saudi Arabia, Orange Business Services has developed strong customer relationships across the Kingdom in a range of key industries, such as Oil & Gas, healthcare, banking and more recently, smart cities. In addition, Orange supports government bodies and other growing local KSA companies as they expand beyond the Kingdom, as well as the multinational companies which operate within Saudi Arabia. In 2012 Orange Business Services established a local company, Orange Business Arabia and operates from three offices in the main cities across the three provinces of KSA – Riyadh, Jeddah and Dammam. The growing team includes specialists in pre-sales, sales and customer service, as well as consulting.



Bangkok 14-17 November



7th Private Sector

Chief Regulatory Officers (CRO)
Meeting

13 November 2016
Bangkok, Thailand

Objective: The CRO meeting brings together senior industry executives to share experiences and exchange ideas on how to strengthen the private sector's involvement and engagement in global, regional and national initiatives and to identify mechanisms to better foster an enabling environment for future development of the sector. This year's meeting follows-up on the outcomes of the 6th CRO meeting held in Sharm el-Sheikh, Egypt, on 11 May 2016.

Registration Online

<http://www.itu.int/go/regitud>

Contact

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“Crossing the Chasm” - Continuous Transformation of the Business is the best approach for Sustainable Growth

GBI's CEO advocates a game-changing and holistic industry approach that delivers value to the whole ecosystem

Q: What is your future plans for GBI?

A: GBI will keep evolving and reinventing itself in order to sustain its edge, to cope with the market dynamics. We will always be alert and ready to cater for tomorrow's needs. At the same time, we are committed to bringing more value and to deliver on our promises to our partners, customers, shareholders and to the markets where we operate in the GCC - the Middle East at large, Asia and Europe.

Q: What are your views on the market and how can companies overcome the challenges?

A: We need to look at the market dynamics shift from a fresh perspective, since we have noticed that our traditional business approach is not delivering on our aspiration.

Currently, the market is driven mainly by the end-user; it is about their experience: how quickly their HDMI video is loading, ability to stream seamlessly a game, etc... In order to understand the profile of today's end-user - young, technology-savvy digital natives - who simply want to be connected at all time, beyond mobility. It is about personalized and virtualized experience.

In conclusion, the end-users do not trace if a certain network passes through China, Iraq or Turkey. They want to get into a portal to create virtual machines; they want to make sure all the applications work for them. The companies that will be able to cater to those end-users will be the companies that choose to build a sustainable business model. These will be either players with legacy which have transformed their mindset to become more agile, flexible and innovative, or there will be an emergence of a new breed of companies that will take over since they have what is needed to serve the end-user.



Amr Eid
Chief Executive Officer
Gulf Bridge International



“ GBI successfully transformed into a global shared and managed services provider that bridges the East to the West through the Middle East ”

We, at GBI, have recognized this challenge. This new realities have triggered the company's successful transformation what I call a Transformation bottleneck. This has allowed us to introduce a new structure, to revamp processes and to integrate more intelligence into our Network, which, in turn, enabled us to provide more products that cater to carriers and their enterprise customers, while meeting the end-users' expectations.

Today, we would like to invite all regional stakeholders to collaborate in a new mindset by shifting their current business model and by adopting a fresh and flexible approach that will open a new horizon of opportunities in their countries and for the region as a whole. We believe that only then, stakeholders will be able to unlock a new hype of business growth that will bring more value to the end-users. Consequently, this new industry vision will positively impact the region's economies and will be more aligned with the region Governments' directions and future plans.

Embracing a new business approach means greater integration of smart services, emerging technologies and a leading position in the global competition landscape for the establishment of smart cities, smart governments and smart living.

Q: In light of the above, what is your message to the regulatory bodies across the region?

A: Allow me to thank all regulators in the Middle East for their support and acceptance of any constructive suggestions from the private and the public sectors.

In order to bring value to countries, citizens and economies, there is a need for a new regulatory framework that emphasizes the adoption of innovation, the emergence of new technologies, and welcomes new entrants such as OTT's, Cloud service providers and others.

Regulators today have the mission to act as a catalyst for growth, in order for them to maximize the value they bring to a given country. I believe regulators should be very quick in adopting changes and in pushing companies out of their comfort zone, by enabling competition and demonstrating an “open attitude” for the latest technological developments. Today, many services are regulated strictly, which may not be the best scenario.

For example, the Middle East IP Transit Corridors require a matrix approach. Every country in the Middle East can facilitate and grant IP Transit in a similar way to the Open Skies policy. We need to look at the Middle East as a combined group of countries that facilitates transit supported by a regulatory framework. Transit networks do not destroy the domestic business because it's like fluid dynamics: When you block the liquid flow somewhere, it will not stop, but the fluid will go around the obstacle.

Here is another example: It is true that the expensive cross-connect charges and the expensive backhaul cost are considered a good income, yet at the same time they have a substantial indirect cost on the national economy. This would lead to shying investments, waste of potential to attracting regional and international business, and stall the country's technology advancement. In a nutshell, it will deprive a country from the opportunity to catch up with the rest of the world. This is why we appeal to regulators to embrace a more holistic approach: to consider creative neutral charges, to establish free zones and attract global and regional players into their ecosystem. Once this happens, regulators will witness some income decline from such services at the early stages and soon enough, this income

we regain its momentum and would show a steady and sustainable growth until the current foreseen revenues are surpassed. The European experience in that perspective is a good example.

More to the point. The introduction of cloud services has necessitated the development of a new and more flexible regulatory framework. If we regulate the cloud services more we are destroying the whole concept of virtualization.

There are a lot of examples that can be highlighted for the regulators to consider. We are keen to work with them closely and to turn the Middle East into a global transit hub.

“ The industry needs to reconsider the current business model to be part of the new transformed telecom market, where OTTs are becoming network providers and operators ”

Q: In your opinion, what is the next step to tackle the potential that you have highlighted?

A: We would like to invite all industry stakeholders to initiate a real dialogue that will focus on the current challenges, the Smart Future needs, creating synergies and aligning our efforts with the support of regulators.

Through our collaboration we can provide the end-users with a virtualized network that consists of a mesh of corridors and transit routes that goes across many countries at different latencies. By creating this hybrid virtual networks, we can cater to the cloud-based services.

In order for us to predict the future, we will need to make it together!

REGIONAL NEWS

Workshop on Oman government network discusses latest services



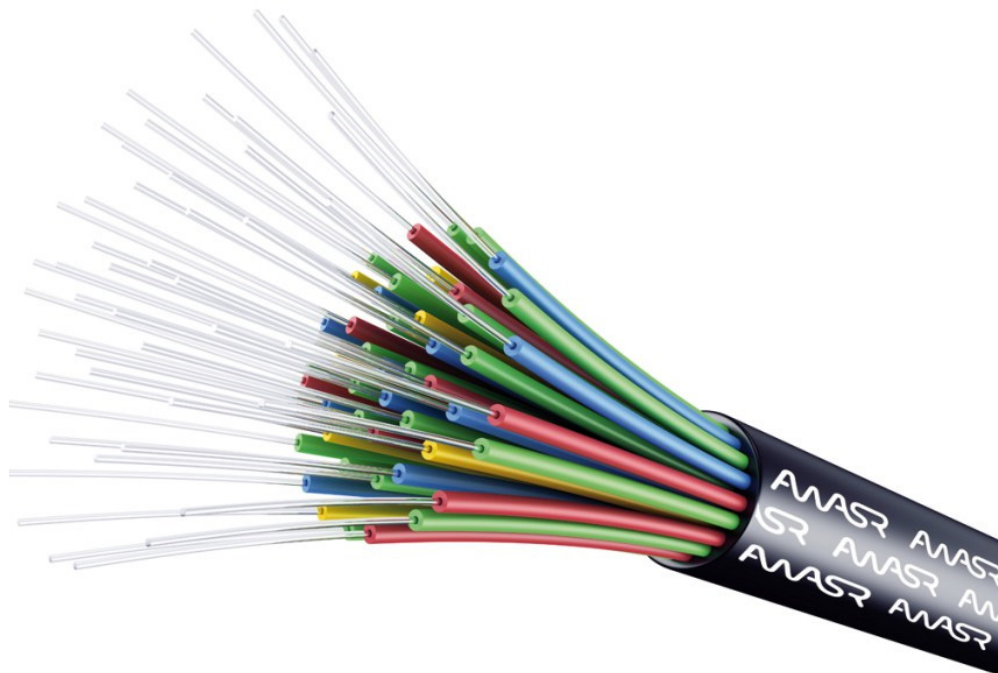
In a bid to drive forward the eGovernment transformation in the sultanate, the Information Technology Authority (ITA), in

collaboration with Omantel, conducted a two-day workshop on the Oman Government Network (OGN) at InterContinental Muscat. According to a press release, participants discussed the latest services and upgrades to the Multiprotocol Label Switching (MPLS) system and the enhancement of available services delivered to customers. The objective of the workshop was to provide a communication platform where all stakeholders of this government initiative were present in one place, allowing them to share experiences, learn about ITA's

and Omantel's plans in this project, and the new advancements related to MPLS. MPLS is a type of data-carrying technique for high-performance telecommunication networks, that directs data from one network node to the next based on short path labels rather than long network addresses, avoiding complex lookups in a routing table. Nuzha Mohammed al Maharbi, team leader, Oman Government Network at ITA said, "Oman Government Network is a single communication national infrastructure considering it to be a vital tool towards the advancement of our eGovernment transformation and provision of efficient government eServices. In September 2016, OGN linked 1,025 government websites from 80 government entities into a single unified network."

Oman reinforces telecom and IT infrastructure through Awasr

Oman is upbeat about its digital evolution journey aiming to bolster sustainable development efforts in the country. The sultanate has reason to celebrate as the launch of Awasr, the country's first specialized high speed fiber Internet service provider, in the first quarter of the year, will definitely enhance the telecommunications and information technology sector. Awasr focuses on providing ultra-high speed Internet for businesses and homes, and is expected to see a higher public demand on its packages, which come with exceptional features. The packages enhance productivity and efficiency while reducing costs, time and efforts, especially with the introduction of 1 GB package in the Omani market for the first time. Ghaith bin Mohammed al Darmaki, chief technology officer, Awasr, said, "Undoubtedly, enhancing the use of ultra-high speed Internet in society plays a pivotal role in bolstering the sultanate's



continuous efforts for sustainable development. Through our fiber home and business packages offered at competitive prices, we will contribute to the country's vision for a digitally empowered future. We will arm the Omani generation with the concepts of innovation, and transfer and localize knowledge to achieve the Omani government's vision to provide better life and sustainable development." Awasr offers four fibernet home packages with 20 Mbps, 50 Mbps, 150 Mbps and 1 Gbps speeds, and several fibernet business packages with the following speeds: 5 Mbps for small businesses, 10 Mbps and 30 Mbps for medium businesses and 70 Mbps

and 120 Mbps for large businesses. The Internet was a first step towards what we know as the World Wide Web, the software protocol governing the online world and influencing how we do business, learn, socialize and find entertainment. Whether it is empowering our schools with the latest learning tools, linking our hospitals directly with the global medical community or the increasing permeation of smart phones and tablets, the sultanate's demand for Internet capacity seems unstoppable. Driving this remarkable growth is the development of the knowledge economy. As information increasingly becomes the valued commodity, broadband networks

are replacing highways and shipping lanes as the core arteries over which goods are exchanged. On a consumer level, high capacity activities like video sharing on desktops and mobile devices are growing at an exponential rate. Beyond the individual, broadband connectivity is playing an increasing role in underpinning broader societal progress. This is particularly evident in medicine, where doctors here can work in real time with doctors from Canada, the US or China. Awasr has recently been awarded Grade 1 Licence by the local Telecommunications Regulatory Authority (TRA).

Pakistan offers ample opportunities for investment in the telecom sector

Pakistan's telecom revolution has made the country a lucrative destination for both the local and foreign investors, a minister said. "Pakistan offers ample opportunities for investment in the telecom sector and the government accords highest priority to the development of IT (information technology) and telecom sector," Anusha Rehman, minister for IT and telecom said, during a meeting with Jon Eddy, head of Emerging Markets Vimpelcom Limited, which owns Mobilink. Rehman said the liberal and investment-friendly policies, economic reforms introduced by the

present government, are phenomenal. "Nothing less than a telecom revolution has been witnessed in IT and telecom sector," she added. "We believe in growth through public- private partnership and expect Mobilink to play a more meaningful role in realizing the vision of digital Pakistan." Minister Rehman said the government is pursuing the vision of digital Pakistan by connecting people of un-served /under-served areas and providing platforms for e-services. "We believe in culmination of digital divide that's why under-served and marginalized areas of the country are our

main focus," she said. Eddy appreciated the government's telecom policy, which has spurred healthy competition among the leading cellular companies. "Pakistan's telecom sector has great potential and Mobilink has expanded its network and operations in Pakistan and (is) using Pakistan as a hub for (providing) all the services to its affiliates," Eddy said. He reiterated his company's commitment towards facilitating the people of Pakistan with modern information and communication technology solutions.

Telecom Egypt selects Ciena for resilient optical mesh network

Telecom Egypt is deploying Ciena's GeoMesh solution and packet-optical platforms for reliable, low-latency connectivity to meet surging demands for high-bandwidth services on its national terrestrial network and submarine links between the Mediterranean and Asia. Telecom Egypt is the largest provider of fixed line services in the Middle East and Africa and offers a complete range of international telecommunications services, including voice, data, dark fiber, colocation and tailored

data solutions. With a more agile and scalable network, Telecom Egypt's wholesale carrier, service provider, internet content provider and consortium customers will be able to provide diverse data transit routes for international data center interconnect (DCI), disaster recovery, cloud-based services, and other high-capacity services for enterprise and consumer end-customers. Ciena said that the GeoMesh solution also allows Telecom Egypt to proactively resolve unexpected issues and main-

tain network reliability. Ciena's 6500 and 5430 packet-optical platforms, powered by WaveLogic Extreme coherent optics, allows Telecom Egypt to offer a diverse mix of services over high-capacity wavelengths; supporting any type of traffic, including fully transparent optical transport networks (OTN), virtual private networks (VPN), optical VPN and Ethernet services, all with stringent SLAs.

Dot bangla domain to open from December 16

Dot bangla domain would be opened for mass users from December 16. State Minister for Posts and Telecommunications Tarana Halim today came up with the announcement at a press conference at her ministry office. "We will finalize the policy, terms and conditions, pricing and managerial manpower for the dot bangla domain soon to open it for mass users from December 16," she revealed. Tarana said before opening it for public; all the procedures are needed to get the approval of the board of directors of the state-owned Bangladesh Telecommunications Company Limited (BTCL), the assigned organization to handle the domain. The International Corporation of Assigned Names and Numbers (ICANN) has officially allotted the dot bangla (.bangla) internet domain to Bangladesh on October 4 after long procedures. Indian state West Bengal and Sierra Leone, one of whose official languages is Bangla, had also applied for the internationalized domain name (IDN) label-dot bangla. "Through capturing the domain, Bangla would strengthen its presence in cyber space," hoped the state minister. Replying to a query regarding pricing, Tarana Halim said they have primarily set prices and conditions, but all those are needed to be approved by the BTCL board. BTCL would seek applications from the users after the opening of the



.bangla domain. Earlier, ICANN-approved another domain label for Bangladesh as dot bd or .bd. From now on, .bangla is Bangladesh's own Unicode domain label. It is the second country code top-level domain (TLD) for Bangla websites. According to the BTCL, the total registered users of .bd have reached at 36,500. Domain names, such as "bssnews.net", were originally designed only to support

ASCII characters. In 2003, a specification was released that allows most Unicode characters to be used in domain names. IDNs are supported by all modern browsers and email programmes, so people can use links in their native languages. Therefore, users can go to the BTCL website (www.btcl.com.bd) by typing "BTCL Bangla" in Bangla fonts in the browser.

World's second-largest cell phone Co. Vodafone enters Iran market



Vodafone has agreed a partnership with Iranian Internet firm HiWEB to help modernize its network, the companies said on Tuesday, making the British company the latest Western firm to enter Iran after sanctions were lifted. Vodafone, the world's second largest carrier by subscribers after China Mobile Ltd., said the agreement to help modernize HiWEB's network and IT infrastructure would also benefit its multinational corporate clients when they travel to Iran. Many European companies have sought to capitalize on the opening up of the region's second largest economy since US sanctions were lifted on Jan. 16 after Iran agreed to curtail its atomic energy program, Reuters reported. With a young population and high levels of mobile ownership, Iran is seen as an opportunity for telecoms companies seeking to expand into frontier markets. "Vodafone's corporate customers will get the benefit of quality network services in the country and

HiWEB will be able to access Vodafone's global expertise," Vodafone Partner Markets Chief Executive Diego Massidda said in a statement on Tuesday. While Iran has a higher mobile-phone penetration rate than the US or Germany, its mobile data consumption lags, underlining a well of opportunity for investment in mobile Internet services as the country catches up. Vodafone's French rival Orange (ORAN. PA) said at the end of August it was in talks with the Mobile Telecommunication Company of Iran, the country's largest mobile operator. Orange, France's largest telecommunications company, already has a technical-assistance contract with the Iranian company, The Wall Street Journal said. "All operators around the world are looking for a form of cooperation with Iran," said Bruno Mettling, Orange's deputy chief executive for the Middle East and Africa, in an interview in London in July. The agreement with HiWEB fits into Vodafone's strategy of focusing on fast-growing emerging markets, which also include India, Turkey and South Africa. "It enables us to have on the ground a partner that can serve our multinational corporate clients," a Vodafone spokesman said. Privatized in 2009, HiWEB got a nationwide license

to supply mobile Internet services in 2014 and has won a government contract to provide high-speed Internet exclusively to 25,000 villages across the country for a decade. It is also looking to expand its mobile and fixed services in cities with a focus on business clients.

More foreign companies coming in

Other British companies entering Iran include British Airways, which resumed direct flights to Tehran in September, and BP (B.P.L) which was reported to have bought crude from the National Iranian Oil Company (NIOC) this month. A host of foreign investors, including Boeing Co., Airbus Group SE, Peugeot-maker Groupe PSA and German industrial giant Siemens AG, have also signed deals in Iran since the lifting of sanctions in January. Earlier this month, the US Treasury loosened restrictions on Iran's ability to trade in the US dollar, and widened the pool of potential business partners in Iran for non-American investors. Washington ruled that non-American investors can partner with Iranian entities even if those entities are still on the US sanctions list, as long as the entities weren't controlling shareholders in any new venture. That opens the door for

a host of fresh deal-making. The Vodafone spokesman said "the recent lifting of restrictions on dollar trading is helpful" but the wider lifting of international sanctions in January "was the main driver". Vodafone said it would assist HiWEB in marketing, distribution and sales, including the provision of Internet of Things (IoT) services which involve enabling Internet connectivity for cars and other objects. British employers' group the CBI welcomed the news, saying Britain needed to develop its export links more than ever following the June vote to leave the European Union. "Businesses recognize there are emerging opportunities in Iran," the spokesman said. "As with other Persian Gulf states, Iran has a growing middle class and infrastructure, energy and educational projects in need of foreign investment." The move by Vodafone is another significant vote of confidence. HiWEB began in 2003 as a subsidiary of Iran's Ministry of Industry and Mine, according to its website.

Dubai tops Mideast smart city index

Dubai has been ranked first in a study undertaken by global research firm Navigant and commissioned by Huawei that studied several cities in the Middle East region for its vision and execution of smart city initiatives. The Huawei Smart City Index commended Dubai for its strategic vision coupled with a clear understanding of the practical requirements to deliver on the vision. The study was undertaken by Navigant and Huawei with the aim of understanding the level of readiness of cities in the region for the next level of smart city adoption and deployment. Ten Gulf cities were studied by the duo for their strategy and execution of smart city campaigns. The study, which was released by Huawei and Navigant on the first day of Gitex 2016 yesterday, aimed at understanding the level of readiness of cities in the region for the next level of

smart city adoption and deployment. Safder Nazir, the vice president of Smart Cities & IoT, Huawei, Middle East said: "As countries in the Gulf are increasingly diversifying their economies away from fossil fuels, they are also coping with the need for rapid digitalization in business and government." "Huawei is committed to helping countries in the region in their digital transformation through smart city initiatives that are customized to meet specific needs. We undertook the Gulf States Smart City Index in order to better understand the



current levels of readiness of different cities so that we are better able to serve this region," he added. The study found that the foundation laid by Dubai's leaders

and the Smart Dubai Office provides an excellent basis for a range of innovations that have a significant impact on the city's operations and quality of life. Eric Woods, research director at Navigant Consulting, who led the study, said: "Dubai stands out in this Navigant Research ranking as a leader among cities for its strategic vision and ambitious implementation program. Overall, cities in the region are expanding their digital infrastructures, developing new services, and investing in large-scale

building programs." "The emerging focus on open data and data analytics programs is an important next step. This will be one of the most important developments in the next stage of smart city evolution in the Gulf region," he added. The Smart Dubai roadmap has targeted the delivery of 1,000 services by 2017 across 100 initiatives. As of September 2016, it had documented more than 500 current and planned smart services and initiatives, of which 150 have been completed, said the

study. With innovative programs such as Dubai Data Initiative for data sharing and data analytics, smart mobility solutions for traffic control, a smarter grid program for better management of power and water consumption, smart health services, smart police force and other mobile-enabled e-Government services, the city is a leading example of how smart city strategies need to evolve and be refreshed to maintain focus and momentum, it added.

Safe city systems to support smart city development in Africa

Safe and smart city systems initially take the form of effectively integrated existing systems, already deployed by various departments and organizations, to provide new capabilities, such as video sharing among emergency responders and providing geographic information systems maps to improve response times. Moreover, the success of integrated systems in supporting specific functions serves as the basis for broader open systems to provide smart city systems for citizens to use, says information and communication multinational Huawei enterprise business group government and public utility VP Edwin Diender. "Safe cities, almost by necessity, are the first step towards smart cities. The priorities, as identified by the customer, in the case of cities, the authorities and agencies, are used to constitute the initial functionalities of the system. "Once the integrated platform is in place to support these functions, it becomes easier to add additional functionalities and agencies, especially as the benefits of a shared information platform are realised and sharing of information between agencies becomes routine practice." Huawei Kenya CEO Dean Yu notes that the Huawei safe city platform has been in place in Nairobi and Mombasa for a year and is a unified communications platform incorporating the police, the Ministry of the Interior and emergency medical services. Huawei Kenya wireless product director Rose Moyo highlights that the safe city system is scalable and can thus be deployed iteratively and within existing budgets. The closed-circuit

television system in Nairobi, which is currently used to support police operations by gathering video evidence, tracking car license plate numbers and providing live video feeds from cameras near crime scenes, is also being used to monitor traffic congestion in the city. Diender notes that these basic functionalities are augmented with additional information feeds and contextualised through combining the information in backend analytics systems, such as using the location of an emergency call from a mobile device to provide the precise location of the caller without having to ask the caller to provide that detail. "Functionality such as caller location dramatically improves the value gleaned from emergency calls, reduces response times and helps to ensure that the correct resources are deployed to the scene." Huawei global government and public utility president Chen Qi points out that the crime rate in Nairobi has decreased by about 46% over the past year, partly owing to the fact that criminals know they are being watched, as well as there being improved evidence to support convictions once criminals are apprehended. Moyo highlights that the platform is designed as an open platform that enables the integration of existing systems, including non-Huawei systems, into a single platform without the need to replace any existing systems. Diender adds that part of the design of the platform is that it reuses existing communications systems to support different requirements. For example, existing second-generation telecommunications systems are often

leveraged to provide connectivity for sensor networks, while functions that have higher bandwidth requirements, such as video, voice and data sharing, use third-generation and fourth-generation (4G) connectivity. The open platform can also intelligently leverage fixed and mobile connectivity to improve the speed and efficiency of data sharing between the various stakeholders. "Once this platform is in place, authorities can provide systems to improve citizen interaction, and the improved efficiencies can help to bolster economies," says Diender. The progressive expansion of smart city systems also means ensuring laws and regulations address such issues as private information protection, and that the solutions that respond to those regulations are then in place for other systems to use, says Moyo. "Eventually opening these safe city platforms to other public and private organisations enables the vision of truly smart cities to take shape," concludes Diender. The summit showcased safe city best practices in cities like Nairobi and Mombasa. As part of its strategy of industry collaboration to drive innovative safe city solutions, Huawei demonstrated its new 4G and cloud-based smart safe city solutions, which were codeveloped with partners, and shared its other partner innovations successfully deployed in Africa. Huawei partnered with Safaricom to deploy the Kenya National Police Service system in Nairobi and Mombasa.

Broadband, Smartphone adoption rises in MENA

A new GSMA report has revealed that mobile broadband networks will account for 61 percent of mobile connections by 2020, up from 41 percent in the second quarter, across the diverse Middle East and North Africa (MENA) region. The report published at the GSMA Mobile 360 Series – Middle East conference in UAE, highlights that there are currently 339 million unique mobile subscribers in Q2 across the region's twenty five markets, a figure expected to rise to 385 million by 2020.



Tunisie Telecom completes field trials of G.fast technology with ADTRAN

Tunisie Telecom (TT), the Telecom Services Operator for both residential and business broadband solutions in Tunisia, has successfully completed a series of lab and field trials of G.fast technology with ADTRAN®, Inc, one of the providers of next-generation networking solutions. Forming a vital part of TT's vision and strategy towards digitization, these trials demonstrate TT's commitment to modernizing its network and enriching its service portfolio in order to stay ahead of its competitors as customer requirements evolve. The successful trials were able to deliver ultrafast and Gigabit services, which have reached up to 800 Mbits/s at a distance of about 100 meters over existing copper infrastructure, while demonstrating full IP integration and readiness for NFV/SDN network automation. "The outcome of these trials has been very positive in testing possible directions for our future broadband access development. They show how a technology such as G.fast can be used to increase the value of our existing infrastructure while satisfying greater bandwidth demand, allowing more agility and reducing time-to-deploy," said Mr. Nizar Bouguila, CEO at Tunisie Telecom. "Tunisie Telecom is committed to providing affordable high-speed broadband services on a widespread basis and these trials mark the first time we've taken a DevOps approach to deploying new services. Our network experts worked effectively with

ADTRAN's team to build, test and release trial results. Mr. Nizar Bouguila, CEO at Tunisie Telecom said. "Another key consideration was enabling quality-of-service for customer traffic differentiation, confirming that G.fast would allow us to serve the needs of our business customers as well as expanding our footprint in B2B marketplace." TT's extensive ADTRAN G.fast trials were timed to coincide with the hottest period of the year, where outside air temperatures in the capital city, Tunis, regularly exceed 40oC (104oF), and hit 50oC (122oF) within cabinets and distribution points. The trials have also seen the advanced reverse-powering capability of the ADTRAN 500G series of G.fast Distribution Point Units (DPU) put under particular scrutiny, as it enables rapid rollout of ultra-broadband services to premises where the status of electrical power supply is uncertain. "Choosing G.fast technology as a key



part of its global access vision will ensure Tunisie Telecom is well-equipped to face new competitive challenges and provide the step-change in broadband performance that subscribers demand, wherever they are," said Ronan Kelly, chief technology officer for EMEA and APAC at ADTRAN. "We hope to extend our successful collaboration with TT to deliver the superior, differentiated high-speed service offerings it needs to win against mobile operators and new market entrants."

Bahrain's ICT market most dynamic in ME: BATELCO CEO

Bahrain's Information and Communications Technology (ICT) market is one of the most dynamic in the Middle East region with a mobile penetration of 183 per cent, said Batelco CEO Muna Al Hashemi, adding that the industry is highly developed and continuously growing towards a digital society. Al Hashemi was speaking during the monthly '@ the Majlis', event hosted at the Capital Club. The networking event, attended by Club Members and VIP officials, focused on discussing Batelco's aim to further develop the telecommunications sector in the Kingdom by providing customers with innovative digital solutions. "Batelco has played a pivotal role in the country's development

as a major communications hub and today we are the leading digital communications' provider, continuing to lead and shape the consumer and enterprise market," she said. Al Hashemi also addressed the challenges faced during her professional journey at Batelco coupled with the pressure of competition in the local market. "While the journey was very challenging, it was also exciting. Batelco is one of the leading employers in the Kingdom; it instills the value of equal opportunities by developing a long-term career growth plan for employees. We take a pride in our team, our success is due to their continuous dedication and growth," Al Hashemi said. "The ongoing competitive pressure in

the market acts as a motivation for us to stay focused on exceeding customer expectations by providing the highest-quality service experience," she added. Further commenting on the event, Sumeet Jhingan, General Manager of Capital Club Bahrain, said, "The @ the Majlis series has been successful in bringing Club members together to network and further discuss pressing and current economic and business issues." The event held on a monthly basis, features a number of executives from both the government and private sector.

MTN Irancell shows off LTE-A network

Iran's second largest wireless operator by subscribers, MTN Irancell, says it has carried out trials of LTE-Advanced (LTE-A) 4.5G mobile data services. A report from Tasnim news agency cites the cellco's chairman and CEO Alireza Ghalambor

Dezfouli as saying that the tests achieved peak download speeds of 1.2Gbps, with upload speeds reaching 66Mbps. The trials used two carriers in the 1800MHz band. Separately, Irancell's CEO says the firm has now deployed 3.5GHz time division duplex

LTE (TD-LTE) fixed-wireless networks in 49 cities, having begun a project in August this year to upgrade its legacy WiMAX systems to the faster technology. Irancell now claims to be serving 2.6 million customers on its 4G networks.

UAE ranks third most connected country globally

Jumping five points to rank third, UAE residents are today more connected than the citizens of Norway, Germany, Saudi Arabia, the United Kingdom, Switzerland and Denmark, according to research firm GfK's Connected Consumer Index 2016 report. Fahad Al Bannai, CEO of Axiom Telecom, said in a statement on Thursday that the UAE businesses that do not embrace mobile technology as part of their efforts to enhance the consumer experience risk being sidelined in today's increasingly competitive environment. With the average person in the UAE now owning at least three connected devices at one time, according to Google's latest Connected Consumer Survey, he said mobile technology is having a profound influence on the consumer decision-making process. According to the Google study, nearly two-thirds (63 per cent) of

the UAE residents use their Smartphones to search for local businesses. In addition, 84 per cent go online at least as often via a Smartphone as a computer — a whopping 44 per cent increase since 2012, and more than three-quarters (76 per cent) of residents look to the internet when seeking information. However, traditional mobile technology is not the only way consumers connect with data services, as wearable and smart devices are also penetrating the way people live and interact. In GfK's Connected Consumer Index 2016, the UAE scored 995 points, ranking behind Hong Kong and North America that ranked first and second respectively in the list of 78 countries. Globally, the average score in the index stood at 313, while for the Middle East and Africa region, it was at 127. "As our lives become increasingly connected to the devices we use on a daily basis,

there is a shift in the way we connect to data services and consequently engage with our surroundings," stated Al Bannai. "Today, UAE consumers live online. It's the first place they turn to when seeking information or a service — and if your business is not there when they look, that is a lost opportunity. In today's fast-paced and information-driven world, having a strong online presence is instrumental to the success of every business." He said that people go online because they want to meet some of their basic universal needs, whether it is interpersonal connection, self-expression, exploration or for the sake of convenience. If brands and retailers manage are able to successfully tap into these personal motivators, they will have an incredible opportunity to reach consumers anytime, anywhere.

SATELLITE NEWS

DOD Uncertain that Smallsats can Handle Big Missions

The U.S. government is still waiting to close the business case on widespread use of small satellites and hosted payloads, U.S. Air Force (USAF) Assistant Deputy Under-Secretary David Hardy said during a keynote speech at the Oct. 20 Hosted Payload and Smallsat Summit in Washington, D.C. The USAF has requested a \$5.5 billion budget for space investment in 2017, and while Hardy noted the enormous progress industry has made in the smallsat space within the last 10 years – particularly when it comes to reducing the cost of entry into space – very little of the proposed budget will go toward this technology until the Department of Defense (DOD) can be convinced they can fulfill the missions necessary for U.S. defense. “When it comes to small satellites, the answer [for what their progress means for DOD] is still uncertain,” said Hardy. “Yes, it is true there have been tremendous capabilities in being able to make the satellite bus smaller

and make the sensors smaller, however, this has been accompanied with the increase in requirements we need from our space. Hardy’s remarks come days after another Department of Defense (DOD) official, Deputy Assistant Secretary of Defense for Space Policy Doug Loverro mentioned small satellites as a way to boost resiliency in space. Hardy defended DOD’s apprehension to make use of smallsats as an issue that has much to do with their current capability to provide the same services as larger, geosynchronous satellites. “On the DOD’s side the issue has always been packing in sufficient capability to close the cost-versus-capability case. For many applications we have in the military, power and aperture – or power aperture – are the coin of the realm, and it is hard for small satellites, oftentimes, to meet the sufficient capability to argue that it is the cost-effective, militarily important way to meet the requirement,” he said. Tradition-

ally, the USAF and DOD have trended toward larger and larger satellites as adding capabilities to a single platform has proven to be the most cost-effective way for the U.S. government to scale up, particularly given that the cost of launch has historically been more expensive than it currently is. “This crab-walked us, over time, into building ever-larger satellites. That is combined with the fact that the space industry is naturally conservative. We invented satellites and moved into space driven by a defense imperative,” said Hardy. “So, what drove us to this tension to always wanting to meet the need but also being conservative – we were worried about the thing being broken when it got up there – and we still retain a pretty risk-averse approach with which we build satellites.”

Thaicom Subsidiary Buys Ka-band Satellite from China Great Wall Industry



International Satellite Company (ISC), a subsidiary of Thai satellite operator Thaicom, has entered into a satellite procurement contract with China Great Wall Industry Corporation (CGWIC) for a \$208 million Ka-band satellite. The subsidiary is

buying the satellite on behalf of an unnamed business partner under which the satellite will be licensed and whose orbital slot it will use. Thaicom said in a press release that the partner will provide the company with advanced service fees that will serve as the source of funding for the construction of the satellite, and that the project is expected to contribute to increased revenue for the operator. The satellite is designed to carry 37 GHz of Ka-band capacity, equivalent to 53 Gbps; ISC has already agreed to lease

out the entire capacity to a major customer. Once completed around the end of 2019, the satellite is expected to provide broadband and mobility services in China, Hong Kong, Taiwan, South Korea, Japan, Malaysia, Singapore, the Philippines, Vietnam, Laos, Cambodia, and Thailand over its 15-year lifetime. State-owned CGWIC is the only commercial organization authorized by the Chinese government to provide satellite, commercial launch services and to carry out international space cooperation. Other recent commercial contracts include Apstar 9 for APT Satellite of Honk Kong and Belintersat 1 for the new Belarusian operator Belintersat.

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Inmarsat and Vodafone form IoT Roaming Agreement



Inmarsat and Vodafone have established a roaming agreement that lets Internet of Things (IoT) devices use international satellite and cellular roaming connectivity. The agreement will use the Inmarsat I-4 satellite network, providing

global L-band coverage for Vodafone IoT customers. "This agreement marks a first for Inmarsat; enabling a mobile operator to utilize broadband roaming services on our global network," said Rupert Pearce, CEO, Inmarsat. In February Inmarsat joined the LoRa Alliance, an international non-profit organization founded in 2015 to standardize Low Power Wide Area Networks (LPWAN) for IoT. Satellite-powered IoT allows organizations to extend their services beyond terrestrial networks.

Telespazio Commits to Driving More HD, Ultra-HD to Eutelsat's Hotbird Satellites



Telespazio, a global broadcast service provider, has formed a new agreement with Eutelsat to promote the growth of higher resolution video channels at the operator's Hotbird video neighborhood. In addition to pursuing standard digital

platforms in first and Second Generation Digital Video Broadcast-Satellite (DVB-S and DVB-S2), Telespazio has committed to accelerating the move to High Definition and Ultra-HD from the video neighborhood. Eutelsat's cluster of three high-power Hotbird satellites at 13 degrees east provide coverage of Europe, the Middle East and North Africa. Together they deliver 1,000 channels in 40 languages to more than 135 million homes through Direct-to-Home (DTH) reception, cable, IP and Digital Terrestrial Television (DTT) networks.

Analyst: HD Growth Slowed in MENA but Not Done, Yet

The growth rate of High Definition (HD) channels among Arab countries has slowed, but not stopped, according to research from Arab Advisors Group. Findings from the group's research show that 61 more HD channels started broadcasting from February 2014 to March 2015, reaching a total of 195 channels. From March 2015 to May 2016 however, the region saw only 17 more HD channels, reaching 212. Mohammed Al Shawwa, general manager of Arab Advisors Group, told Via Satellite that the likely reason for the slowdown of HD is because most

of the heavyweight broadcasters have already made the transition, meaning the biggest investments have already been committed. "When broadcast in HD was first introduced, a large chunk of the 'big name' channels rushed to offer this viewing experience to their viewers," Al Shawwa explained. "For them, the investments made toward broadcasting in HD were justifiable, given the huge viewer base and the revenues generated from it. As for other channels that were not as fast to jump on the wagon, the investment in upgrading to HD might have not been

feasible so far." Al Shawwa said channels across the region can essentially be divided into two categories: big name channels that enjoy a huge viewer base, and other smaller channels with less reach. Now that most of the largest players have already committed to HD, the remaining uptake across the region will be at a slower pace. There are still regions in the Arab World where HD is growing faster than others. Al Shawwa said Gulf Cooperation Council (GCC) countries that have higher income levels will continue to witness the highest uptake of HD content. "Other developing

countries in the region will follow for sure, albeit in a slower pace," he added. Much of the growth in HD is concentrated with pay-TV operators. These companies use HD as a differentiator to draw in subscribers, and subscriber revenues can then go toward covering the specialized equipment, higher bandwidth consumption, and other operating costs associated with HD. One of the challenges to the further uptake of HD is public opinion. TV watchers in the Middle East and North Africa (MENA) region do not always see merit in HD over regular Standard Definition (SD), Al Shawwa said. "According to a survey we did in Egypt, only 15.7 percent of respondents who watched content did so in HD; the majority didn't. Furthermore, around 14 percent of respondents to our survey didn't actually know the difference between HD and SD. We are aware that in countries other than Egypt the viewership of HD TV is higher, but these figures still show that HD is still not considered to

be the new standard in TV yet," he said. Furthermore, the overwhelming majority of content is available Free-to-Air (FTA), meaning pay-TV penetration levels remain lower than in other parts of the world. "Taking into consideration that the typical TV viewer is not expected to, and probably will not be willing to suddenly start paying for TV channels and content unless there is a major benefit from doing so, offering content in HD is considered a much needed added value for pay-TV operators that can further encourage customers to adopt pay-TV," Al Shawwa added. Despite the low percentage of paying viewers, Al Shawwa said he believes that customers in the Arab region are increasingly adopting the pay-TV model, thanks largely to premier and exclusive content offerings by pay-TV channels. As for 4K Ultra-HD, Al Shawwa said Arab Advisor's Group counted only one channel as of March 2016 in the region, that being on Yahsat's YahLive platform. Fashion One 4K is broadcasting

on the platform via the Yahsat 1A satellite. "I believe 4K will witness similar patterns of adoption by operators as HD TV did," said Al Shawwa. "Big channels will be early adopters, while others will wait until they adopt the technology. In all cases, I believe that it will be two to three years before there is any noticeable adoption of 4K in the region. Moreover, as with what happened with HD TV, pay-TV operators will be among the early adopters of the technology." Al Shawwa said existing pay-TV market players have expanded their services over the past few years, notably beIN transitioning from the provision of sports-only content to entertainment content. He also pointed out the emergence of Subscription Video on Demand (SVOD) players in the region, including Netflix, StarzPlay, ICflix and others. As viewers warm to the idea of HD, Al Shawwa said he expects more channels, particularly smaller ones, to also begin HD broadcasts.

Multiple FSS Operators Musing a Stake in LeoSat

Upcoming satellite operator LeoSat is in discussion with eight geosynchronous satellite operators on investing in the company's future high capacity Low Earth Orbit (LEO) system. The talks could lead to an arrangement whereby an established Fixed Satellite Service (FSS) provider would have shared access to the LeoSat constellation once in orbit, Mark Rigolle, CEO of LeoSat, told Via Satellite. "We are talking to some eight strategic investors, FSS operators, who are in various stages of due diligence," Rigolle said, adding that it took nine months for SES before that operator made its investment in O3b Networks. Rigolle is a former CFO and CEO of O3b, and guided the Medium Earth Orbit (MEO) operator to raising \$1.2 billion back in the late 2000s. Rigolle estimates that LeoSat will require \$3.5 to \$3.6 billion for its planned constellation of high throughput, low latency satellites. He said the Round A funding the company is currently undergoing will be for equity. An FSS partnership with LeoSat could continue a trend growing all the more evident among GEO players as they seek to differentiate



their services. Last year Intelsat partnered with OneWeb for combined GEO/LEO services, of which Gogo is the inaugural customer; SES this year moved to take 100 percent ownership of O3b, and Telesat procured two demonstrations LEO spacecraft to trailblaze a potential constellation of 150 to 200 small satellites. "The general feeling of malaise in the sector, because of the feeling that there is excess capacity and price wars, has led to a situation whereby everybody seems more interested in looking at a broad span

of strategic options, and have therefore engaged with us," Rigolle observed. LeoSat recently signed a Phase B contract with satellite manufacturer Thales Alenia Space to detail the design forged during a feasibility study last year. During Phase B, Rigolle said the companies will be specifying the constellation down to the sub-component level, deciding who is going to be building which components, what will be done in house at Thales Alenia Space, what will be outsourced, and who the subcontractors will be. He estimated that production could be set up within a year, and long lead items ordered.

Vector Space Systems Awarded \$60 Million Launch Contract

Microsatellite launch company Vector Space Systems has finalized an agreement with York Space Systems, an aerospace company specializing in small- and medium-class spacecraft, to conduct six satellite launches from 2019 through 2022 with the option for 14 additional launches. The first launch through the agreement is also to be the inaugural launch of the Vector-H vehicle, a rocket designed to launch 100 kg into orbit. York Space Systems plans to use the launches to place standardized S-Class satellite platforms into orbit for commercial and government customers. The company's satellites will also employ Vector's electric upper stage as the final insertion stage of the launch vehicle to place the satellites into orbital altitudes up to 1000 km with zero loss of launch throw mass capability. York Space Systems currently focuses on small and medium spacecraft supporting



a wide range of missions, including visible, infrared, multispectral and radar Earth Observation (EO), asset tracking, weather, communications, signals intelligence, and robotic servicing. The company claims

its S-Class platform reduces the cost of manufacture by an order of magnitude. The platform's first flight qualification is scheduled for the third quarter of 2017.

C-Com Gains Telenor Satellite Approval for 98cm Ka-band Antenna Systems

C-Com Satellite Systems has received type approval for its iNetVu driveaway and flyaway antenna systems from Norway-based Telenor Satellite. Using the Ka-band high throughput payload on the operator's Thor 7 satellite, C-Com's iNetVu Ka-98G driveaway and the iNetVu FLY-98G three-axis transportable, along with the 7710 auto-acquire controller, were able to deliver more than 10Mbps upload and download rates. Thor 7, positioned at 1 degree west, offers 6 to 9 Gbps throughput with up to 25 simultaneously active spot beams covering Europe and the Middle East. "Customers can now easily roam between beams with C-Com's three-axis motorization and our

auto-polarization switching function. This will give Telenor customers the option of a fully approved, land-based system capable of finding [a] satellite in just a few minutes with the press of a button," said Drew Klein, director of international business development for C-Com Satellite Systems. Telenor Satellite began offering Occasional Use (OU) Ka-band services on Thor 7 at the end of September. The operator worked closely with C-Com prior to launching the OU service to approve the antennas. Primetech U.K., a European partner of C-Com, assisted in the testing.



Ooredoo Maldives Supplying Thuraya Satellite Products to Fisheries

Ooredoo Maldives has reached an agreement with Mobile Satellite Service (MSS) provider Thuraya to supply resorts and fisheries with mobile satellite products and services across the archipelago in the Indian Ocean. The initial phase of the agreement will provision fisheries and anglers with voice products and broadband connectivity over Thuraya's satellite network. The Maldives government has issued a mandate requiring commercial fishing operators to fit their vessels with satellite communication equipment and to supply anglers with satellite phones. The goal of the mandate is to boost safety in the fishing industry. By equipping their fishing vessels with Thuraya's products, operators will have access to monitoring

systems and services that address multiple requirements, such as issues of distress and safety. Ooredoo Maldives is selling Thuraya SatSleeve+ and SatSleeve Hotspot devices, along with data packages at retail outlets and through enterprise account teams. The Thuraya devices augment smartphones to function as satellite phones, enabling connectivity on the move, especially in remote areas where terrestrial networks have become unavailable or unreliable. The devices also come with a programmable SOS button that works even if the smartphone is not connected. "Traditionally, fish[ing] is the main occupation and major source of livelihood in the Maldives. It is also the second largest industry in the country. Safety is

an important driver in this sector, where there are many accidents. It is important to have crew-calling capabilities outside of radio range so fishermen can send alerts when in trouble," said Ooredoo's Hussain Niyaz. The second phase of the agreement, which will come into effect later this year, will target the 105-plus resorts located in the different atolls constituting the Republic of Maldives. In a preemptive and precautionary mandate by the government, all resorts and touristic facilities are required to install satellite communication equipment as an added safety measure for tourists and visitors.

White House Announces \$50 Million Investment in Smallsats



The United States executive branch has announced an investment of more than \$50 million for small satellite technologies. The White House announcement came as part of the Frontiers Conference that President Barack Obama hosted in Pittsburgh, Pennsylvania. The White House said federal

agencies will announce investments and new steps they will take to advance the small-satellite technology in the coming weeks. These investments are to promote the increased adoption of smallsats for commercial, scientific, and national security needs. As part of this initiative,

NASA will invest \$30 million to support public-private partnership opportunities that allow for Earth science observations from constellations of commercial small spacecraft. The White House also shared that the value of the National Geospatial-Intelligence Agency's data purchase agreement with smallsat startup Planet is \$20 million for imagery from its constellation of cubesats. President Obama is also enacting a new executive order to coordinate efforts to prepare the United States for space-weather events. He signed the order yesterday, which aims to minimize economic loss and save lives by enhancing national security, identifying successful mitigation technologies, and ordering the creation of nationwide response and recovery plans and procedures. Last year the U.S. government released a National Space Weather Strategy and an accompanying Action Plan describing how the federal government would coordinate the efforts of federal agencies. The executive order aims to enhance the scientific and technical capabilities of the United States, including improved prediction of space-weather events and their effects on infrastructure systems and services.

Noorsat CEO: DTH Demand Still Strong in Arab World

Direct-to-Home (DTH) service provider Noorsat is seeing increased demand for satellite broadcast services across the Arab World, which bodes well for the company as it completes its 10th year anniversary. Originally established to provide satellite capacity for DTH, VSAT, internet and telephony services, the company today is focused principally on DTH. Noorsat uses capacity on the Eutelsat 7A, Eutelsat 7B, Eutelsat 25B and Intelsat 15 satellites, rebranded as Noorsat 7, Noorsat 7B, Noorsat 1 and Noorsat 5, respectively. Incorporated in Bahrain with a regional office in Jordan, the company runs its own teleport and broadcasting center, enabling services including content delivery, playout, television backhaul, Occasional Use TV services and 24/7 customer service. Today Noorsat reaches more than 50 million TV homes spread across the Arab World. In an interview with Via Satellite Omar Shoter, CEO of Noorsat, shares his vision for the company, his sense of demand for services, and how trends regionally are shaping the broadcast sector in the Middle

East and Northern Africa (MENA) region. Business is very good and solid. We are proud of the progress that we have made over the last 10 years since the establishment of the business. The region that we serve has seen a huge uptick in demand for satellite services and we are responding to this requirement, but we are also prepared for any new demands that emerge in the future. The population is looking for access to a wider range of TV and radio channels and there is also a great requirement for connectivity for business communications and Internet services. We do not anticipate any slowdown in this demand. The business has grown at a steady rate over the last 10 years and we believe that this will continue. We predict a positive outlook for future business.



Eutelsat Becomes First Customer of ILS Proton Medium Variant



Eutelsat has revealed that the third launch in its Multi-Launch Agreement (MLA) with International Launch Services (ILS) will use a Proton Medium rocket, making the operator the first to commit to using one of the new launch vehicle variants. The mission is to occur in the 2019 to 2020 timeframe from the Baikonur Cosmodrome in Kazakhstan. The Proton Medium mission is the second Eutelsat launch contract announced this week. Yesterday the operator revealed that the newly ordered Eutelsat West 5 B will launch on a Proton Breeze M rocket, also from ILS, on a shared launch with Orbital ATK's first Mission Extension Vehicle (MEV 1). Eutelsat 5 West B will be stacked on top of MEV 1 for a dual launch in the last quarter

of 2018. The Proton Medium vehicle is a two-stage version of the Proton Breeze M rocket optimized for the small and medium class range of 3 to 5 metric tons. ILS has exclusive commercial use of the Proton Medium and Proton Light variants. Eutelsat has so far conducted one launch under the MLA – Eutelsat 9B on Jan. 30 this year. The MLA is designed to provide Eutelsat with schedule flexibility and assured access to space at cost effective prices over a seven-year period. "Our agreements with ILS are aligned with our plans for fleet expansion and our commitment to control capital expenditure. We commend Khrunichev for the new expanded line of Proton vehicles that should bring added diversity in more segments of the commercial launch market," said Rodolphe Belmer, CEO of Eutelsat.

SpeedCast Creates Joint Venture in Ghana

SpeedCast International has finalized a joint venture in Ghana, which it anticipates will broaden the company's service offerings, increasing reach and reinforcing expansion plans to provide a managed network throughout Africa. The joint venture builds upon the SpeedCast's existing presence

in Algeria, Libya, Nigeria, Kenya and Angola. The move places the company in a position to provide more communication services in Africa via fiber, wireless and satellite. "Based on our existing business servicing energy customers offshore in Ghana, along with the anticipated growth

in the region, we are delighted to have a local partner with an already extensive oil and gas sector presence. An important part of SpeedCast's energy strategy is to anticipate oil field trends and proactively build support networks," said Bill Green, managing director of SpeedCast Ghana.

Orbital ATK, Airbus Defence and Space to Co-Build Eutelsat's Next Satellite



Eutelsat has signed a partnership with two satellite manufacturers, Orbital ATK in the U.S. and Airbus Defence and Space of France, to co-build Eutelsat 5 West B. Under the terms of the agreement, Orbital ATK will provide a GEOSTAR satellite platform, and Airbus Defence and Space will provide a communications payload consisting

of 35 active Ku-band channels. This is the first time the two companies have partnered on satellite work. With an estimated final launch mass of around three tons and a power of 5 kW, Eutelsat 5 West B will replace Eutelsat 5 West A, addressing predominantly French, Italian and Algerian broadcast markets from the 5 degrees west orbital slot. The satellite will feature switchable transponders to increase commercial flexibility. The companies will design, build and test the spacecraft at Orbital ATK's satellite manufacturing facility in Dulles, Virginia. Eutelsat 5 West B will have an operational lifetime of more than 15 years, and is scheduled to launch in a

stacked configuration with Orbital ATK's first Mission Extension Vehicle (MEV 1) on an International Launch Services (ILS) Proton rocket in 2018. Eutelsat expects significant savings will be achieved relative to the theoretical cost of replicating Eutelsat 5 West A, as the replacement is the first satellite to be procured within the framework of the company's capex reduction strategy announced in June 2016. The company expects these savings to come from an improved match of the satellite's coverage with specific customer requirements, thus lowering costs on power requirements and hardware. Eutelsat is discontinuing the C-band mission of Eutelsat 5 West A, which served mainly data customers in Sub-Saharan Africa. The operator plans to enable service continuity by similar C-band capacity available on other Eutelsat resources.

Japan Resets Next ISS Mission Launch Date to December 9

Mitsubishi Heavy Industries (MHI) and the Japan Aerospace Exploration Agency (JAXA) have pushed back the sixth H-2 Transfer Vehicle (HTV-6) cargo mission to the International Space Station (ISS) to Dec. 9, Japan Standard Time (JST), after discovering a leak in the vehicle back in August. The company and space agency team discovered the leak during an air tightness test as part of preparations for

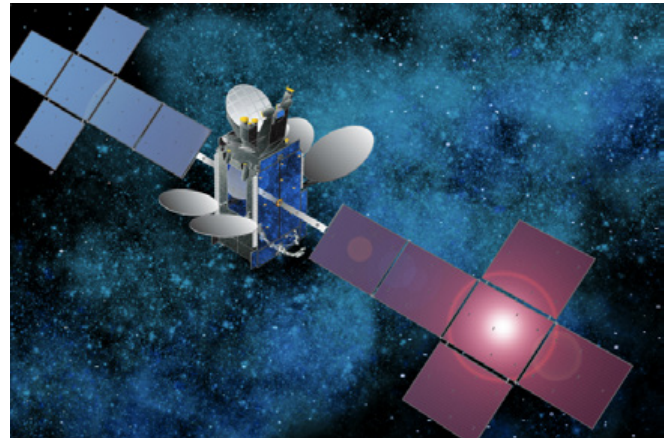
a previously anticipated Oct. 1, launch. At the time, MHI and JAXA said they would "disband the HTV-6 module and take necessary measures," to fix the leak. HTV-6, also known as Kounotori 6, is slated to launch aboard an H2B rocket from the Yoshinobu Launch Complex at Tanegashima Space Center, Japan. In addition to supplies for the ISS crew, the unmanned HTV vessels have also been

used to bring small satellites and related equipment to the station. The previous mission, HTV-5, delivered the NanoRacks External Payload Platform (NREP), a self-funded commercial platform for access to the outer space environment, which has since been attached to the Japanese Kibo module.

Intelsat 36 Starts Commercial Operations

Intelsat 36, launched Aug. 24 aboard an Arianespace Ariane 5 rocket, has entered service for satellite operator Intelsat, the company announced today. Built by Space Systems Loral (SSL) in less than two years, the satellite is collocated with Intelsat 20 at 68.5 degrees east, providing broadcasting and Direct-to-Home (DTH) services for African DTH giant MultiChoice. MultiChoice will use the Ku-band payload, and Intelsat will use the C-band payload to provide in-orbit resilience for its media neighborhoods serving Africa and the Indian Ocean regions. "There are dynamic changes taking place across the global media landscape, and Intelsat 36 supports

our customers as they address the growing demand for content throughout the African continent," said Brian Jakins, regional vice president of Africa sales at Intelsat. "This satellite will enable our customer, MultiChoice, to extend high definition channels throughout the region. The C-band payload will provide additional redundancy for media customers to ensure that all viewers have access to reliable, high quality content."



Algeria to launch communications satellite in 2017



Algeria's first geostationary satellite AlComSat1 is to launch by mid 2017 aboard a Chang Zheng-3B/G2 rocket, the North African nation's space agency has announced. "The satellite Alcomsat1 will be launched before the end of June 2017 with the aim of strengthening the national sovereignty in the fields of telecommunications and broadcasting, of telephony and Internet," said Azzedine Oussedik, director general of the Algerian Space Agency (ASAL). The communications satellite AlComSat1 will carry Ku-band and Ka-band transponders for civil applications and Z-band, UHF and EHF

for military and strategic state sector use. Based on the DFH-4 Bus, it has a 5200Kg mass, and a 15-year lifetime. Two ground control stations have been built, one in Medea and the second in Ouargla, which will control the satellite. The project is being conducted in cooperation with China, which is training Algerian staff to run the operation.

Inmarsat, Turksat to Enhance Space-Based Communications Capabilities in Turkey

Inmarsat announced a strategic partnership with Turkish state-owned regional satellite operator Turksat. The companies signed a Memorandum of Understanding (MoU) in March to explore the opportunities available through the formation of a strategic partnership, initially focused on defense, public safety and aviation. Inmarsat and Turksat will collaborate to bring cutting-edge, high value-added, space-based communications capabilities

to Turkish government, enterprise and consumer users, according to Inmarsat CEO Rupert Pearce. "We are not aiming at only business relations with Inmarsat. One of our targets is technology transfer to our country. In this sense, Inmarsat's fourth land station for satellite services will be established in Turkey," said Turksat CEO Cenk Sen. "We also have been working on providing broadband Internet services on airplanes with Inmarsat capabilities. This

partnership will assist the qualified internet services for passengers of Turkish Airlines." Turkish Minister of Transport Maritime Affairs and Communications Ahmet Arslan added that with the strategic partnership between both companies, some high-value added Inmarsat equipment would be produced in Turkey by one or more Turkish firms.

ARTICLE

Next Generation Mobile: What can 5G do for the Enterprise?

5G is on its way: it is almost two years since Samsung in South Korea tested its 5G mobile network, achieving download speeds up to 30 times faster than existing 4G LTE, and things have moved on since. In February trials of 5G in the US achieved speeds of 10Gbps.

What is 5G and how does it work? 5G is the fifth generation of wireless technology. It builds on 4G, which brought us the full packet-based mobile network, facilitated always-on anywhere connectivity and the mobile workplace. But where 4G occupies the frequency bands up to 20 MHz, 5G will inhabit the frequency band up to 6GHz.

“ 5G is an end-to-end ecosystem to enable a fully mobile and connected society. It empowers value creation towards customers and partners, through existing and emerging use cases, delivered with consistent experience, and enabled by sustainable business models ”

(Source: NGMN 5G Vision-White Paper)

According to NGMN alliance, 5G is defined as:

The main characteristics of 5G technology are that it will be significantly faster than existing mobile connectivity. 5G technology will change the way we communicate by supporting immersive applications (such as virtual and augmented reality) that required high-speed wireless connections, a fully realized IoT, lower latency, and improve both energy and spectrum efficiency.

There is a possibility that commercial deployments could begin as early as 2017, but it is more likely that full, wide-ranging commercial deployments will happen in 2020.

Which apps will benefit?

Lower latency means better performance for high bandwidth apps. For consumers that means being able to stream video far more reliably or download a movie in a matter of seconds, and for the enterprise it means supporting mobile working much more effectively. 5G will make



Dr. Ioannis Karamitsos
Digital Transformation
Technologist, MENAT,
Orange Business Services



multi-person video calling on the move a reality and will deliver the fully wireless, cloud-based office, with all unified communications (UCC) apps more reliably and consistently available.

“ 5G networks will deliver an end-to-end latency of less than 5ms and over air-latency of less than 1ms, which is one-tenth compared to the latency of a 4G network. ”

Other sectors that will really benefit from 5G's lower latency are IoT, Smart cities, self-driving cars, gaming and broadcast. At the moment 4G can manage end-to-end latency of 40ms, and air-latency of 10ms which is low, but not enough to enable truly real-time response from the remote server. Similarly, 5G networks will deliver an end-to-end latency of less than 5ms and over air-latency of less than 1ms, which is one-tenth compared to the latency of a 4G network. Based on that, broadcasters will be able to deliver a better service. Spectators in sports stadiums, for example, will be able to watch live streams showing alternative camera angles of the match with no delay or buffering.

Enabling the enterprise

Because 5G will be significantly faster than 4G, it will take mobile working to the next level and enable higher productivity across more devices. 5G will help deliver a mobile digital workspace that offers increased flexibility and agility. One of the most crucial UCC tools, video conferencing, will benefit hugely. Given that 94 per cent of businesses saying that the biggest benefit of video conferencing is increased efficiency and productivity, that is likely to be a killer application for enterprises.

Businesses could also be able to turn to 5G as a fixed-line network replacement, meaning they can connect up enterprise

branch offices much more quickly and easily with minimum network latency using novel technologies such as device-to-device (D2D) technology. With D2D technology will achieve low network latency and support a large number of simultaneous connection in a network.

5G will play important role in IoT industry Internet of Things (IoT) is the best application for 5G. IoT fast becoming a reality, with billions of connected devices and machines expected on the network over the next few years, there is a real possibility of 5G providing the actual network backbone that powers IoT. 5G will deal with the huge number of devices connected and we would have to allocate time slots dedicated to each of them. For this reason, the existing orthogonal multiple access in 1G-4G systems doesn't work for 5G. Currently there are a lot of researchers exploring how we can design non-orthogonal multiple access by assigning a lot of IoT users/ devices with different quality of service requirements into the same time slot or frequency channels. For this reason, the idea of non-orthogonal access is very promising and ideal for Internet of Things.

Potential use cases already in place

Trials of 5G are starting this year in the US. It is being pitched as a potential residential broadband offering, without the need to dig trenches or sink cabling. 5G could also provide a new, dedicated network for emergency services, where reliability and real-time communication is essential. 5G's lower energy-per-bit usage would improve battery life of connected devices and low latency would provide sub-millisecond support for emergency services.

5G could also provide the bandwidth for apps like virtual reality (VR) and augmented reality (AR), both of which have already been trialed for use in enterprise environments. An upcoming service that is expected to provide a new user experience in 5G is UHD video streaming. Nowadays, some mobile phones are equipped with a camera module that can record video with 4K UHD quality. 4K video is a must-have service for next-gen mobile and 5G will support and power that too.

“ 5G could also provide the bandwidth for apps like virtual reality (VR) and augmented reality (AR), both of which have already been trialed for use in enterprise environments. ”

Autonomous cars are another area where 5G will be critical – it will be the mechanism that 'drives' self-driving cars. Autonomous vehicles deployed today rely on cell towers for connectivity and to determine their locations, the proximity of other vehicles and more. The latency present in a 4G network means that cars currently travel over 4 feet before they receive a notification that another vehicle or obstacle is ahead! With 5G that signal is much faster and makes the vehicle significantly safer, with stopping distance down to just a couple of centimeters.

A recent Forrester survey found that 71 per cent of enterprises believe mobility is a top priority – and 5G is set to power a whole new generation of mobility. Ultimately, 5G could provide the backbone of our economy and society in future, and will impact hugely on enterprises in every industry and on every area of our daily lives. Just be prepared to wait a few years for 5G to deliver all this. That said, if you aren't already planning for the advent of 5G and making business decisions to help you benefit from it, what's keeping you?

WHOELSALE NEWS

Slovak MNOs ordered to offer national roaming to 4ka

The Slovak telecoms regulator the Office for Electronic Communications & Postal Services (RU) has ordered the country's incumbent mobile network operators (MNOs) to provide national roaming services to the fourth largest cellco by subscribers, SWAN Mobile (operating under the brand name 4ka). SWAN

launched its LTE network in October last year and one year on, the company announced it now has more than 250,000 subscribers. SWAN's license obliges the three established MNOs – Slovak Telekom, Orange and O2 – to provide the newcomer with wholesale access to enable it to offer a nationwide service in the 900MHz and

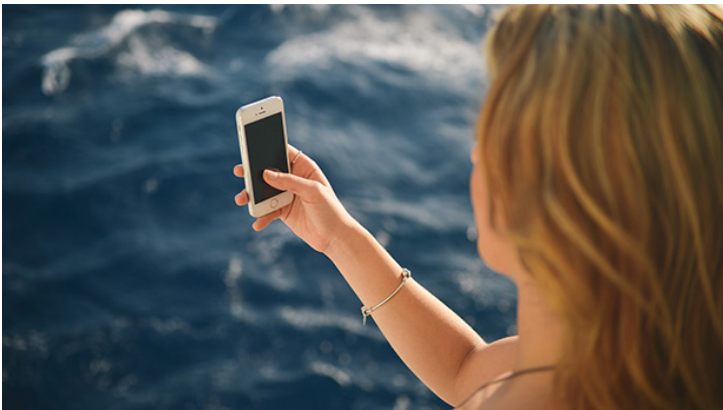
1800MHz frequency bands, but so far no national roaming deals have been agreed. According to the RU the quality of service provided for SWAN must match that which the dominant firms offer. The companies have 15 days to appeal against the regulator's decision.

Cross-border mobile services at risk in EU's race to end roaming charges

The European Union, governments and telecoms companies have only four months to resolve a long-running impasse over the bloc's desire to end mobile phone roaming charges or risk disruption to services when the new rules take effect next June. Faced with a crisis of confidence after Britain's decision to leave the EU, tweaks to the new rules ending roaming charges were presented last month as proof that Brussels can work for consumers. However, continued failure to

charges from the foreign networks that connect them. "The wholesale pricing issue still hasn't been dealt with," said one senior EU official familiar with a decade of roaming negotiations. "They've created a big expectation on roaming and they now have to solve a problem they've had for years." And the clock is ticking. The ban on roaming charges will require lower caps on wholesale prices to avoid a knock-on jump in domestic prices, which diplomats say need to be agreed by around the end of February to become law before June. Yet dreams of a United States-style continent-wide market appear as elusive as ever, with the 28 EU states jealously guarding their lucrative control of national airwaves while wide disparities in living standards mean prices vary hugely. The Irish, for example, spend nearly 10 times more on mobile phone bills than

poorer customers subsidize frequent travelers. There is also the possibility that some operators will simply decide to stop offering roaming services entirely. Finnish operator Elisa said in a written submission to the European Commission that the risk of a waterbed effect on domestic prices was very high in markets like Finland, where domestic prices are low and mobile service bundles are very generous. Yet passing on the cost to consumers has the potential to damage market share and could amount to commercial suicide, argues Innocenzo Genna of MVNO Europe, a mobile operators trade association. "Increasing prices in a competitive market is a deadly solution," Genna said. Deutsche Telekom's response to the Commission's consultation on the subject said that without limits on how much customers can use their phones abroad, operators would be "put under severe pressure" if they are unable or unwilling to increase domestic prices. Such pressure would be particularly keenly felt by operators that offer cheap and generous domestic packages, such as those in Scandinavia. "Lower wholesale prices will definitely help those companies to survive," Andrus Ansip, the European Commission vice president for digital affairs, told Reuters. Compounding the problems facing the EU is a loophole that would allow some operators -- if they can show a revenue hit of at least 5 percent -- to apply to their national regulators



work out who will pick up the bill could yet throw a spanner in the works. Politicians have long portrayed roaming fees as an insult to single-market ideals and a symbol of corporate greed. The problem, however, is that companies banned from charging extra for calls or data while customers are abroad still face wholesale

Latvians. In tourist-rich southern Europe, meanwhile, companies are fighting pressure to cut their rates. Retail roaming fees account for about 5 percent of all EU retail mobile revenue and companies warn that if wholesale charges do not fall they could recoup income by raising prices in their home markets, effectively making

to continue with roaming charges. EU lawmaker Miapetra Kumpula-Natri believes the issue could even derail the proposed ban on roaming charges. "It will not happen if ... operators have to cover a price that is excessive for them," said Kumpula-Natri, who is steering proposed European legislation to cap wholesale roaming fees. Big operators such as Deutsche Telekom, Vodafone, Telefonica and Orange have the market muscle to negotiate lower wholesale fees with foreign firms seeking reciprocal deals. Less powerful players -- especially those who do not own their own networks, including the likes of Sky

and Fastweb -- can be required to pay up to the EU maximum wholesale rate of 50 euros (\$56) per gigabyte, enough to listen to about 300 songs online. The EU executive proposes setting the cap at 8.50 euros per gigabyte, while Brussels lawmaker Kumpula-Natri thinks it should be 5 euros, dropping to 1 euro by 2021. Member states remain deadlocked and there is little leeway to work the numbers to please everyone across different markets, as years of wrangling on retail caps have shown. Vodafone, in its submission to the Commission's consultation, said it did not believe there is a "sweet spot" for

wholesale caps that would allow everyone to offer free roaming on all tariff plans. Now the challenge is to cut a deal by February so that companies do not find themselves taking drastic action to prevent losses. "We've been kicking the wholesale can down the road," an executive working for one telecoms company said. "We're not talking about making less money but potentially losing money."

CRTC imposes interim wholesale broadband rates after large operators fail to toe the line

The Canadian Radio-television and Telecommunications Commission (CRTC) has put in place revised interim rates for wholesale fixed broadband access services offered by the country's large cablecos and telcos, in response to a failure by some of the operators to submit 'reasonable' tariffs. The watchdog previously directed large operators to file new wholesale tariffs, and says it was not expecting deviation from the costing principles and methodologies laid out in the current regulatory proceedings on the wholesale broadband segment, but after analyzing the tariff applications, the CRTC is of the view that the rates proposed by certain companies had to be revised downwards. Jean-Pierre Blais, CRTC Chairman and CEO, declared in

a press release: 'Competitors that provide retail internet services to Canadians using wholesale high speed services must have access to these services at just and reasonable prices. The fact that these large companies did not respect accepted costing principles and methodologies is very disturbing. What's even more concerning is the fact that Canadians' access to a choice of broadband internet services would have been at stake had we not revised these rates.'

- The CRTC has now reduced the proposed wholesale 'transport' component rate for a number of companies by up to 89%. Additionally, proposed wholesale 'access' component rates of certain companies

were reduced by up to 39%

- The large companies who had submitted rates are Bell Canada, Cogeco, MTS, Rogers Communications, SaskTel, Shaw, Telus and Videotron
- The CRTC will continue its in-depth analysis of the various Tariff Notices in order to set final rates
- The CRTC intends to issue requests for information as a next step in the process. All parties will have the opportunity to comment on the Tariff Notices in order to assist in ensuring that the final rates are just and reasonable.

Regulators reject anti-competitive roaming allegations

Costa Rica's telecoms watchdog the SUTEL and antitrust authority the Commission to Promote Competition (Comision para Promover la Competencia, Coprocom) have rejected allegations from state-owned utility provider Grupo ICE -- which offers telecom services under the Kolbi brand -- relating to its competitors' mobile roaming charges. El Financiero writes that in May 2015 Kolbi accused

Movistar Costa Rica and Claro Costa Rica of monopolistic practices for offering voice and data roaming in Central America at local prices (sometimes referred to as 'roam like home'). Kolbi claimed that the strategy constituted margin squeezing by abusing the duo's dominance in the region, and requested that the regulator conduct a market analysis to assess the situation. SUTEL passed the matter to Coprocom

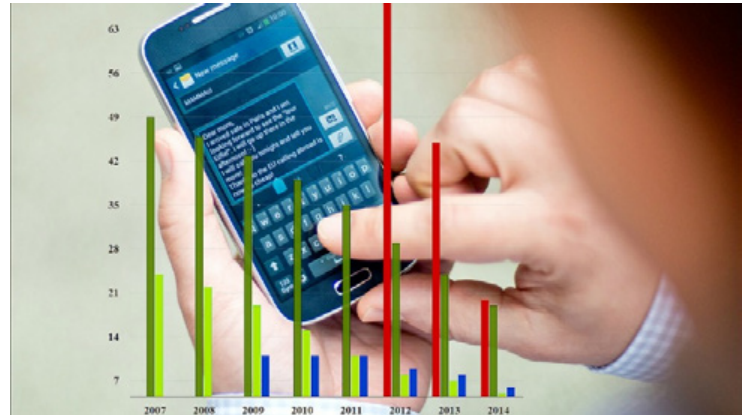
in July last year for consideration, but in its ruling the agency found no evidence that the pair had significant power in the relevant markets, adding that it was therefore 'not considered relevant' to assess whether the two cellcos were engaged in anti-competitive practices.

EU considers concession to telecom firms to end roaming charges

Mobile telecoms operators across Europe could be allowed to charge each other higher fees for keeping customers connected when they travel abroad under a Spanish proposal to help firms recoup their costs when roaming charges are abolished. The European Union has committed to letting its 500 million citizens use their phones while travelling abroad within Europe without incurring cross-border roaming charges from June 2017. But the network operating companies will still face costs in the form of the wholesale charges they pay to foreign operators to let their customers use their networks. European member states are split as to where the cap on wholesale roaming charges should be set to avoid operators raising their domestic prices to recover lost revenues. Deputy EU ambassadors will attempt to break the stalemate and discuss a provision originally proposed by Spain that would allow operators hosting EU tourists on their networks to ask their regulators for permission to charge more than the wholesale cap in exceptional circumstances if they are unable to recover their costs. Slovakia,

which is chairing the discussions as holder of the rotating EU presidency, has proposed limiting the surcharge that can be levied so the final amount does not exceed 8.50 euros per gigabyte, according to a draft seen by Reuters. Under the proposal, wholesale data caps would be progressively cut from 10.50 euros per gigabyte to 6.50 euros from June 2021, meaning that operators would only have an incentive to levy a surcharge from 2020 onwards, when the wholesale cap dips below 8.50 euros per gigabyte. Still, the so-called sustainability mechanism faces opposition from states pushing for low wholesale caps to ensure their operators are not forced to hike retail prices or stop offering roaming altogether. One diplomatic source said the sustainability proposal would not affect the end of retail roaming charges for consumers, which is set to come into force on June 15, as it

dealt only with payments made between the operating companies. The only way to accept the Spanish proposal would be to lower the wholesale caps significantly, another diplomat said. A European



Commission source said the wholesale data caps originally proposed by the EU executive meant there was "no need for a derogation at wholesale level as our proposal aims at fully covering the costs".

US telecom giant AT&T to provide roaming service in Iran

A major Iranian telecommunications operator has confirmed that it has an international roaming service deal with America's AT&T. Majid Sadri, the Managing Director of RighTel, was quoted by Iranian media as saying that his company has already been able to establish roaming services with 123 operators in 87 countries. They, as the company says on its website, include the US. Sadri's remarks followed a report by the New York Times that AT&T had started to provide voice and data service in Iran to its customers with American phones through a partnership with RighTel. RighTel on its website has named AT&T as a host service provider in the US. Earlier in March, Iran's Minister of Communications and Information Technology Mahmoud Vaezi told the domestic media that RighTel was the only Iranian operator that had started to take measures to establish an international roaming service between

Iran and the US. Vaezi acknowledged that this was a result of the removal of sanctions against Iran that had, as he put it, "helped facilitate business with not only the US, but also with Europe". Sadri further told ISNA news agency that his company has also roaming deals with 33 European countries. They are mostly supported by British telecom giant Vodafone, according to RighTel website. The New York Times added that the deal between RighTel and AT&T had been sealed in March and that this had made America's second largest telecommunications services provider the only US provider to offer phone service in Iran. The opening up



of phone service is undoubtedly a welcome surprise to Iranians and the approximately two million Iranians living in the United States, many of whom travel frequently to their home country, the New York Times added in its report.

Sutel recommends lifting pricing controls in several markets

Costa Rican telecoms watchdog the Superintendency of Telecommunications (SuTel) has opened a public consultation on its technical study of the nation's telecommunications markets. The study analyzed 15 of the 18 previously-defined markets with a view to assessing the level of competition and determining operators with significant market power (SMP). SUTEL's study proposed replacing the existing market definitions with eleven new ones, including six concerning wholesale services and five retail markets. Under these definitions, SUTEL found that four markets were competitive, and recommended

lifting its current tariff controls, namely: Telecommunications Traffic (Wholesale), International Roaming (Retail), Fixed Internet (Retail) and International Telephony (Retail). Controversially, the regulator found that the mobile sector was not competitive; noting that state-backed utility provider Grupo Instituto Costarricense de Electricidad (Grupo ICE) – which offers telecoms services under the Kolbi brand – had a market share of nearly 60% in 2015. SUTEL's decision focused primarily on the pre-paid segment, claiming that the space 'has not achieved a strong competitive dynamic'. Nevertheless,

SUTEL has recommended that pricing controls on the post-paid segment be lifted, acknowledging that there was sufficient competitive pressure from the smaller two mobile network operators (MNOs), Movistar Costa Rica and Claro Costa Rica. The watchdog has been under pressure in recent years for dragging its feet in removing its tariff controls, with operators complaining that the restrictions hamper their ability to introduce new services. Following the current public consultation, a final determination is expected to be published in November this year.

4ka celebrates first anniversary with 250,000 subs, but unhappy with roaming delays

Slovakia's fourth mobile network operator (MNO) SWAN Mobile, which trades under the '4ka' brand, says it signed up more than 250,000 customers in its first year of operation. Having launched full commercial services to around 40% of the country on 3 October 2015, the firm says it has now deployed LTE networks covering over 64% of the population in almost 150 cities and towns, with plans to increase this to 70% by the end of this year. According to

TeleGeography's GlobalComms Database, SWAN could claim around 2.5% of all mobile users in Slovakia at the end of June 2016, though the cellco says its share of the pre-paid card market is closer to 12%. Separately, Telecom paper writes that SWAN Mobile plans to take legal action against rival operators for failing to open their networks for national roaming. SWAN's license obliges the three established operators – Slovak Telekom,

Orange and O2 – to provide the newcomer with wholesale access to enable it to offer a nationwide service, but no deals have so far been signed. The report suggests that negotiations are most advanced with Slovak Telekom, with the two sides having agreed on the technical aspects of a deal but not on prices. For its part, O2 says a roaming deal was offered to SWAN but was turned down.

ACCC publishes draft decision maintaining wholesale ADSL regulation

In a draft decision the Australian Competition and Consumer Commission (ACCC) has confirmed its intention to continue regulating the wholesale ADSL service for a further five years. Announcing its plans via press release, the ACCC said it believes that maintaining regulation of the service will benefit customers by promoting competition in broadband markets until the rollout of the National Broadband Network (NBN) is complete.

Submissions on the draft decision from stakeholders and interested parties have now been invited, with the regulator setting a deadline of 14 November 2016, while it has said it expects to finalize its ruling in early 2017, ahead of the expiry of the current declaration. Commenting on the matter, ACCC Commissioner Cristina Cifuentes said: 'Telstra retains its dominant position in both the wholesale and retail markets for the supply of

ADSL fixed-line broadband services on a national level ... Continuing regulation will ensure network providers continue to have access to Telstra's copper network at reasonable prices. This will encourage them to continue competing in the retail market to develop and offer different ADSL broadband products to meet the needs of customers as they prepare to shift to the NBN.'

ARTICLE

Security: The Vital Element of The Internet of Things

We're now experiencing a new wave of technology that's being defined by connected devices everywhere. It's all a part of the Internet of Things (IoT). These connected devices are impacting our lives on a daily basis, changing everything from the way we provide healthcare to cooling our homes to running our manufacturing facilities and other critical infrastructure. Today there are 10 billion connected devices but that number is expected to grow exponentially – exceeding 50 billion sensors, objects, and other connected “things” by the year 2020.

Each of these devices could either be an asset you want to protect and enable, or a threat vector. The ultimate goal of IoT is to increase operational efficiency, power new business models, and improve quality of life and by connecting everyday objects and networking them together, we benefit from their ability to combine simple data to produce usable intelligence. To capitalize on the vast opportunities that the IoT brings doesn't just require networked connections but secure networked connections. Cybersecurity is not just a top consideration with the IoT, but one that is foundational to delivering on the promise of the vision. Protecting all of the interactions of the IoT is crucial in enabling people and organizations to benefit from these advances.

In today's world of IoT, cybersecurity needs to be top of mind as the number and type of attack vectors will continue to increase as will the amount of data, creating a daunting challenge for companies and those responsible to defend the infrastructure. No longer is it a matter of if attacks will happen, but when. Incentives for attackers are extremely large, and all organizations

need to understand how these attackers pursue valuable data.

IoT Cybersecurity Challenges

The IoT is exponentially increasing the number and type of attack vectors, creating many new and unforeseen challenges for organizations and those responsible for defending the infrastructure. Some of these challenges include:

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Scott Manson

Cyber Security Leader for Middle East and Turkey, Cisco



- **Increased attack surface.** With billions of new devices now connected to the IoT and more devices connecting all the time, the ability to gain visibility into these attack vectors, let alone close them to malicious actors, is increasingly difficult.
- **Threat diversity.** Due to the variety of objects adversaries can target, many of which are in insecure locations, attackers are able to devise new methods we have yet to face and blend sophisticated techniques to accomplish their missions.
- **Threat sophistication.** Threats have already become stealthier, evading initial point-in-time detections and using nearly imperceptible indicators of compromise to reach their target. Cybersecurity systems that rely exclusively on point-in-time defenses and techniques can't keep up with unfolding attacks.
- **Differentiated Enforcement and Remediation.** IT and OT networks are managed with different priorities in mind. Cybersecurity policies that are intended for one environment often do not translate well to the other. This presents serious tradeoffs between protection and continuity of operations.
- **Complexity & Fragmentation.** Networks and their components constantly evolve and spawn new attack vectors - mobile devices, web-enabled and mobile applications, hypervisors, social media, web browsers, and home computers - making cybersecurity a complex problem to address. The inherent diversity of IoT networks further expands this to new device types.
- **Shortage of skilled resources.** Adding to these challenges is the lack of in-house technology skills necessary to maintain a strong security posture to keep up with a rapidly developing and evolving threats. For 2016, the world-wide shortage of security professionals is estimated at more than a million, increasing to 1.5 million by 2019 which indicates how much demand there is for security talent. Since the demand is greater than the supply, many organizations

struggle to attract and retain security professionals and, consequently, this further constrains security teams.

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What's Needed

What's needed is a new, threat-centric and operational approach that is as pervasive as the IoT and the threats themselves. This new approach must span a range of attack vectors and address the full attack continuum – before, during, and after an attack. With this model we can protect computer systems, networks, and data. I believe that the right approach for IoT cybersecurity should deliver on three key imperatives –visibility-driven, threat-focused, and platform-based. Here are my reasons why:

Visibility-Driven: We must be able to accurately see what is happening in the environment in real-time to gain knowledge about the environment and threats. Visibility needs to come from the network fabric, endpoints, mobile devices, applications, virtual environments and the cloud. A real-time, accurate picture of devices, data and the relationships between them is crucial to making sense of billions of devices, applications, and their associated information.

Threat-Focused: We need to presume compromise and hone our ability to identify threats based on understanding normal and abnormal behavior, identify indicators of compromise, make decisions and respond

rapidly. Policies and controls are important to reduce the surface area of attack, but threats still get through. We need to focus on detecting, understanding and stopping threats. With advanced malware and zero day attacks this is an on-going process that requires continuous analysis and real-time cybersecurity intelligence, delivered from the cloud, that is shared across all technologies for improved efficacy.

Platform-Based: In this new IoT environment, security is now more than a network issue; it requires an integrated system of agile and open platforms that cover the network, devices and the cloud. These platforms need to be extensible, built for scale and centralized management for unified policy and consistent controls. We need to move from deploying simple point cybersecurity appliances to integrating a true platform of scalable, easy to deploy services and applications.

“ **In this new IoT environment, security is now more than a network issue; it requires an integrated system of agile and open platforms that cover the network, devices and the cloud.** ”

The promise of the IoT can only be fully realized when fears about the very real security implications are assuaged. Organizations across an array of industries are embracing IoT, each with unique needs and requirements. While there is no “one size fits all” approach to cybersecurity, with a comprehensive approach to security, organizations are free to capitalize on the IoT to improve business, government, and safety in extraordinary ways.

TECHNOLOGY NEWS

ITU-T doubles G.fast standard speed to 2 Gbps, addresses VDSL2, coax coexistence

The ITU-T Study Group 15 has given the green light for the 2 Gbps iteration of the G.fast standard, doubling the access speeds achievable with the first generation of the standard that promised up to 1 Gbps speeds over very short copper wire loops. As the third amendment of ITU-T G.9701 G.fast standard, ITU-T doubles the aggregate net data rate capacity to 2 Gbps using spectrum up to 212 MHz. The update to the standard maintains spectral compatibility with VDSL2. By enabling the coexistence of G.fast and VDSL2, service providers gain the agility required to switch customers between G.fast and VDSL2 as business operations demand. Besides offering higher speeds, ITU-T is also enabling G.fast to be applied to coax cable, enabling the coexistence of G.fast and satellite signals in coaxial cable infrastructure. The amendment also specifies a mechanism for dynamic time

assessment, functionality that enables upstream or downstream transmission to exploit G.fast's full aggregate net data rate. This functionality will improve users' broadband experience by increasing upload or download speeds in line with the demands of the applications in use. Having this second standard option in place should be music to the ears of service providers like CenturyLink and BT, which are currently conducting G.fast trials. A recent Ovum report, commissioned by Australia's NBN and BT, forecast that G.fast will serve nearly 30 million subscriber homes and businesses worldwide by 2021. The research firm said that the first commercial G.fast services won't launch in a meaningful way until next year. Out of the top United States-based telcos, it's clear that CenturyLink has taken an aggressive stance with G.fast. In September CenturyLink announced that it installed

G.fast technology in 44 multi-dwelling units (MDUs) in Platteville, Wisconsin, or nearly 800 apartments. For this initial deployment, CenturyLink is leveraging its own mix of existing copper and coax cable – assets it gained as a result of a cable overbuild by its predecessor Qwest. CenturyLink isn't the only U.S.-based telco that's moving ahead with their G.fast plans. Fellow telco Windstream previously began a field trial targeting MDUs with G.fast in Lincoln, Nebraska. Using Calix's G.fast nodes and GigaFamily solutions, Windstream said it will increase broadband speeds to residential customers in what it says is a "select" number of buildings. However, it has not revealed what parts of the city will be the first to get the service.

Nokia delivers 4.5G Pro, Carrier SDN, IP and optical technologies to Globe

Nokia and Filipino telco Globe Telecom have signed two Memoranda of Confirmation frame agreements – one

Globe Telecom's current fixed and mobile networks to enable it to meet the country's burgeoning and future digital data demands. The Finnish group says it will migrate Globe onto a more flexible cloud-based network infrastructure, which it claims provide seamless connectivity to consumers and enterprise customers as the operator prepares for IoT and 5G. Under the plan the vendor will deploy its 4.5G Pro technology using the 5G-ready AirScale Base Station and Flexi Zone small cells, managed by NetAct, in the Visayas and

use Mobile Edge Computing and advanced carrier aggregation (CA) techniques to deliver scalability and speed and capacity improvements to support new products and services. Meanwhile, the delivery of an integrated IP and optical networking and carrier SDN technologies across the Philippines will hopefully enhance Globe Telecom's enterprise data services network in regions including Lanao del Sur, Maguindanao, Basilan, Sulu and Tawi-Tawi.



for wireless technologies and the other for IP, optical and SDN technologies – under which the vendor will transform

Mindanao regions, providing broadband access to some areas in these regions for the first time. Globe will also be enabled to

Qualcomm debuts first “5G” chipset

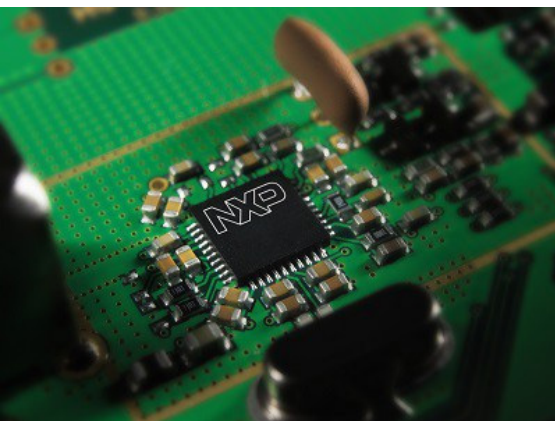
US chipmaker Qualcomm announced what it described as the world's first 5G modem, stating it is “the first stone in place to build the path to 5G”. The Snapdragon X50 modem works on millimeter wave spectrum in the 28GHz band and supports a peak download speed of 5Gb/s. The modem is intended to support OEMs building the next-generation of cellular devices, as well as operators moving towards early 5G trials and deployments. “This is the first of a family of chipsets and we're happy to put the first stone in place to build the path to 5G,” said Cristiano Amon Qualcomm EVP. It is expected to be available in sample volumes in the second half of 2017, with the first products using it reaching the market in 2018. The company also introduced three upgraded Snapdragon chipsets – two higher-tier chips (653 and 626) and one mid-tier (427) model. The Snapdragon 653, with features an integrated X9 category 7 LTE modem, also delivers a 10 per cent improvement in CPU performance through a speed increase to 1.95GHz and other architectural improvements. Growth in mobile is the highest in high-end and mid-tier, Amon said. “As the market has

moved from feature phones to smartphones, the low-end is moving towards the mid-tier and the mid-tier is moving to the high-tier.” He said demand for improved modem features for 4G is the highest it's ever been, noting the there is really no comparison of the rate of advancement for 4G technology with the pace of change experienced with 2G or 3G. “Some say that the mobile industry has peaked, we believe nothing can be further from the truth. The best is yet to come,” Amon said. He noted that there are more than 147 LTE-Advanced networks worldwide, with 85 per cent Category 6 and above. Given the need for capacity continues to be a big challenge for operators, Qualcomm is excited about gigabit LTE, which enables operators with 60MHz of spectrum (3x20MHz) to achieve gigabit speeds and start preparing for 5G. He said Qualcomm is focused on both licensed and unlicensed spectrum as well



as cellular and Wi-Fi technology to boost capacity and speeds. Only 16 per cent of operators worldwide can implement gigabit class LTE using licensed spectrum, but he said that using LTE-U and LAA (Licensed-Assisted Access) that percentage rises to 64 per cent. Highlighting the complexity of the multitude of frequencies used in smartphones, he said there are now roughly 700 different band combinations, which is an increasing challenge for the industry as complexity grows.

Qualcomm linked with NXP buy



NXP Semiconductors is apparently looking at a \$30 billion deal to be acquired by Qualcomm, which would boost the US Company's presence in markets beyond

the Smartphone. First reported by The Wall Street Journal, it was suggested that a deal could be struck in the next two or three months. But it was cautioned that it may not happen, and that Qualcomm is also exploring other deal options. NXP is strong in a number of markets including automotive and secure identification and payments. The company has been emboldened by its acquisition of Freescale, although the integration of this business is still underway – meaning a subsequent swallow by Qualcomm is not without its challenges. There are also differences in business models, for example with NXP owning chip manufacture facilities whereas Qualcomm outsources fabrication. The report noted that with the

semiconductor market more competitive than ever, the acquisition of a company with established products in an adjacent market enables expansion without the need for expensive – and risky – internal development. According to an RBC Capital analyst cited by Barron's, at a reasonable valuation a deal would be “attractive” for Qualcomm, enabling it to diversify further beyond mobile, boost its IoT proposition, and effectively use its offshore cash pile. And the market has seen a number of deals in recent months, including the Broadcom/Avago Technologies acquisition and Intel's courtship of Altera. But so far Qualcomm has stayed away from the recent megadeals.

Microsoft develops first human-like speech recognition system

In a major breakthrough in the field of speech recognition, Microsoft researchers have created a technology that accurately recognizes the words in a conversation like humans do. The team from Microsoft Artificial Intelligence and Research reported a speech recognition system that makes the same or fewer errors than professional transcriptionists. The researchers reported a word error rate (WER) of 5.9 percent, down from the 6.3 percent WER the team reported just last month. The 5.9 percent error rate is about equal to that of people who were asked to transcribe the same conversation, and it's the lowest ever recorded against the industry standard "Switchboard" speech recognition task. "We've reached human parity. This is an historic achievement," said Xuedong Huang, the company's chief speech scientist in a Microsoft blog post. The milestone means that, for the first time, a computer can recognize the words in a conversation as well as a person would. In doing so, the team has beat a goal they set less than a year ago – and greatly exceeded everyone else's expectations

as well. "Even five years ago, I wouldn't have thought we could have achieved this. I just wouldn't have thought it would be possible," said Harry Shum, executive vice president who heads the Microsoft Artificial Intelligence and Research group. The research milestone comes after decades of research in speech recognition, beginning in the early 1970s with DARPA, the US agency tasked with making technology breakthroughs in the interest of national security. "This accomplishment is the culmination of over 20 years of effort," said Geoffrey Zweig, who manages the Speech & Dialog research group. The milestone will have broad implications for consumer and business products that can be significantly augmented by speech recognition. That includes consumer entertainment devices like the Xbox, accessibility tools such as instant speech-to-text transcription and personal digital assistants such as Cortana. "This will make Cortana (Microsoft personal assistant) more powerful, making a truly intelligent assistant possible," Shum said. To reach the human parity milestone, the team used

Microsoft's Computational Network Toolkit (CNTK), a home-grown system for deep learning that the research team has made available on GitHub via an open source license. CNTK's ability to quickly process deep learning algorithms across multiple computers running a specialized chip called a graphics processing unit vastly improved the speed at which the team was able to do research and, ultimately, reach human parity. Moving forward, the researchers are working on ways to make sure that speech recognition works well in more real-life settings. That includes places where there is a lot of background noise, such as at a party or while driving on the highway. In the longer term, researchers will focus on ways to teach computers not just to transcribe the acoustic signals that come out of people's mouths, but instead to understand the words they are saying. "The next frontier is to move from recognition to understanding," Zweig said.

Small Cell Forum warns on 5G delays

The Small Cell Forum called on regulators to build a "consistent and supportive" environment for the deployment of dense HetNets, warning that otherwise 5G deployments could be "significantly impacted". "While the air interface continues to dominate industry discussion, the biggest challenges in rolling out the dense networks associated with 5G lie in the underlying network architecture and fragmented and outdated national regulatory frameworks," said Small Cell Forum chair David Orloff. "It is critical that the industry works in conjunction with regulatory bodies to create an environment in which these networks can be swiftly and cost-effectively deployed." The Forum said dense HetNets represent a "fundamental shift in telecoms infrastructure," providing the underlying communications backbone for pervasive and robust connectivity.

It said it is developing different best practice guidelines for states, regulators and municipalities in North America in collaboration with 5G Americas, in Latin America in collaboration with the GSMA, and with operators in the Middle East and Asia. In Europe, it is preparing responses to the UK Digital Economy Bill, and "closely following" the review of the European telecoms framework.



Vodafone lines up four commercial NB-IoT launches

Vodafone Group said it will debut live NB-IoT networks in Germany, Ireland, the Netherlands and Spain during Q1 next year. The operator said the rollout will involve a software upgrade to its existing 4G base stations, meaning a rapid shift to nationwide coverage “almost immediately”. The initial four countries will be followed by others during 2017, with full coverage of Vodafone’s global network by 2020. NB-IoT is the cellular industry’s favored technology to support Low Power Wide Area (LPWA) networks, which will drive low bandwidth applications like smart meters and parking sensors. It is competing with unlicensed technology

offerings such as LoRa and Sigfox which have enjoyed commercial momentum globally. NB-IoT was ratified as a standard in June by the 3GPP and is expected to see major rollout next year. At the GSMA Mobile 360 Middle East event this week in Dubai, Huawei said Deutsche Telekom will roll out in Europe next March, while TIM will deploy sometime in 2017. China Unicom is expected to launch NB-IoT networks in 800 Shanghai sites this quarter. Last week, Deutsche Telekom said it had activated the world’s first NB-IoT end-to-end system on a live network in Germany. It was set to demo the system this week. Vodafone said it last week completed another first – the

test of an NB-IoT connected product on a commercial network. Vodafone Spain linked up a parking sensor buried in a parking space within Madrid’s Vodafone Plaza. An app displayed on a smartphone screen successfully showed that the space was occupied when a car parked in it, and then went back to free when the vehicle moved away. Back in September, Vodafone previously commented on the progress in Spain, when it also flagged its intention for 2017 commercial launch.

Qualcomm unveils first 1 Gbps LTE router and network

Qualcomm has taken advantage of its 4G/5G Summit in Hong Kong to announce the first devices and networks using its 1 Gigabit Snapdragon X16 LTE modem. The company has partnered with Telstra, Ericsson and Netgear to bring products and networks to market using the sixth-generation discrete LTE multimode chipset unveiled in February. The Netgear Mobile Router MR1100 is described as the first consumer end device capable of reaching

LTE download speeds up to 1 Gbps. It uses Telstra’s new Gigabit Class LTE network enabled by Ericsson to deliver “fiber-like download speeds wirelessly,” said Qualcomm. The chip maker added that Telstra will now complete comprehensive device, network and user testing ahead of commercial launch in the coming months. Qualcomm said the 1 Gbps download speeds are achieved through a combination of 3x carrier aggregation, 4x4 MIMO on two

aggregated carriers plus 2x2 MIMO on the third carrier, and 256-QAM higher order modulation. Unveiled earlier this year, the Snapdragon X16 LTE modem is built on a 14nm FinFET process and the Qualcomm WTR5975 RF Transceiver. The company also carried out a live demonstration of the 1 Gbps LTE device and network at the 4G/5G Summit.

Nokia, STC ink deal to deploy 4.5G across Saudi Arabia

Nokia and STC have signed an agreement to expand high-speed mobile broadband capacity and coverage in Saudi Arabia using Nokia’s 4.5G technology. The enhanced network will meet the ever-increasing demands of subscribers across the country, including the millions of visitors who travel to the cities of Mecca and Medina each year, particularly during the Hajj and Ramadan seasons. Nokia has already completed the first phase of the deployment in Mecca and Medina, where it asked to dramatically increase capacity. Using 4.5G technology, including Saudi Arabia’s first indoor small cells deployment, STC managed the huge traffic demands during



this year’s Hajj pilgrimage, which during peak times recorded an increase in 4G traffic of 600 percent compared to 2015. Nokia will continue to deploy its 4.5G macro

and small cell radio access network and microwave packet radio technology to provide ubiquitous coverage and faster access to the Internet across the country. This will allow STC to launch new services and expand the delivery of voice-over-LTE (VoLTE) to more subscribers. The agreement continues a long history of collaboration between Nokia and STC. Nokia has defined a path to 5G that allows leading operators such as STC to take advantage of major increases in speed and capacity where and when they need it using 4.5G, 4.5G Pro and 4.9G technologies.

Huawei bags \$180-\$220mln managed services, network operations deal from Vodafone India

Huawei Technologies has bagged a three-year managed services contract worth \$180-\$220 million (Rs 1,200-1,470 crore) from Vodafone India covering several telecom circles, people familiar with the matter said. Huawei will provide managed services, including network operations, to Vodafone in Kerala, Tamil Nadu & Chennai and Odisha circles, replacing Finnish rival Nokia. It will also offer network operations in Andhra Pradesh and Delhi, where Nokia will continue to provide a part of managed services to Vodafone, one of the people said. The new contract follows a recent big-ticket deal that Huawei got from market leader Bharti Airtel for upgrading the wireline network with vectoring, GPON and G.Fast technologies, which helped the carrier in launching 100 Mbps broadband services in 87 cities. "The agreement has been signed between both Vodafone and Huawei. Both companies are now working towards formalization of the contract, which includes transition of manpower," a second person said. Third-

party employees working with the existing vendor will now move to Huawei, along with some of Vodafone and Huawei's on-roll employees. "Overall, there will be around 1,000 employees, third party and on rolls employees included," this person said. A Vodafone spokesperson said the company works with several infrastructure providers, but declined to comment on the specific Huawei partnership. In February, it had awarded a three-year contract to Ericsson to manage optical fiber networks in 10 telecom circles. Huawei didn't respond to ET's emailed queries. A Nokia spokeswoman said the company cannot comment on its customer engagements "due to silent period (ahead of earnings release) and as per Nokia policy". Huawei has lately been making inroads into the country's telecom managed services – which typically cover technology and network operations – a segment that has so far been led by Sweden's Ericsson and Nokia. The Shenzhen-based company last year won a Rs 1,200 crore managed

services and network modernization deal from Telenor's India unit, and is also managing four telecom circles for Airtel. Vodafone is the second largest telecom operator in India, with Cellular Operators Association of India data for August showing its subscriber base at 200.1 million and market share at 25.63%. Huawei and Vodafone have collaborated on other projects as well. India's No. 2 telecom company had awarded a \$150 million pan-India deal to Huawei to upgrade and augment the capacity of the wireline network so that it would be able to handle increasing data traffic, ET had reported. The Chinese company is supplying LTE base stations and other equipment for Vodafone's 4G networks in Karnataka and Kerala circles, besides expanding the telco's 3G network in these two circles. Over the last 12 months, Huawei has also won 4G deals from Bharti Airtel and Idea Cellular.

What is 5G? We don't have a clue, says Orange

Orange's director of network strategy said the industry has "no clue" what 5G is, but said this doesn't matter because consumers will always want something more and something better. Speaking on a panel at Total Telecom Congress in London, Yves Bellégo said 5G is about addressing customer demand rather than need. "Do we do things just because there is a problem to solve?" he asked. "Everyone wants 5G; do they need it? That is not the question. What will 5G be? I don't have a clue but that is not a problem. "So why do we do 5G? Because our customers want it. Why? Because it is just better." Bellégo went on to identify 5G as the technology which will make connectivity available to everyone, no matter where they are in the world. Its potential as a substitute for fixed networks, fibre in particular, is limited though. "We expect 5G to be the technology to bring access to people in countries where there



is no Internet so there is a case for 5G to be the technology of access for many people," he explained. "When it comes to Western Europe, FTTH is being deployed and we have millions of customers and even more households connected but we will not have 100% of houses connected in the coming years and this is where 5G comes in." Bellégo was joined on the panel by Matteo Gatta, technology strategy and innovation

director at Belgium's Proximus, and Franz Seiser, head of core network development at Deutsche Telekom, both of whom shared Bellégo's vagueness about exactly what 5G is.

"What is 5G? The fact we are still discussing this says a lot," said Seiser. "What are the implications of something that you don't know what it is, is therefore difficult. 5G is hopefully a technology that solves the communication needs of decades to come, whatever they look like. Is 5G just more speed and less latency? No. Yes, that needs to be there but it cannot just be that. 5G is about flexibility and the ability to solve differentiating communication needs much faster than we can do today."

US Cellular, Nokia trial 5G technologies for fixed-wireless access

US Cellular, in conjunction with equipment vendor Nokia, has demonstrated 5G fixed-wireless technologies in both indoor and outdoor environments. The 5G trials utilized 28GHz spectrum awarded via an experimental license by the Federal Communications Commission (FCC) and Nokia's commercially-available, 5G-ready AirScale radio platform to stream six

simultaneous 4K ultra HD videos. In both indoor and outdoor environments, the tests delivered speeds of 5Gbps and ultra-low latency of under two milliseconds over the 5G wireless link. Ricky Corker, executive vice president and head of North America for Nokia, said: 'Nokia continues to accelerate its efforts to develop and test 5G in North America, and we're pleased to

expand our relationship with US Cellular with this newest 5G collaboration. Our tests show how 5G technology not only will enhance US Cellular's ongoing efforts to stay ahead of the needs of their data-hungry customers and businesses, but also create opportunities for new services requiring high bandwidth and low latency.'

Europe sets up a date with data destiny

Ansip wants better data-sharing, Vestager wants to stop anticompetitive data-sharing, meanwhile 500 million hacked Yahoo users just want to know where their data is. Europe should not be afraid of data. That was the key message delivered by the EU's digital single market (DSM) commissioner Andrus Ansip in a speech that was published on the European Commission's Website this week. "Data is the basis of our digital future and prosperity. Data will

drive our competitiveness and economic growth," he said. However, for data to realize its potential, it must be allowed to soar majestically across borders, free from the shackles of localization rules, which Ansip claims do not offer better protection, and only result in fragmentation. "This will be to the detriment of benefits for citizens, consumers, SMEs and society," he warned. As long as the public institutions of individual countries, such as law enforcement or tax authorities, have ready access to the data they need in order to do their jobs properly, it shouldn't matter where the data is stored, he said. This is because the recently-adopted General Data Protection Regulation (GDPR) will ensure a "gold standard" of oversight and enforcement. "It is possible to ensure

smoke. Whenever something like a data breach happens, consumers immediately want someone to blame; 'one throat to choke', as they say in business circles. If the PR fallout is not handled properly, Ansip's throat could conceivably be the one that everyone wants to wrap their hands around. Statistics released this week by the Chartered Institute of Marketing (CIM) show that Ansip still has work to do to convince people of the merits of sharing data. According to the research, 57% of U.K. consumers do not trust brands to use their data responsibly, and a whopping 70% do not see the benefit of sharing their data at all. It gets worse: 71% of those surveyed by the CIM said they do not feel comfortable with sharing their location data, and 68% are uncomfortable sharing data included on their social media profile. "Our new research shows that people are nervous about sharing personal data – fears of data breaches and misuse has them on high alert," said CIM chief executive Chris Daly, in a blog post on Tuesday. One voice from within the European Commission itself also urged caution regarding the use of data this week. In a separate speech that was also published online, competition commissioner Margrethe Vestager said data is an asset that has the potential to be abused to the detriment of competition and consumers. If companies share too much information about their businesses with one another, "it might become too easy for them to coordinate their actions, rather than competing to cut prices and improve their products," she warned. However, she insisted that she is not



drive our competitiveness and economic growth," he said. However, for data to realize its potential, it must be allowed to soar majestically across borders, free from the shackles of localization rules, which Ansip claims do not offer better protection, and only result in fragmentation. "This will be to the detriment of benefits for

more security and more effective data protection safeguards without any artificial rules on data localization," Ansip insisted. A compelling pitch, but Ansip will have to tread very carefully the minute something goes wrong – like a high-profile data breach – if he doesn't want his dream of cross-border data sharing to go up in

opposed to rival companies pooling data, "as long as companies make sure they do it the right way." Data could also be an important factor in how a merger could affect competition, Vestager continued. "A company might even buy up a rival just to get hold of its data, even though it hasn't yet managed to turn that data into money," she explained. "We are therefore exploring whether we need to start looking at mergers with valuable data involved, even though the company that owns it doesn't have a large turnover." Speaking of valuable data, around 500 million Yahoo members still want to know why it took the company two years to discover and disclose the theft of their personal information. In an SEC filing by Yahoo earlier in September

that relates to its acquisition by Verizon, the company said there had not been any security breaches involving the "loss, theft, unauthorized access or acquisition, modification, disclosure, corruption or other misuse of any personal data in [the] seller's or the business subsidiaries' possession." However, a source cited by the Financial Times late last week insisted that Yahoo CEO Marissa Mayer was aware in July of a potential data breach. If this is true, it could land Yahoo in hot water with the SEC. This week a group of U.S. senators led by Democrat Patrick Leahy wanted to know why an attack that allegedly took place in 2014 was only disclosed in 2016. "User information was first compromised in 2014, yet the

company only announced the breach last week. That means millions of Americans' data may have been compromised for two years. This is unacceptable," said the senators, in a letter to Mayer on Tuesday. "Consumers put their trust in companies when they share personal and sensitive information with them, and they expect all possible steps be taken to protect that information." Hopefully affected Yahoo users will get some answers soon. With all this in mind, perhaps the message should be: embrace data...carefully.

5G represents €113.1bn opportunity for EU countries

Study claims 5G investment will create €141 billion worth of trickle-down benefits, create 2.3 million jobs. A European Commission study published this week claims that rolling out 5G could benefit EU member states to the tune of €113.1 billion per year by 2025. The next-generation of

carried out on behalf of the Commission by wireless kit maker InterDigital, research firm Real Wireless, consultancy Tech4i2, and Connect – which is Trinity College Dublin's network research centre. "The goal of this study was to investigate what 5G might actually mean for industries,

stakeholders to plan future policy in areas such as spectrum allocation planning and future market regulation," said Alan Carlton, vice president of InterDigital Europe, in a statement on Wednesday. The study arrived at the €113.1 billion figure by calculating the benefits derived by two groupings: first-order benefits across four vertical industries, namely automotive, healthcare, transport, and utilities, will account for €62.5 billion worth of benefits. Meanwhile, second-order benefits across four 'environments' – smart cities, smart home, workplace, and non-urban – will account for the remaining €50.6 billion. Of course, with 5G still under development, it remains to be seen exactly what networks will be capable of, and how these capabilities translate into financial benefits. For the purposes of the European Commission's study, three major capabilities were identified: ubiquitous 50 Mbps mobile broadband coverage; support for large-scale M2M and IoT networks; and the ultra-tactile Internet, which promises to enable new applications and services based on human-to-device, and device-to-device interactions. According to the study, the cost of rolling out 5G networks across EU member states will total €56 billion by 2020.



mobile technology is also expected to create as many as 2.3 million jobs across the EU, and generate trickle-down benefits worth as much €141 billion. The study was

including the mobile industry, as well as various other stakeholders. This study should provide a basis for regulators, other public authorities and various

REGULATORY NEWS

EC launches formal investigation into Czech mobile sharing deal

European Commission (EC) antitrust regulators have opened a formal investigation into mobile telephone network sharing in the Czech Republic. EU Commissioner in charge of competition policy, Margrethe Vestager, said: 'Network sharing agreements can bring about efficiencies, such as reduced deployment costs and may allow for network expansion to previously unserved areas. But, in some circumstances, network sharing may also reduce competition on the market. The network sharing agreement between the two major operators in the Czech Republic covers most of the country. We need to ensure that it will not reduce infrastructure competition and innovation.' The EC enquiry centers on two major players in the Czech market, O2 CZ and T-Mobile CZ,

which between them serve approximately three quarters of the Czech retail mobile telecommunications market. The EC statement notes that O2 CZ's mobile infrastructure and wholesale business has been transferred to Ceska telekomunikacni infrastruktura (CETIN), a new network infrastructure company belonging to the same corporate group. In 2011 O2 CZ/ CETIN and T-Mobile CZ entered into a network sharing agreement that has been increasing in scope ever since. Today, the cooperation encompasses 2G, 3G and 4G technologies across the whole country, with the exception of Prague and Brno – thus serving all other urban, suburban and rural areas, blanketing some 85% of the population. Specifically, the Commission is interested in investigating whether or not

the network sharing agreement between the parties 'risks slowing down quality improvements in existing infrastructure, and delaying or hindering the deployment of new technologies, such as 4G LTE and future technologies, and new services based on them, in particular in densely populated areas. If this were the case, the cooperation would be contrary to EU Treaty rules that prohibit anticompetitive business practices (Article 101 of the Treaty on the Functioning of the EU) to the extent that it concerns behaviors that restrict competition. The Commission will also investigate the impact of potential efficiencies that could be brought about by the network sharing.'

ECTEL telecoms ministers vote in favor of new legislation to enhance competition

The Council of Ministers of the Eastern Caribbean Telecommunications Authority (ECTEL) – the body which represents the interests and provides an overarching regulatory structure for the Eastern Caribbean states of Dominica, Grenada, St Kitts & Nevis, Saint Lucia, and St Vincent & the Grenadines – has approved new legislation designed to enhance the competition environment for telecoms across all member states. In a statement published this week, the Council confirmed that the new regulations will address issues such as: consumer protection; submarine cable regulations, specifically in terms of defining conditions for fair access to submarine cable capacity; access to network infrastructure and wholesale services regulations, including rules on how operators with significant market power (SMP) allow rivals to access

their networks; and new regulations and guidelines on the conduct of market analyses. Going forward, the respective ministers now have two months to familiarize local parliaments and relevant regulatory bodies with the principles, purposes and provisions of the new legislation. TeleGeography's GlobalComms Database writes that ECTEL's decision to enact new legislation stems from issues surrounding the 2015 USD3 billion regional merger of Cable & Wireless Communications (CWC) and Columbus Communications group. In March this year talks between ECTEL and the enlarged group – which trades under the Flow banner – ended without 'amicable' agreement. ECTEL is concerned about the potential anti-competition issues presented by the tie-up and has been working diligently with CWC since the merger an-

nouncement was made in November 2014. Having failed to secure agreement with CWC-Columbus on matters such as the minimum speed and price for entry-level broadband packages, maintaining an open internet, sharing of telecommunications infrastructure for existing and new entrants to provide new services, and protection provisions to ensure customers are not disadvantaged by new services and pricing, to be implemented following the merger, it began to consider alternative ways of resolving its concerns. Subsequently, last month – with the latest round of talks having broken down – ECTEL decided to declare the joint operations dominant in the sector and review the legislation to return some balance to the market.

TRAI recommends USD157m fines over Jio interconnect issue

Sector watchdog the Telecom Regulatory Authority of India (TRAI) has written to the Department of Telecommunications (DoT) to recommend that Vodafone India, Bharti Airtel and Idea Cellular be issued fines of INR10.5 billion (USD156.75 million) apiece for violating the terms of their licenses by refusing to provide sufficient interconnection points to newcomer Reliance Jio Infocomm (RJIL). In its notices, the TRAI argues that the three providers are required

to provide adequate points of interconnection (PoIs) to all eligible service providers. As the trio failed to do so, despite pressure from the watchdog and without offering an adequate explanation for their refusal to comply with regulations, the TRAI found that their actions: 'clearly indicates [an] attempt by the service providers ... to stifle competition in the market and to willfully violate the license conditions.' The regulator added that although such non-com-

pliance of the terms and conditions of the license warrants a revocation of the operators' concessions, such action would 'entail significant consumer inconvenience.' Therefore, the TRAI recommended a fine of INR500 million per service area where PoI congestion exceeded the allowable limit of 0.5%; congestion exceeded the acceptable level in 21 of the 22 circles (all except Jammu & Kashmir).

ECJ rules in favor of Germany in IP address squabble

The European Court of Justice (ECJ) ruled that Germany's government may collect and save the log data of visitors to its websites, in order for it to better resist hackers. EurActiv Germany reports. The Luxembourg court dismissed a case brought by the Pirate Party's Schleswig-Holstein leader, Patrick Breyer, who claimed that Berlin's practice of recording such information is a breach of data protection laws. Breyer had taken his concerns to Germany's federal court, who then referred the case to the ECJ, asking for a judgment on whether a dynamic IP address can be protected as a piece of "personal data" if the access provider requires additional information to identify the user. Today's decision means the ECJ does not agree

with this interpretation. As a result, the federal government is allowed to continue recording the log data of its websites' users, in order to safeguard against hackers. The decision is very important for many internet service providers. The German government will now be able to collect and store the dynamic IP addresses of its websites' users, in addition to the info it already records, such as when a webpage was viewed and for how long. The ECJ stipulated that this would only come into the realms of data protection if access providers could identify the internet users with further technical information. Germany's data protection officer, Andrea Voßhoff, welcomed the federal court's referral to the ECJ back

in October 2014. Whether IP addresses should be considered pieces of personal information and therefore safeguarded by data protection rules will be debated for years to come. The EU regulation on data protection, which is still a work-in-progress, requires "a uniform interpretation and a harmonized approach to fundamental issues", explained Voßhoff. "The EU does not protect internet users from their internet usage behavior being monitored en masse," said Breyer, in response to this verdict. He complained that internet users will continue to have their "private interests and preferences collected and passed on", urging the EU to "close this unacceptable gap in its data protection as quickly as possible, by introducing a new law!"

Governments in Middle East and North Africa on pace to spend US \$11.7 billion on IT in 2016

Governments in the Middle East and North Africa are on pace to spend US \$11.7 billion on IT products and services in 2016, according to Gartner, Inc. This forecast includes spending on internal services, software, IT services, data center systems, devices and telecom services. Government comprises state and local governments and national government. Telecom services, which include fixed and mobile telecom services, will be the largest overall spending category through 2020 within the

government sector. It is expected to be US \$4.8 billion in 2016, with mobile network services being the largest sub-segment with US \$3.2 billion in spending. "The software segment includes enterprise resource planning (ERP), supply chain management (SCM), customer relationship management (CRM), enterprise application software, infrastructure software and vertical specific software (VSS). Software spending will grow 6.1 percent over 2016 spending, to reach US \$1.2 billion," said Moutusi Sau,

principal research analyst at Gartner. "Applications will grow 11.8 percent in 2016 to reach USD \$394 million." The top priority for Middle East governments is cybersecurity due to some recent high-profile targeted cyberattacks. Governments are focusing on releasing cybersecurity frameworks and by mandating country-specific regulatory policies, which include NESA in the United Arab Emirates (UAE), QCB in Qatar and SAMA in Saudi Arabia.

India's spectrum auction puts added pressure on operators

India's mobile operators, whose balance sheets are already stretched, will face additional obstacles following the country's spectrum auction last week, with seven players spending \$9.8 billion to expand their spectrum holdings as competition intensifies. "These spectrum wins will weigh on balance sheets and cash flows, as debt levels will rise materially for most operators," warned Annalisa Di Chiara, a Moody's VP and senior credit officer. "The operators will experience a reduction in their ability to fund further expansion or to absorb the effects of weaker profitability as competition intensifies." More intense competition is likely to drive tariffs lower,

causing ARPU to contract and industry revenue and profitability to fall over the next 12-18 months, meaning that leverage levels could rise, Di Chiara said. 4G newcomer Reliance Jio, which finally launched service nationwide in early September, is offering voice, SMS and 4G data service for free as part of a trial until the end of the year. Its aggressive move is starting a price war as rivals respond with low-cost packages. Growing demand for 3G/4G data services will continue to drive each company's spectrum cost recoveries, Moody's said. Operators such as Bharti Airtel, Idea and Vodafone, among others, will likely opt to defer their spectrum payments, mitigating

the effect on cash flows. This option requires them to make upfront payments of 25 per cent or 50 per cent, depending on the spectrum band, within 10 days of the auction's close, with the balance payable in 10 annual installments after a moratorium of two years. In the longer term, Moody's said the new spectrum will help operators maintain their competitive positions, support their strategies on data growth and enhance cash flow generation. Their high debt burdens may also pave the way for recapitalization and further industry consolidation, which will ultimately benefit the stronger players.

Canal+ fiber internet rollout hits regulatory blockage in Benin



The local Beninese ISP subsidiary of the French-owned Canal+ pay-TV group has been ordered by the state authorities to halt the deployment of fiber-optic infrastructure for its planned high speed internet access service in the Republic's capital Cotonou, apparently for failing to comply with licensing regulations, reports

Jeune Afrique. As previously reported by CommsUpdate, in January 2016 Canal+ struck a deal to operate internet access services via the network of the Beninese Electric Power Company (SBEE). The agreement provided for the operation of internet infrastructure by Canal Box Benin, which TeleGeography noted is registered

as a Beninese ISP under the name Espace Informatique Benin (EIT), although it appears that its current infrastructure deployment activities may not be covered by its existing licensing. Canal+/Canal Box Benin acquired the assets of EIT in February, although Jeune Afrique's report claims that the French-led group has run into problems by failing to comply with Benin's current telecoms legislation adopted in July 2014, and has instead 'followed the previous guidelines, dating from 2002.' The new Canal Box internet service is intended to be rolled out across the capital before a potential expansion to other areas, with the CEO of Canal+ declaring that: 'Our ambition is to mesh the entire city of Cotonou, and gradually, a fiber-optic network that will enable end users to benefit from very high speed internet,' whilst citing the example of successful powerline communications (PLC) internet services in Brazil as a precedent.

Jeune Afrique adds, however, that following an agreement with SBEE to initially deploy 120km of aerial optical fiber on the utility firm's electricity poles in Cotonou, only 50km was installed by August before the government ordered a shutdown of the operation.

Dutch net neutrality law puts Digital Single Market at risk – GSMA

Industry body says strict new rules are incompatible with the EU's own net neutrality legislation. Strict net neutrality rules adopted by the Netherlands this week are jeopardizing the development of the Digital Single Market (DSM), the GSMA has warned. Amendments to the Telecommunications Act that ban zero-rating – where usage of a certain service or category of services does not count against a customer's data allowance – were passed by the Dutch Senate. This runs counter to BEREC's guidelines for implementing the European Union's net neutrality law, which calls for national regulators to consider zero-rated pricing practices on a case-by-case basis. "The

Dutch Net Neutrality law goes far beyond the intent of the EU regulation," said Afke Schaart, the GSMA's vice president for Europe, in a statement. "We therefore call on the European Commission to ensure the harmonized implementation of Europe's open Internet rules." Earlier this week, T-Mobile Netherlands launched a zero-rated tariff called 'Music Freedom', which as the name suggests, gives customers unmetered access to music streaming services. On Tuesday, the Dutch competition watchdog, the Authority for Consumers and Markets (ACM), said it will investigate Music Freedom, and warned it will sanction T-Mobile if the offer is found to violate the country's strict new net

neutrality rules. In response, T-Mobile said it is prepared to challenge the legislation in court, insisting that Music Freedom conforms to BEREC's guidelines, and that the policy in the Netherlands is in conflict with European law.

The GSMA agrees:

"The new law will be incompatible with the EU Open Internet Regulation, in force from November 2015, putting the development of the EU Digital Single Market at risk," the industry group said. "Moreover, the implementation of the revised law will harm consumers by stifling innovation and limiting the choice of services available to Dutch citizens."

Pakistan to get 100 percent universal connectivity by 2018



The State Minister for IT and Telecom, Anusha Rehman, on Thursday said the government was committed to complete all its milestones to achieve universal connectivity envisaged to connect the unconnected by 2018. She said this while chairing 47th Board of Directors (BoD) Meeting of USF Co in Islamabad on Thursday. IT Federal Secretary Rizwan Bashir, PTA Chairman Syed Ismail Shah, Member Telecom, Mudassar Hussain, Mobilink CEO Aamir Ibrahim, USF Co CEO Faisal Sattar and other board members also participated in the meeting. The board reviewed the progress and development on the key projects of ICT services in un-

served and under-served areas being carried out by USF Co in far flung and remote areas across the country, with a particular focus on coverage in Balochistan and FATA regions. The USF Co CEO briefed the board on "Broadband for Sustainable Development Project" through a detailed presentation. He informed the board that company has formally signed an agreement with Ufone for Khuzdar and Chaghi lots. Moreover, Kohistan, Kharan, Washuk and Kohlu lots are also ready to be rolled out within next few days, he said. He further apprised the board that USF Co has completed 50 percent milestones in Zhob, Sibi, Shangla areas so far and within next six months, we are anticipating this ratio to reach at 75 percent. The board was informed by the company that BISP's data have been received and being analyzed for the

initiation of "Pilot Project" for provisions of 30,000 broadband enabled handsets to the women who are active recipients of BISP funds in un-served and under-served areas of the country. The progresses on "ICT for Girls", "Establishment of Labs at Women Empowerment Centres" and "Telecentres" were also discussed by the board, whereas the board was satisfied with the progress being made on these projects. The minister said that she along with her entire team at MoIT and USF Co, had accorded particular focus to early childhood IT skill training to young children, particularly girls to achieve this programme of computer lab plus teacher training through Microsoft, which is being executed in rural girls schools of the ICT region as a pilot. Rahman reiterated that the prime objective behind the USF projects is to provide connectivity to the marginalised and remote areas of the country, especially Khyber Pakhtunkhwa (KP) and Balochistan so that entire Pakistan could benefit from this development. She directed the authorities to gear up efforts to complete their roll outs with utmost transparency and efficiency within given timelines.

FCC approves rules on ISP customer data protection



The FCC has approved a draft proposal regulating how ISPs can use customer data. This follows a public consultation earlier this year which received extensive feedback. The Commission will vote on the proposal on October 27. The FCC already regulates personal data and privacy issues at telecom network operators. Its oversight is extended to internet providers after its Open Internet Order last year reclassified broadband access as a telecommunications service. The rules, if adopted, would give consumers greater control over their ISPs' use and sharing of their personal information, and provide them with ways to easily adjust their privacy preferences, the FCC said. The draft rules require that ISPs offering either mobile or fixed broadband to consumers must tell customers about

what types of information the ISP collects about its customers; specify how and for what purposes the ISP uses and shares this information; and identify the types of entities with which the ISP shares this information. ISPs must provide this information when a customer signs up for service, and update customers when their privacy policy changes in significant ways. In addition, the information must be available clearly on the ISP's website or mobile app. The Commission's Consumer Advisory Committee (CAC) will develop a standardized privacy notice format that would serve as a 'safe-harbor' for those providers who choose to adopt it. In order to use customers' sensitive information, ISPs would be required to obtain explicit prior permission, through an opt-in. This covers data such as location, health, on children, social security numbers, web browsing history or the content of communications. Sharing of most other types of information would be subject to an opt-out. ISPs would still be able to share anonymized data without being subject to the above rules, as long as they commit to not re-identifying the customers associated with the data. Additional rules include a ban on rejecting customers who refuse to share part or all of their data, and heightened disclosure and vetting by the

FCC for 'pay for privacy' type products. In addition, the rules would require ISPs to take reasonable efforts to protect customer data from security threats. A set of guidelines on such measures is included, in line with the FTC's Consumer Privacy Bill of Rights. Any data breaches would need to be reported to affected customers within 30 days of discovery and to the FCC within seven days, and the FBI must be notified if more than 5,000 customers are affected. The FCC's rules stop short of regulating online services such as search engines and social media sites. Consumer Watchdog welcomed the broadband regulations but said "ultimately we also need privacy regulations covering so-called 'edge providers' like Google, Facebook, Amazon and Twitter". Industry group USTelecom was more concerned about how the FCC determines what 'sensitive' customer data is. While welcoming the approach to basing the privacy regulation on the type of data, USTelecom said that the Commission would be better off deferring to the FTC on defining what is sensitive, in order to ensure a uniform approach. "We are concerned . . . that the commission, which has no expertise with regard to determining the content of speech, is now attempting to redefine what consumers may regard as sensitive," the group said in a statement.

ICT Policy paper approved by government, ICASA ordered to halt spectrum auction in South Africa

The South African government has approved the ICT Policy White Paper, which has been in development since 2012, with the document outlining the establishment of a Wireless Open Access Network (OAN). Under the new framework, all wireless service providers in the country will be required to return their previously assigned spectrum, which in turn will be allocated to the OAN. 'This will ensure that operators with significant market power do not leverage access to their infrastructure and critical resources to maintain dominance and deny market access to competition', the white paper states. Following the adoption

of the White Paper, the Independent Communications Authority of South Africa (ICASA) will be required to conduct an industry-wide public consultation process to determine the terms and conditions, as well as the time frame, under which the currently exclusively/individually assigned high demand spectrum will be returned to the regulator. Meanwhile, ICASA has been ordered by the North Gauteng High Court to halt its planned LTE spectrum auction, TechCentral reports. 'ICASA is interdicted and prevented from implementing the licensing steps and processes referred to in the Invitation to Apply [ITA]', judge

Roland Sutherland said, adding that the regulator was also banned from accepting any bids for the ITA pending an application from Cell C to launch court proceedings against it, provided that the papers are served before 14 October. The ruling was handed after South Africa's Minister of Telecommunications and Postal Services, Siyabonga Cwele, filed an application in August 2016 to block the proposed auction of LTE-suitable spectrum in the 700MHz, 800MHz and 2600MHz bands – scheduled to take place in March 2017.

EU pushes IoT security regulations

The European Commission has said it is planning to push industry governance measures that would improve the security of Internet-connected devices such as cameras, set-top boxes and other consumer electronics, amidst increasing exploitation of such devices to carry out online attacks. Speaking at a conference in Brussels, a senior Commission official said the body wants to take the measures to ensure consumers continue to trust Internet-connected products.

Certification scheme?

Thibault Kleiner, deputy head of cabinet for Commission digital policy commissioner Günther Oettinger, said the body wants to see the creation of a certification process for "Internet of Things" devices that would ensure users are protected. "That's really a problem in the Internet of Things. It's not enough to just look at one component. You need to look at the network, the cloud. You need a governance framework to get certification," Kleiner said, according to a report by news outlet EurActiv. He said such a scheme could be comparable to the European energy-consumption labelling

scheme, which was implemented by an EU directive in 1992 and covers products such as white goods, light bulbs and automobiles. But he acknowledged some hardware manufacturers consider such a scheme unworkable and instead want to see the development of a standardised SIM card-like component that would be used in connected electronics to ensure security.

IoT botnets

Currently most connected devices include minimal security protections, allowing hackers to infiltrate them en masse and assemble them into powerful botnets directing malicious traffic to knock websites offline. The users of such compromised devices would in most cases be unaware that the product was being misused, according to computer security researchers. The Commission has begun to organize its efforts around IoT, including setting up a group called the Alliance for Internet of Things Innovation last year backed by large firms in industries including energy, automotive and health care. But there are already around 6 billion connected devices in use around the world,

a figure expected to rise to 20 billion by 2020, according to consultancy Gartner.

Insecure devices

The IoT security issue made headlines last month when a botnet made up of compromised devices was used in an attempt to disable popular IT security website Krebs On Security. The attack was carried out on a scale rarely seen before, even in incidents involving more conventional botnets made up of PCs, according to Akamai, the Internet management service that dealt with the attack. Bruce Schneier, a well-known computer security researcher, said last week the attack shows regulation is necessary. "What this attack demonstrates is that the economics of the IoT mean that it will remain insecure unless government steps in to fix the problem," he said in an editorial on IT publication Motherboard. "The government could impose security regulations on IoT manufacturers, forcing them to make their devices secure even though their customers don't care."

PLDT, Globe launch legal action against competition watchdog

Philippine operators PLDT and Globe Telecom filed a petition against a probe by the country's competition watchdog PCC (Philippines Competition Commission) into their joint buyout of San Miguel Corp's telecoms assets. In two separate statements, the companies said they had filed for a temporary restraining order (TRO) to the country's Court of Appeals, asking for a halt of the review, with Globe arguing the "transaction is already deemed approved", adding that "the PCC cannot by whim or caprice state that it wants a review without any legal basis". "The PCC cannot withhold and block the transaction out of a process not found in their own rules, and not disclosed to the public," it added. PCC declared last month it was conducting

a "comprehensive review" of the PHP69 billion (\$1.5 billion) acquisition, struck in May, after asking operators to resubmit filings, with the agency indicating that the companies may have failed to comply with guidelines of the competition act. The two operators then called for a meeting with the regulator seeking to resolve any issues it may have, while repeatedly claiming the transaction was above board and did not violate any provisions of the country's anti-competitive law. It is worth noting that shortly after the deal was struck, the PCC released new regulations for the competition act, which were put into effect in June. Both companies also stressed in their statements they have already been implementing the transaction and using the

frequencies as part of its nationwide rollout, which includes the valued 700MHz band. "The new frequencies are now providing Smart with much needed additional capacities which are crucial in its efforts to provide faster, reliable and affordable mobile internet services throughout the country," said PLDT's head of regulatory affairs, Atty Espinosa. In response, the PCC confirmed the applications for a restraining order against it, and said it was "disappointed" about the lawsuit. It added that the legal action will only serve to delay the review, expressing confidence that it will get a favorable decision from the Court of Appeals.

TRAI's arbitrary, and inexplicable, pricing to blame for failure of 700MHz auction

Given the telecom regulator's (TRAI) reserve price of Rs 11,485 crore per MHz for the 700MHz spectrum frequency band was irrational, it is not surprising there have been no takers for the band in the ongoing telecom auctions. Since the 700MHz band, at even the reserve price, would have meant a bid of over Rs 400,000 crore – as compared to Rs 290,000 crore mopped up in all the auctions since 2010 – the failure of the auction in this band means over 70% of the total 2016 auction, by way of value based on the reserve price for various spectrum frequency bands, was rendered a non-starter from the word go. Given the superior propagation qualities of the 700MHz frequency band, a failure to auction it has meant Indian telcos have been denied the opportunity to provide top-quality internet services to users – this also means telcos who already have spectrum in the 800MHz and 900MHz

bands remain better placed. Of course, the Cabinet has the power to reduce the reserve price and put the 700MHz spectrum on auction again – in 2012, while Trai recommended 800MHz be priced at twice the 1800MHz price, the Cabinet lowered this to 1.3 times and when the auction still failed, the reserve price was further cut by half in 2013. Setting a reserve price for the 700MHz band should have been relatively easy since last year's auction had thrown up valuations of Rs 2,682 crore per MHz for the 1800MHz band, Rs 8,681 crore for 900MHz and Rs 5,221 crore for 800MHz. In 2012, while fixing the reserve price for 800/900MHz, Trai used the relative their propagation characteristics to arrive a reserve price which was roughly double that of the 1800MHz band – while the 700MHz band has better propagation than 800MHz, it doesn't have as robust an eco-system in terms of phones that work on it right

now; so a price roughly equal to 800MHz should have been expected. Instead, Trai used a flawed 2012 recommendation of an earlier Trai. At that time, Trai had used the relative auction prices of 700MHz and 1800MHz bands in some European nations and applied this to India. Using a European norm made little sense to begin with, but what was even more arbitrary, Trai used a factor of 4 while this differed from 28.5 in Germany to 3.1 in Italy, 1.4 in Portugal and 1.8 in Sweden. While analyzing the auction, both the regulator and the government will do well to examine how such a poor recommendation was made and why the telecom ministry didn't strike it down either – in any case, when there is auction process, it is not clear why reserve prices are kept so high since, once there are enough bidders, the market-price will be discovered anyway.

EC set for new rules on data sharing

Speeches by two EU commissioners, Andrus Ansip and Margrethe Vestager, highlighted the tensions for Europe in how it allows, or blocks, data being pooled and moved across borders. "Europe should not be afraid of data" said European Commissioner Andrus Ansip in a speech on the power of IoT. Within the single market data has to be able to flow across national borders, said Ansip. "This is not what Europe has today," he added, referring to legal and technical barriers that constrain such flows. He argued tax, company and health data should not necessarily be stored locally. "Forcible data localization rules will not lead to better protection, but to fragmentation," he commented. The existing General Data Protection Regulation (GDPR) offers sufficient protection, he added. He also gave a nod to concerns expressed recently by the French and German governments with a reference to how enhanced data exchange could

help security and law enforcement. Later this year, the EC will present an initiative that will tackle restrictions on where data is located, including legal issues around data ownership, management, use and reuse of data, he said. Ansip was speaking at the 2016 Digital Assembly in Bratislava in Slovakia. On the other hand, EU competition commissioner Margrethe Vestager highlighted potential concerns around how data is manipulated. For example, collecting data from connected cars can help build better cars, or teach autonomous cars to drive independently. Correctly regulated, this type of pooling can help competition, she said. But companies have to be careful that pooling data does not give away too much about their business. "Otherwise, it might become too easy for them to coordinate their actions, rather than competing to cut prices and improve their products." Data is now so important it can be central to mergers and

acquisitions, in that a company might buy another to get hold of its data, even though it has yet to translate into significant revenue. So the EC is considering whether it should scrutinize mergers with valuable data involved, even though the companies concerned might not (yet) have big turnovers, said Vestager. She also argued the need for EU-wide regulation on data. "But if we want to be able to deal with big data issues throughout the EU, then every national authority has to have the tools it needs to enforce the rules," she said. Evidence for the need came from the Facebook/WhatsApp case in Germany. "I think there's a strong case for new EU rules as part of the answer," said Vestager, with the preference for a directive rather than a regulation. She was speaking at the EDPS-BEUC Conference on Big Data in Brussels.

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A SNAPSHOT OF REGULATORY ACTIVITIES IN SAMENA REGION



Afghanistan

President: Dr. Mohammad Najib Azizi
[Afghanistan Telecommunication Regulatory Authority (ATRA)]

Afghanistan ended June with over 6,781 mobile telephone base stations. The country also had mobile telephone population coverage of 89 percent at the end of June, according to a report from the Afghanistan Telecom Regulatory Authority (ATRA). There were 2.5 million 3G broadband subscribers in Afghanistan at June

30, as well as 112,190 landline telephones. The GSM subscriber base stood at 27.8 million, with around 20.6 million active GSM subscribers. CDMA subscribers reached 253,628 at end-June. (October 20, 2016) telecompaper.com



Algeria

President: Mr. Mohamed Ahmed Nacer
[Regulatory Authority for Post & Telecommunication (ARPT)]

Algeria's ICT minister Iman Houda Feraoun has disclosed that a draft Code of Posts and Electronic Communications – with an obligation for fixed line incumbent Algerie Telecom (AT) to open its unbundled local loops to alternative operators – will soon be submitted to the country's Cabinet for discussion. The proposed legislation, which was previously named Code of Posts and Telecommunications, is set to replace Telecom Law 03-2000 of August 5, 2000, which provided for the establishment of AT as the country's sole fixed line operator. Mrs. Feraoun said: 'The old name of the law required the existence of a basic infrastructure including fiber-optic, satellite and other equipment, while electronic communications would incorporate the basic infrastructure, in addition to content exchanges on the network, while also applying this law to virtual operators and internet service providers ... This is to adapt to technological progress in this area, due to the intervention of other virtual actors who do not have telecommunications network.' (October 26, 2016) l'Expression

The Regulatory Authority for Post and Telecommunications (ARPT) has awarded the executive decrees authorizing the deployment of

4G LTE networks to Algeria Telecom Mobile (Mobilis), Optimum Telecom Algeria (OTA, trading as Djezzy) and Ooredoo Algeria, with all three operators now advertising '4G+' services on their websites. According to Algeria Focus, the cellcos must pay one-off license fees of DZD5 billion (US\$45.9 million, Mobilis), DZD4 billion (OTA) and DZD2 billion (Ooredoo) within 20 days of the license award, in addition to an annual fee of 1% of revenues generated by 4G services. With regards to the deployment schedule, the government has divided the country into two categories – C1 (15 high priority wilayas, or regions) and C2 (33 low priority wilayas). According to the authorizations' terms and conditions, the three operators must achieve minimum coverage of 10% within one year of operation in the following wilayas: Ouargla, Algiers and Oran (Mobilis); Djelfa, Setif and Constantine (OTA); and Bechar, Tlemcen and Tizi Ouzou (Ooredoo). Once the minimum coverage obligations have been achieved in the stipulated wilayas, the operators will be authorized to deploy their 4G services in three to four additional wilayas each year. (September 27, 2016) telegeography.com



Bahrain

Chairman: Dr. Mohammed Alamer
[Telecommunication Regulatory Authority (TRA)]

Telecommunication Regulatory Authority (TRA) issued a public consultation on draft regulation on permission, installation and maintenance of public radio communications stations, which details the necessary roles and processes for permitting mobile base stations as well as technical specifications for design and deployment. "We want to deliver and enable future technologies which consider public safety and visual impact of masts." Says TRA Technical Operations Director, Mr. Mohammed Al Noaimi. "Within this regulation, we have proposed a complaints procedure enabling consumers to raise complaints about any mast. Through the regulation, we aim to provide a time efficient process by having a single point of contact. We encourage members of the public and of the telecoms sector to provide us with their feedback on the regulation to ensure that their insights will be taken into account." He added. This draft regulation is an important step toward effective implementation of the Prime Ministerial Decision No. 45 of 2015, which appoints TRA as the responsible entity to receive applications and coordinate with other relevant bodies the grant of permits for deploying new public radio communications stations. It also allows TRA to establish an efficient and effective permission system, setting up a framework to classify and rectify existing public radio communications stations that do not hold valid permits, and encourage increased sharing practices and using environmentally friendly masts. The draft regulation can be found through www.tra.bh under consultations page.

(October 18, 2016) tra.bh

The Telecommunications Regulatory Authority (TRA) has held a one-day workshop for its staff members on the mobile market competition, in collaboration with SAMENA Telecommunication Council. "TRA is very involved at the international level and collaborates with industry experts on discussions regarding the market's future needs. Sharing perspectives with industry groups such as SAMENA Council is key to bridging the gap between regulatory and operator viewpoints, as SAMENA represents the

voice of operators not only in Bahrain but also across the whole region" said TRA's Deputy General Director, Shaikh Nasser bin Mohammed Al Khalifa. He added "The workshop aimed to discuss what has been accomplished regionally and internationally. We have also discussed matters related to aspects of the future of mobile market competition, technologies and services from an operator standpoint and how the industry regionally and internationally is dealing with digital services, big data, future technologies such as 5G and the use of mobile radio spectrum." The workshop aimed at familiarizing TRA staff with the industry's international developments in the mobile market, focusing on services such as machine-to-machine communications, Smart Cities, and advances of telecommunications to support other sectors such as finance, education, transportation, health, and energy. Future technologies and services such as 5G and the management of mobile radio spectrum were also discussed during the workshop. Bocar BA, CEO of SAMENA Council stated "This workshop provided an opportunity to understand the vision of TRA Bahrain and how its esteemed leadership views the TRA's transforming role in leading digital development both in Bahrain as well as in the SAMENA region. All stakeholders realize that potential exists to enable public and private telecom sectors to support each other by leveraging, combining and capitalizing on each other's complementary strengths and capabilities. The workshop between TRA Bahrain and SAMENA Council has set a new example of synergy created through constructive collaboration of both sectors. SAMENA Council shall remain closely attentive to the TRA's strategic needs and priorities, to further help bring private-sector perspectives to the regulatory sight, and shall continue to serve TRA Bahrain as a reliable sector development partner. We extend our thanks to the TRA team for their warm welcome and collaboration with SAMENA Council."

(October 16, 2016) bahrainbiznews.com



Bangladesh

Chairman: Sahjahan Mahmud
[Bangladesh Telecommunication Regulatory Commission (BTRC)]

The Bangladesh Telecommunication Regulatory Commission (BTRC) has given its final approval for the merger of mobile network operators Robi Axiata and Airtel Bangladesh, with BTRC Chairman Shahjahan Mahmood saying that the consolidation would bring a positive change for the industry. The merger deal, which was signed in January and received court approval at the end of August, is expected to be completed by the end of

the year, leapfrogging rival Banglalink to form a new second-placed mobile challenger to GrameenPhone under the Robi brand. Malaysia's Axiata will control 68.3% of the new company, whilst India's Bharti Airtel will own 25% and existing Robi Axiata stakeholder NTT DOCOMO will take the 6.7% remainder.

(October 24, 2016) [The Dhaka Tribune](http://TheDhakaTribune)



Egypt

Acting Executive President: Eng. Mustafa Abdul Wahid
[National Telecommunication Regulatory Authority (NTRA)]

Following the redistribution of 4G-suitable spectrum by the National Telecom Regulatory Authority (NTRA) among Egypt's mobile operators, Vodafone Egypt appears to have lost out at the expense of its rival Orange Egypt. As per the NTRA's latest decision Orange Egypt and Etisalat Misr will each be allocated 10MHz of frequencies for the deployment of LTE-based services. While Etisalat Misr had been offered that amount of spectrum under the terms of the 4G licenses that all three Egyptian cellcos opted not to apply for in September 2016, Orange Egypt had only been offered 7.5MHz. By comparison, in the latest spectrum distribution plan Vodafone Egypt will now only be given 5MHz of LTE-suitable frequencies, down from the 7.5MHz it had been offered under the earlier licensing terms. The report also notes that in terms of the price paid for spectrum, the updated frequency allocations mean that Orange Egypt is now paying US\$48.4 million per MHz, down by US\$4.7 million per MHz compared to the earlier license offer. By comparison, Vodafone Egypt will now pay US\$67.0 million per MHz, a notable increase of US\$13.9 million per MHz. Etisalat Misr will also pay a slightly higher rate, though nowhere near as great an increase as the one Vodafone is facing, with the former now looking at a charge of US\$53.5 million per MHz, up from US\$51.25 million per MHz previously. (October 24, 2016) Daily News Egypt

Following in the footsteps of Orange Egypt, fellow Egyptian mobile network operators (MNOs) Vodafone Egypt and Etisalat Misr have both now signed on the dotted line for 4G licenses, less than a month after opting not to apply for a concession under the initial terms set out by the government. Egypt's Ministry of Communications and Information Technology (MCIT) confirmed the award of both licenses in two separate press releases, revealing that Vodafone Egypt had agreed to pay EGP335 million (USD37 million), while Etisalat Misr will pay EGP535.5 million. In a report regarding the matter, Bloomberg cites the National Telecommunications Regulatory Authority's (NTRA's) executive president Mostafa Abdul Wahid as confirming that Vodafone Egypt license includes 5MHz of LTE-suitable spectrum, while Etisalat secured 10MHz, explaining the difference in the prices of the two concessions. It is understood that the 4G deal also included the renewal of both Vodafone and Etisalat's existing 2G and 3G licenses through to 2031. Alongside the updated mobile concessions, both MNOs also agreed to pay out for licenses that will allow them to offer fixed line services over the infrastructure belonging to Telecom Egypt; these 'virtual fixed line' licenses will cost each operator EGP11.262 million. In an e-mailed statement quoted by Bloomberg, Etisalat said of the license award: 'We thank the efforts of NTRA to provide a new service to Egyptian customers which is in line with Etisalat Misr's strategy and which wouldn't have taken place without enough spectrum to operate

4G.' For its part, Vodafone Egypt's CEO Stefano Gastaut, was cited as saying: 'The terms under which we have signed an agreement last night are different from the terms three weeks ago, and we consider the new terms completely satisfactory to be able to launch top quality 4G services.' (October 17, 2016) telegeography.com

Orange Egypt has submitted a request for a license to operate 4G mobile phone services in the country, reports Reuters. The operator said it had informed the regulator of its desire to renegotiate the acquisition of a 4G license in light of new terms. Egypt is selling four 4G licenses as part of a long-awaited plan to reform the telecoms sector and to raise money for stretched government finances. All three mobile operators, Vodafone, Orange, and Etisalat, earlier refused to move towards obtaining a 4G license, attributing their decision to the limited frequencies on the table, which would impact the quality of service; the high price of the license; and the condition of paying 50 percent of fees in US dollars. The statement from Orange Egypt came shortly after the regulator announced that operators which paid for the license entirely in dollars would be given priority for buying additional spectrum. The regulator had originally required that companies pay half the cost of the license in US dollars, which are scarce in Egypt due to a long-running economic crisis. The regulator said the company had until 23 October to submit a formal offer. (October 14, 2016) telecompaper.com

With Etisalat, Orange and Vodafone all turning down 4G licenses, Egypt says China Telecom, STC and Zain may be interested if there is a new auction Egypt's three foreign-owned mobile operators have started a battle with the country's telecoms regulator after they turned down the opportunity to buy 4G licenses. Etisalat, Orange and Vodafone are all claiming that there is inadequate spectrum on offer and that the current terms favor state-controlled operator Telecom Egypt, which agreed to buy a 4G license in July for \$800 million. The National Telecommunications Regulatory Agency (NTRA) is planning to set out the terms for new 4G licenses, a move that may open the way for other operators to move into the market. President of the NTRA agreed that the spectrum on offer was "not enough" for 90 million users, but said that it was a starting point. He said the existing terms for a 4G spectrum license were now withdrawn and would not be offered again. A number of reports have suggested that other companies, including China Telecom, STC of Saudi Arabia and Zain of Kuwait, might be interested in bidding for a 4G license, citing an unnamed telecoms ministry official. Mr. Yasser El Qady, Egypt's telecoms minister said that Telecom Egypt will go ahead with 4G services. Telecom Egypt owns 45% of Vodafone Egypt, a stake it is expected to sell if both companies offer mobile services

in the market. Vodafone Egypt said: "We want to launch 4G in Egypt as soon as possible, but to do so the conditions must be right." The company added: "After extensive analysis, Vodafone Egypt's Board of Directors regrets to say that it believes the current terms and conditions of the 4G license do not serve the interests of the Egyptian citizen and do not take into account the developmental dimension of the telecom sector in Egypt. "The license does not offer sufficient spectrum to operate 4G services efficiently and in a way that would allow the Egyptian user to experience significantly higher speeds. Furthermore, the lack of available 4G spectrum could also impact the quality of 2G and 3G services being enjoyed by over 40m existing customers.

Accordingly, the board has decided to decline the 4G license in its current form." Orange Egypt said: "Considering the existing terms and conditions of the proposed 4G license, Orange Egypt decided not to apply for it. In particular, the quantity of spectrum currently availed does not allow to launch a 4G service with the required level of quality according to all international standards." It added: "Orange Egypt considers that the quantity of spectrum offered is not enough to offer the Egyptian customers the quality of 4G services that they deserve. We will remain available to discuss the 4G license further in case a new framework is offered." (September 27, 2016) globaltelecomsbusiness.com



Kuwait

Chairman and CEO: Salim Alozainah
[Communication and Information Technology Regulatory Authority (CITRA)]

Ooredoo Kuwait, member of international Ooredoo Group, has finalized the purchase of 99% of Internet Service Provider FASTtelco's shares for a total of KD 11 million. Following this transaction, Ooredoo and FASTtelco will continue to co-exist as separate legal entities in the foreseeable future. Ooredoo CEO Sheikh Mohammed bin Abdullah Al Thani said: 'This deal is a huge achievement for Ooredoo Kuwait and FASTtelco. Both companies will work hand-in-hand to deliver the highest quality products and services to consumers and businesses. We will continue to innovate and invest in our portfolio to create unique offerings in the Kuwaiti market to meet the needs of our consumers. Our focus will be on exceptional service delivery to ensure that we continue to meet our goal of enhancing people's lives through the strengths of both companies'. Business and residential consumers will gain access to comprehensive offers that combine fast-speed mobile internet

and voice, fixed broadband, gaming and data center services. Customers will benefit from the new products and services as well as from increased service delivery due to improved infrastructure. Jointly, the companies will promote the accelerated development of new products and services and unique customer experiences. By relying on Ooredoo Kuwait's comprehensive nationwide wireless network and FASTtelco's dependable and cost effective fiber broadband solutions, the companies will drive an enhanced customer experience with a focus on speed and consistency. To get further details about the new packages and services, customers can visit one of Ooredoo outlets or official retailers, and they can also visit www.ooredoo.com.kw or call the customer care center available 24/7 on 121 for Ooredoo subscribers.

(October 20, 2016) 4-traders.com



Lebanon

Secretary of the Board: Mr. Amine Moukheiber
[Telecommunication Regulatory Authority (TRA)]

The executive bureau of Arab Telecom Ministers Council held its 40th session at the Emirates Palace in Abu Dhabi, with Lebanese Telecom Minister Boutros Harb making a range of suggestions helping to overcome the difficulties and challenges facing the telecom sector at the international level. Minister Harb proposed forming an investing financial committee enjoying a

big capital prone to support and produce telecom services and internet applications across all Arab countries. The committee will be formed between the private and public sectors and the governmental banks. He also proposed setting a rapprochement for "interneting" commodities, linking each object to the internet marketing. (September 27, 2016) nna-leb.gov.lb



Morocco

Director General: M. Azdine El Mountassir Billah
[National Telecommunications Regulatory Agency (ANRT)]

Moroccan telecom regulator ANRT has published a ruling against incumbent Maroc Telecom over failings to comply with obligations to open up its fixed network to alternative operators willing to provide LLU services. While Morocco's regulatory framework has introduced LLU obligations since 2007, the first attempts to make LLU a reality by alternative operators date back to 2011. The ANRT issued its first warning to the incumbent over its failings to comply with LLU regulations in 2013 and

since then it has continued to observe partial failings in meeting these obligations. The latest ruling opens procedures which could lead to the imposition of sanctions on Maroc Telecom using the authority granted to the ANRT to stamp out anti-competitive practices by operators with significant market power.

(October 24, 2016) telecompaper.com



Nepal

Chairman: Mr. Digambar Jha
[Nepal Telecommunication Authority (NTA)]

Nepal Telecom (NT) has finally received the operating license to provide 4G service in Nepal from the government. Nepal Telecommunications Authority (NTA) – the telecommunication sector regulator – has allowed Nepal Telecom to introduce the service in Nepal from January 1, 2017, making NT the first telecommunication company to roll out 4G service in Nepal. "The NTA board meeting decided to issue 4G licenses to NT under the same plan that the company had submitted to NTA last week," Digambar Jha, chairman of NTA, told The Himalayan Times, adding, "Following the issuance of the license, NT will have to launch 4G service on a commercial basis starting this New Year." Besides the date from which Nepal Telecom had proposed to launch 4G service – December 15 – the telecom sector regulator has approved all other provisions of the rollout plan that NT had submitted. Jha informed that additional time was given to NT so that it could smoothly complete all necessary works needed prior to the launch of 4G service in the country. As mentioned in its rollout plan, NT will begin the service initially from Kathmandu Valley (Kathmandu, Bhaktapur, Lalitpur) and Pokhara. However, NT has mentioned that it is ready to introduce 4G service for its customers from December 15, simultaneously from Kathmandu Valley and Pokhara, citing that 4G service will

be launched through the same existing infrastructure used for providing 3G service to customers. As per NTA, Nepal Telecom has been given permission to launch the 4G service under the same 1,800 MHz frequency band that it has been using to operate 2G service. The telecommunication regulator, however, has not made any decision on the application submitted by Ncell to begin 4G service in Nepal. Of the three operators that had applied to operate 4G service, NTA has already denied the license to Smart Telecom. The 4G service is the fourth generation of wireless mobile telecommunications technology, succeeding 3G. 4G is said to enhance internet using experience for users.

(October 24, 2016) The Himalayan Times

Nepal reached 31.4 million voice telephony subscribers at June 15, up from 30.7 million on May 14. The country's mobile voice subscriber base amounted to 29.7 million users in mid-June, up from 29.4 million in May, according to data from the Nepal Telecommunications Authority (NTA). The total includes 28.3 million GSM users in June, up from 28 million in the previous month, while the remaining 1.41 million use Nepal Telecom's CDMA service. (October 24, 2016) telecompaper.com



Oman

Executive President: Dr. Hamed Al-Rawahi
[Telecommunication Regulatory Authority (TRA)]

Oman's Telecom Regulatory Authority (TRA) said it has received complaints regarding the withdrawal of balances from the prepaid accounts of customers and that it will investigate the authenticity of the claims, reports Muscat Daily. TRA's announcement follows reports on social media that telecom companies have been withdrawing balances from prepaid accounts of customers. The companies in question, though, said that they were not aware of any such incidents and requested anyone making such claims to come forward and file a formal complaint. The authority has also urged all telecom companies to be accurate and transparent in their dealings with customers, stating that it would take legal action against any company found guilty of any violations. TRA said it issued three decisions in order to speed up network and quality enhancement and bring down prices of telecom services. Under the decision, TRA seeks to have a survey of the various regions of the sultanate to find out the extent of coverage and follow up on the performance of networks of both fixed and mobile telecommunication. TRA, under the decision, has also directed the operators to provide within two weeks from the date of the decision, to provide a plan for next three years. It will also work with other governmental authorities and urge them to facilitate and overcome the challenges that companies face in obtaining licenses and approvals necessary to expand their networks and services. It will carry out a detailed study on retail prices of telecommunications services in the sultanate and compare it with neighboring countries in coordination with the neutral and independent bodies, so that highest standards of transparency is followed. (October 25, 2016) telecompaper.com

Oman's Telecom Regulatory Authority (TRA) has decided to finish all the procedures for a third telecom provider in the country to enhance the competition in the telecommunications sector, the telecom regulator said in a statement. The TRA didn't give further details or the name of the new telecom provider. The regulator issued a decision on Sunday urging telecom companies to speed up network, quality enhancement and bring down prices of telecom services. TRA also urged the telecom firms to conduct a survey of the various areas in the country to find out the extent of coverage and follow up on the performance of telecom companies. The body directed telecom firms to provide within two weeks from the date of the decision, a plan for next three years. (October 18, 2016) gulfnws.com

The Telecom Regulatory Authority (TRA) said that it has received complaints regarding withdrawal of balances from prepaid account of customers and it will investigate into the matter. TRA tweeted this after rumors were doing rounds on social media that telecom companies have been withdrawing balances from prepaid accounts of customers. It has said that it would investigate the

authenticity of these claims. The companies in question, though, said that they were not aware of any such incidents and requested anyone making such claims to come forward and file a formal complaint. The authority has also urged all telecom companies to be accurate and transparent in their dealings with customers, stating that it would take legal action against any company found guilty of any violations. TRA issued three decisions in order to speed up network and quality enhancement and bring down prices of telecom services. The authority issued decision No 66/2016 in respect of coverage and quality of telecommunication services. Under the decision, TRA seeks to have a survey of the various regions of the sultanate to find out the extent of coverage and follow up on the performance of networks of both fixed and mobile telecommunication. TRA, under the decision, has also directed the operators to provide within two weeks from the date of the decision, to provide a plan for next three years. It will also work with other governmental authorities and urge them to facilitate and overcome the challenges that companies face in obtaining licenses and approvals necessary to expand their networks and services. TRA issued decision No 67/2016 with regard to prices of telecommunication services. Under this decision, the authority said it will promote competition between operators by expediting the completion and launch of third mobile operator in Oman. It will carry out a detailed study on retail prices of telecommunications services in the sultanate and compare it with neighboring countries in coordination with the neutral and independent bodies, so that highest standards of transparency is followed. The third decision No 68/2016 deals with interests of telecom customers. Under this decision, TRA has asked operators to review all their procedures concerning the services used by customers and provide an action plan to ensure the development of these services within two weeks from the date of the decision. (October 17, 2016) muscatdaily.com

Dr. Ahmed bin Mohammed bin Salim al Futaisi, Minister of Transport and Communications (MoTC), held a meeting with the CEOs of the Telecommunication Regulatory Authority (TRA), Omantel and Ooredoo. In the meeting, the minister asked the officials to keep track of the development as well as the quality of services provided to corporate and the public. The meeting addressed the most significant developments in the communications sector this year as well as the development in services especially mobile phone and broadband services. A presentation during the meeting illustrated the development and challenges in communications sector. The speakers explained that the coverage rate of mobile phone and broadband services is constantly increasing; however, on the other hand there has been a downward spiral in rates, which has been benefitting the public. In a query posed by the minister on the prices of telecommunication services in Oman as compared to those in the

neighboring countries, it appeared that the prices of some plans in Oman were less but on an average the prices were more in the sultanate. The attendees addressed the challenges in increasing service coverage as well as quality. One of which, they stated, was the rough mountainous terrain of Oman, that also increases the cost of telecommunications network. They said that they are constantly working on increasing the coverage and reach remote places. The meeting also dealt with few key aspects that the companies must improve and develop. Dr. Futaisi urged all parties to monitor customer satisfaction as well as track their opinions in order to identify possible development and improvement opportunities. He also urged all parties to come up with solutions and services to meet the expectations of the subscribers. The minister directed the parties to engage with customers through various mass media platforms and keep them updated on the continuous development in the sector. The attendees agreed on issuing a joint and detailed press release soon, which will reflect the most significant development occurring in the sector as well the challenges facing them. (October 13, 2016) muscatdaily.com

The Telecommunications Regulatory Authority (TRA), in cooperation with RIPE NCC, held a series of IPv6 technical training workshops at TRA's headquarters in Muscat recently. Staff from eight private and government bodies participated in the workshops. The meeting was an open format for members to share ideas and information as well as resolve any ongoing technical issues with the RIPE NCC, stated a press release. Mohammed al Kindy, executive manager for regulatory and compliance at TRA Oman said, "The implementation of IPv6 is important for our service provider plans that are aimed at expanding and extending

their networks in Oman. Due to the significant impact of IPv6, TRA Oman is cooperating closely with the RIPE NCC to support Omani private and governmental bodies with its expertise and know-how to adopt the protocol in all their networks and services in the sultanate." Paul Rendek, director of external relations at the RIPE NCC, was also positive about the potential of IPv6 training to empower the local community. "IPv6 is a key issue now that the world is running out of unused IPv4 addresses. This is why our strategic partnerships with organizations such as TRA Oman are so crucial – they will translate into real gains in terms of building the capacity needed for wide-scale IPv6 deployment in Oman. The training course gives technical staff in Oman the opportunity to become experts in IPv6 and supports both local and regional knowledge exchange." The core objective of the RIPE NCC's IPv6 training is to allow participants to recognize the importance of deploying this latest version of the Internet Protocol on their networks, build technical capacity, and support the transition to IPv6 in the coming years. (October 7, 2016) muscatdaily.com

A new communication satellite and a third mobile operator are being considered by Oman's Ministry of Transport and Communications. Dr. Ahmed Bin Mohammed Bin Salim Al Futaisi, Minister of Transport and Communications, said that a series of studies and a number of specialized committees have been developed to launch the communications satellite for Oman to meet the growing requirements of the telecoms sector. However he also said that the details of the implementation and funding of this very significant space program will be revealed only after completion of the studies. (October 1, 2016) world.einnews.com



Pakistan

Chairman: Dr. Syed Ismail Shah
[Pakistan Telecommunication Authority (PTA)]

Given the growing trends of Information Technology, it has become imperative to reformulate the National IT policy to take into account the transformative fundamentals of technology and its eco-system centered on digitization. With this in mind, Ministry of IT & Telecom (MoITT) endeavored to draft national IT policy document in-consultation with relevant stakeholders. Initial draft was prepared with the support and coordination of IT Industry, PASHA, Academia, Civil Society, relevant government departments in 2015. The draft document was further deliberated in multiple focused group sessions with researchers from prime academic institutions, high ranking IT experts, civil society, experienced government decision makers, digital & Internet service providers as well as other associated stakeholders. In continuation of its efforts of inclusivity & outreach to all relevant stakeholders, MoIT has now announced to conduct a final "Stakeholders' consultation" event to review the draft national IT Policy to be held

on October 27, 2016 in Islamabad. In preparation of this event, Ministry formulated multi-stakeholder based working groups in August, 2016 and the draft policy was shared with the nominated members of the working groups for their valuable feedback at that time. The objective of the event is to finalize the National IT policy to create a holistic digital ecosystem. The working groups will focus on key topics such as promoting innovation and entrepreneurship, infrastructure development, increase in IT exports, legislative measures to safeguard software industry, enabling e-Commerce environment, gender empowerment & of Persons with Disabilities (PWDs) for IT accessibility. (October 25, 2016) propakistani.pk

PTA has allowed the establishment and the installation of outdoor Point to Point Wireless Link(s) by telecom operators, mainly the cellular companies and Local Loop (fixed and wireless telephone

operators) and Data-CVAS License holders), to be operated in compliance with Industrial Scientific and Medical (ISM) band. This step will promote advance application of services offered by telecom operators on their networks to connect and operate different devices, equipment and appliances for commercial and non-commercial purposes on ISM bands. Point to point wireless links connect two locations through (signals) line of sight (LOS) operation on the industrial, scientific and medical (ISM) radio bands – reserved internationally for the use of radio frequency (RF) energy for industrial, scientific and medical purposes other than telecommunications. The use of ISM bands are increasing worldwide particularly for short-range and low power communications systems. Cordless phones, Bluetooth devices, Near Field communication (NFC) devices, wireless garage door openers, wireless microphones, vehicle tracking and amateur radio and wireless computer networks.

Terms for Setting up Communication on ISM Band

- Prior to commencement of services, these outdoor Point to Point Links will be registered with Frequency Allocation Board (FAB) through PTA.
- An outdoor Point to Point Link will be installed with prior approval of concerned Municipal Authorities and/or owner of the property/building.
- Operators will apply for registration of all those Links established prior to issuance of this SOP within three (3) months of the issuance of this SOP.
- According to PTA, the already established links will remain operational during this period.
- Operators will close / dismantle any of its already established links, if not approved by FAB.
- After expiry of six (6) months, any unregistered Point to Point Link will be considered illegal.
- PTA/FAB will then carry out inspection/survey to find any unregistered Point to Point Link(s) in ISM band and initiate appropriate actions and/or legal proceedings against unregistered Links users.

PTA may order closure of links either permanently or temporarily for security concerns, on violation of the Rules, Regulations, SOPs, or PTA's directives and/or on the policy directives of the Government of Pakistan. (October 3, 2016) propakistani.pk

Pakistan will not pursue arbitration against UAE-based telecoms group Etisalat over an outstanding payment of US\$800 million related to the company's purchase of a 26% stake in state-owned firm Pakistan Telecommunication Company Ltd (PTCL), as such action would have a negative impact on bilateral relations between the UAE and Pakistan, Chairman of the Privatization Commission (PC) Muhammad Zubair said whilst briefing the Senate Standing Committee on Information Technology and Telecommunication. Teleco Alert cites Mr. Zubair as saying that, following a meeting with Etisalat earlier this month, he believes that it is unlikely that the company would sanction the release of the USD800 million payments, bearing in mind PTCL's profitability and share price. Under the 2006 share purchase agreement, Etisalat agreed to pay US\$2.6 billion for the 26% stake over a five-year period, with the final payment dependent on the transfer of some 3,248 properties to PTCL. Should the government fail to transfer the properties, it was agreed that the value of the outstanding property would be deducted from Etisalat's final payment. In the event, the state encountered a number of legal obstacles and was unable to complete the transfer, with 33 of the promised properties now outstanding and deemed non-transferable. For its part, Etisalat has flatly refused to pay the final US\$800 million, repeatedly stating that it will not do so until all of the disputed properties are transferred to PTCL. The group has also disputed the government's valuation of the outstanding properties, claiming them to be worth closer to US\$400 million than the state's assessment of around US\$90 million. In a bid to break the near decade-long impasse – Etisalat ceased making its payments in late 2007 – the senate committee recommended that PM Nawaz Sharif personally intervene at the highest level with the UAE government. The senate also decided that it would invite representatives from Etisalat to present their side of the case to the committee directly. Several senators, meanwhile, sought stronger action, calling for the government to take action against those responsible for mishandling the privatization deal in 2006. Further, it was argued that the National Accountability Bureau's (NAB's) investigation into the matter should be made public. (September 29, 2016) telegeography.com



Qatar

President: Mr. Mohammed bin Ali Al Mannai
[Communications Regulatory Authority (CRA)]

The Communications Regulatory Authority (CRA) in collaboration with the Internet Corporation for Assigned Names and Numbers (ICANN) conducted a training workshop on October 11 to build capacity and skills of senior technical officials and law enforcement officers responsible for investigating cybercrime specifically related to misuse and abuse of Domain Name System (DNS). The

participants were introduced to strategies, techniques and tool that information security professionals use to identify abuses of DNS, malicious registrations of domain names, addresses or hosting. Workshop, conducted by Dr. Richard Lamb, Sr. Program Manager DNSSEC, ICANN, included demonstrations, and hands-on exercises to provide direct experience to the attendees to better

understand the methodology for collecting information needed to investigate a crime and that is also commonly needed for the preparation of court orders. "CRA takes cybersecurity matters very seriously and through such strategic training workshops we intend to build capacity among relevant agencies and technical professionals to equip them with the required skills and knowledge to intercept and block any DNS related cybercrimes and to enhance their familiarity with internet protocols," said Faisal Al-Shuaibi, CRA's Spokesperson. The course modules covered different relevant concepts such as the challenges of distinguishing criminal use from legitimate use of DNS. Other modules covered

details on accessing DNS, domain registration, and IP addressing related information. Finally, attendees were provided with useful tools to collect DNS and registration data and to locate and look at hosting sites and hosted data. Participants in the workshop included representatives from CRA, Ministry of Transportation and Communications, Ministry of Interior, Public Prosecutor, QCERT, Qatar Armed Forces, Q-Post, Ooredoo, Woqod, Qatar Electricity and Water Company, Oryx GTL, Qatar Petroleum, Commercial Bank, Qatar Petrochemical Company, Qatar International Islamic Bank, and Kahramaa. (October 12, 2016) cra.gov.qa



Saudi Arabia

Governor: Dr. Abdulaziz Bin Salem Al Ruwais
[Communication & Information Technology Commission (CITC)]

Etisalat's Saudi subsidiary stands to benefit from an overhaul of the kingdom's telecoms licensing regime, with the prospect of lower annual license costs bringing comfort to the country's troubled operators. The Communications and Information Technology Commission (CITC) has extended the operating license of fellow telco Zain KSA for a further 15 years, according to an announcement by the country's Capital Market Authority. Under the new licensing arrangement, Zain KSA will pay 5 per cent of its annual net income to the government for the duration of the "unified" license. A unified license enables operators to offer landline telephone and internet services as well as mobile services, breaking the fixed-line monopoly of Saudi Telecom. The CITC has offered similar extensions to the other three operators – Etihad Etisalat, known as Mobily, Saudi Telecom and Etihad Atheeb Telecommunications – the statement said. In the statement there was no mention of an upfront fee for the license renewal. The CITC is understood to have had extensive discussions with all four operators regarding the new licensing regime, according to a person with knowledge of the matter who asked to remain anonymous. The CMA suspended trading of shares in the four telcos, requiring them to state how the regime will affect their profits and losses. The new licensing arrangement is likely to affect Zain KSA's earnings positively in the future, with Mobily and other operators also likely to see benefit. According to Nayal Khan, the head of institutional equities sales trading at Saudi Fransi Capital in Riyadh, Zain KSA paid 23 billion Saudi riyals (Dh22.5bn) for the license it won in 2007 and charges yearly on its earnings a 936 million riyals amortization cost for the license. "Up to 2015, the operator has charged 6.5bn riyals against amortization to its P&L [profit and loss] sheet. It is as yet not clear whether [the] operator will look to writeback an excess amortization expense of approximately 2.5bn riyals in 2016, or just take a lower charge for remaining life of [the] license," said Mr. Khan. "If it writes back excess amortization, 2016 earnings could rise to a profit of 1.3bn riyals. Alternatively, their annual amortization expense could fall from 936m riyals to 496m riyals per annum." Zain KSA made a net

loss of 972m riyals last year. Mr. Khan said that a similar license extension would support Mobily in its attempts to turn around its finances, depending on whether the license conditions were the same as those of Zain KSA. A spokesman for Mobily declined to comment yesterday on the status of licensing talks with the CITC, saying that it would make an announcement during the coming days. Mobily's chief executive, Ahmad Farroukh, told Bloomberg Markets Middle East last month that Saudi Arabia's slower economic growth, coupled with new regulations that require all phone and internet customers to be fingerprinted for identification purposes, was putting pressure on telcos' revenues and profits. The operator, in which the UAE's Etisalat owns a 27.45 per cent stake, is gradually repairing its finances after having to slash 27 months of previously reported earnings by nearly US\$1bn owing to accounting errors. Saudi telecom stocks have significantly underperformed the Saudi stock exchange's already grim performance this year, falling by 24 per cent since the start of the year, compared with 21.17 per cent for the index as a whole. The Tadawul closed down by 3.1 per cent yesterday at 5,448.20, its lowest close for more than five years, with Saudi Electricity and Samba falling by 8.1 per cent and 6.3 per cent respectively. (October 2, 2016) thenational.ae

Saudi Arabia's four telecoms operators have said that the country's new licensing system will be positive for their business. Saudi Telecom (STC), Zain KSA, Etihad Atheeb Telecom and Etihad Etisalat, known as Mobily, all issued statements to the Saudi stock market, after the country's communications and information technology commission extended the licenses of all operators by 15 years, charging a fee of 5 per cent of annual net incomes. Zain KSA said that the license extension would reduce the company's annual amortization charge by 433 million Saudi riyals (Dh423.9m), starting from the date of the extension. Atheeb said the new license would reduce the company's annual costs by 9.7m riyals. Mobily, part owned by the UAE's Etisalat, said that the license extension would boost its finances by up to 260m riyals

per year. STC meanwhile said that it did not expect the extension of the duration of its license to have a material impact on its finances. The CITC has said that the new arrangement will give all four operators unified licenses, enabling them to offer landline telephone and internet services as well as mobile services, breaking the fixed-line monopoly of Saudi Telecom. Zain KSA and Atheeb said that while the new unified licenses would offer positive opportunities for future services, it was too early to tell what the financial effect of such services would be. STC, which is already licensed to offer fixed and mobile services, said the unified license was "expected to provide positive opportunities for the company in terms of the ability to provide new products to their customers", but it said that the terms of the license required further study to determine the exact financial impact.

(October 3, 2016) thenational.ae

The Communications and IT Commission (CITC) has extended the mobile operating license of Zain Saudi Arabia (originally known as MTC Saudi) for 15 years, in exchange for 5% of the cellco's annual net income during the extension period. The operating authorization is now valid until 18 January 2047. Further, the authority has offered 15-year extensions to all other mobile service providers – Saudi Telecom Company (STC), Etihad Etisalat (Mobily) and Etihad Atheeb (GO Telecom). In addition, the government is planning to award unified licenses, which will allow the operators to offer fixed line telecoms services. Currently, STC is the only telecoms provider in the country authorized to offer fixed broadband and landline telephony services. Following the CITC decisions, the Capital Market Authority (CMA) has suspended trading in shares of all telecoms providers in the country, until the companies announce the impact of the government's order on them.

(October 3, 2016) telegeography.com



Sri Lanka

Director General: Mr. Sunil S. Sirisena
[National Telecommunication Corporation (TRC)]

Sri Lanka steps into a major socio-economic reform via digital transformation next year ensuring that right skills and resources are available for the public sector with Information Technology (IT) as a key component in this push, Telecommunication and Digital Infrastructure Minister Harin Fernando announced in Colombo. The government will be assisting the public sector to grasp the full potential of future-digital technology components that are to be introduced shortly under the initiative of "Transforming to a Digital Government". Over 960 state institutions are to be provided with 100 mbps Internet connections via fibre optics next year as a step towards improving connectivity, he revealed. The Ministry has identified around 380 IT development projects in health, agriculture, industrial and several other sectors for the effective use of modern technology, he said adding that procurements are being made for 64 projects out of those 380. He disclosed these details in front of a fully-packed audience of telecom experts, top officials of the industry including executive staff members of Sri Lanka Telecom at the launch of "SLT Zero One Awards for Digital Excellence". The Minister pointed out that the government would be able to pave the path to innovate more and reap the benefits of a well-executed digital economic model. Chairman of Sri Lanka Telecom Group, P. G. Kumarasinghe Sirisena commenting on SLT ZeroOne Awards said, "The digital landscape is becoming increasingly popular in today's technologically driven society and if used strategically, it can be effectively leveraged to meet the marketing objectives of organizations and businesses. Sri Lanka has come a long way in terms of digital initiatives". Group Chief Executive Officer of SLT, Dileepa Wijesundera commenting on this initiative said that Sri Lanka Telecom's digital award is a key catalyst in supporting the digital media development in Sri Lanka. The 'Zero One' awards will be open to a wide audience which includes individuals,

agencies, SMEs, brands, multinationals and students. The awards programme was launched with an awareness campaign, launching dedicated website www.01awards.lk and www.zerooneawards.lk, inviting Sri Lankan institutions and individuals to be a part of this initiative and get recognized in their respective fields.

(October 12, 2016) sundaytimes.lk

Sri Lanka's telecoms Minister has asked the finance minister to recommend dropping the VAT and other duties on smartphones in its budget proposal for the next fiscal year. Telecommunication and Digital Infrastructure Minister Harin Fernando called on Finance Minister Ravi Karunanayake to remove the taxes to bring down the cost of smartphones to encourage people to use more digital services, local newspaper the Daily News reported. In Sri Lanka smartphones are subject to 7 per cent duty and 1 per cent nation building tax (NBT). Smartphone penetration in the country is about 35 per cent and mobile broadband (3G/4G) penetration is 25 per cent, according to GSMA Intelligence's Q3 figures. Just 4.4 per cent of the country's mobile subscribers have a 4G connection, with only two of five operators – Dialog Axiata and Mobile – offering 4G service. Fernando has been pushing a digital agenda and believes a planned digital identification system can reduce wastage and corruption in financial transactions. As part of the country's digitization efforts, 960 government institutions will be provided with 100Mb/s fiber connections over the next two years. In May the finance ministry raised the VAT on telecoms services to 15 per cent from 11 per cent to help bridge a huge budget deficit. The increase comes at a time when many sectors are calling for the VAT on mobile services to be scrapped. The rate had come down from 20 per cent back in 2006. (October 3, 2016) mobileworldlive.com

Sri Lanka's telecommunication and digital infrastructure minister Harin Fernando has requested that the Ministry of Finance remove the taxes imposed on Smartphones in the upcoming national budget in order to promote the use of data by mobile users. Fernando pointed out that, compared to other countries; data usage in Sri Lanka is very low due to the lack of availability of mobile internet facilities, meaning that voice calls still predominate. 'The use of voice calls in other countries is only 20%. We still use voice calls to a great extent. I requested the finance minister to remove all taxes imposed on Smartphones.

We are doing a detailed study on this matter and will submit the recommendations for the 2017 budget,' he said. Additionally, when asked about VAT on mobile phones, Mr. Fernando said the government was looking to alleviate some of the impact of this in the next budget, noting that he would submit recommendations on this matter as well. Finally, the minister confirmed that the Sri Lankan government is looking to allocate significant sums of money to improve telecommunication facilities, but that these development plans would not be possible without some taxation.

(September 30, 2016) telegeography.com



Tunisia

President: Prof. Hichem Besbes
[National Telecommunication Commission (INTT)]

Telecoms watchdog the Nation Telecommunications Authority INTT has launched a public consultation process, inviting comments on plans to introduce regulations for sharing and accessing fiber-optic infrastructure. The regulator acknowledged the growing popularity of fiber accesses for residential and business customers, but referred to the deployment of fiber-to-the-

home (FTTH) connections as 'disjointed'. As such, the regulator hopes that the establishment of viable economic and technical conditions for sharing networks will help incentivize rollouts by minimizing costs. The closing date for comments on the INTT's initial proposals is October 26, 2016. (September 30, 2016) telegeography.com



United Arab Emirates

Director General: Hamad Obaid Al Mansoori
[Telecommunication Regulatory Authority (TRA)]

Telecommunications Regulatory Authority (TRA) to introduce rating system (Tasneef) for hotels in ICT services starting from November, a senior official of the authority said in Abu Dhabi. The new move is expected to boost tourism sector and improve quality of services offered by various hotels in the country in the ICT segment. A number of hotels will be inspected and ratings will be given based on their service. "We will start with hotels in the first phase and move on to check the quality of ICT services in shopping malls, restaurants, amusement parks and airports," said Majed Al Mesmar, Deputy Director General of Telecommunications Regulatory Authority speaking to Gulf News The authority will launch the campaign with 50 five star hotels in the first phase this year and will cover the remaining establishments in the subsequent phases. "We aim to push digital innovation and smart services in the tourism sector in time for visitors at the Expo 2020, as well as ensure that sights and attractions across the country are technologically-equipped in their service offerings. The TRA has identified the criteria and technical standards to assess hospitality firms according to their corresponding level of services including the response rate of the technical support team, accessibility, affordability, availability and quality of innovative ICT services. The TRA will display the evaluation results on the websites of leading tourist firms so that customers can chose a hotel or restaurant based on the quality of services offers.

(October 12, 2016) gulfnews.com

ZonesCorp has signed a Memorandum of Understanding, MoU, with the Telecommunications Regulatory Authority, whereby the TRA, acting through the UAE Computer Emergency Response Team, aeCERT, will provide a number of advisory services to ZonesCorp relating to cybersecurity. The MoU implies that ZonesCorp has a highly robust system in place to identify and effectively protect against and deal with online security threats. Hamad Obaid Al Mansoori, Director General of the TRA, said, "Given the ultra-reliance on telecommunications and information technology in today's business environment, there is an ever present cyber security risk. The TRA and aeCERT adopt the latest and most sophisticated methods to ward off these risks or minimize them in order to ensure a healthy environment throughout the country. "We are working in collaboration with ZonesCorp and a number of other specialized UAE institutions and authorities to ensure that they have the highest levels cyber security across all their operations." Saeed Eisa Mohammed Al Khyeli, Director General of ZonesCorp, commented, "We welcome this initiative which is an important step in ensuring the integrity of our IT systems and business continuity. ZonesCorp houses hundreds of important companies from all over the world in its industrial zones and maintaining security in all areas of it operations is of paramount importance." (October 4, 2016) wam.ae

REGULATORY ACTIVITIES BEYOND THE SAMENA REGION



Australia

A consultation paper regarding plans for the sale of 30MHz of unsold 700MHz spectrum has been launched by the Australian Communications and Media Authority (ACMA). With a view to conducting the sale process in the second quarter of 2017, the ACMA is consulting on draft allocation instruments, which describe the product being offered and the rules and procedures that will govern the auction process. As such, the consultation paper released by the regulator sets out information on: how the ACMA proposes to configure the spectrum for auction; how the auction will operate; and how companies can participate in the sale process. Interested parties have until November 17, 2016 to make submissions to the consultation. Commenting on the matter, the ACMA's acting chairman Richard Bean was cited as saying: '700MHz band spectrum is highly valued for 4G LTE mobile broadband ... The 700MHz band unsold lots are available under spectrum licenses which will be attractive to any participant interested in offering nationwide mobile broadband services.'

(October 21, 2016) telegeography.com

Australia's government aims to raise as much as AUD1 billion (\$752 million) by auctioning off the 30MHz of 700MHz spectrum that was left unsold in the digital dividend sale back in 2013, Channel News reported. Vodafone Australia, which didn't participate in that auction, proposed in May to the government

that it be allowed to purchase 2x10MHz of the 700MHz band for AUD572 million or in three installments totaling AUD594 million. The government rejected the request and announced the sale of two 15MHz blocks of the highly efficient spectrum, which was previously used for analogue TV. Both market leader Telstra and number two Optus strongly criticized the proposal for a direct allocation. The Australian Communications and Media Authority (ACMA) will organize the auction, with the government providing direction on the reserve price and allocation limits after seeking advice from the Australian Competition and Consumer Commission (ACCC). With the three major players continuing to expand their 4G networks, the government expects strong interest in the spectrum. TPG Telecom, which is looking to enter Australia's mobile market (it also plans to bid for Singapore's fourth mobile license), has expressed interest in buying 700MHz spectrum. At the end of Q3, 66 per cent of Telstra's 16 million mobile connections were 4G, while 54 per cent of Optus' 9.4 million subscribers were 4G and 63 per cent of Vodafone's 5.6 million customers were LTE users, according to GSMA Intelligence. In the 2013 auction, Telstra, Optus and TPG Internet spent nearly AUD2 billion on spectrum in the 700MHz and 2.5GHz bands.

(October 10, 2016) mobileworldlive.com



Austria

The government of Austria has announced plans to invest EUR110 million (US\$120.6 million) in broadband infrastructure development in 2017. The budget plans, which were unveiled by Finance Minister Hans Jorg Schelling last week, also allocate broadband investment of EUR160 million for 2018, EUR170 million the following year, EUR250 million for 2020 and EUR220 million the year after that. The funding was generated from the multi-band mobile spectrum auction, which was concluded in October 2013. The investment is aimed at helping

Austria achieve the goals of the government's 'Breitband Austria 2020' national broadband strategy, which targets nationwide next generation network (NGN) internet access by 2020, supported by federal, state and EU funding programmes that aim to stimulate competition for the expansion of broadband infrastructure in rural areas. In the form of subsidies, the government is making approximately EUR1 billion available for NGN deployment.

(October 17, 2016) [Daily Der Standard](http://DailyDerStandard)



Bulgaria

The Communications Regulation Commission (CRC) has published its Decision No. 496 of September 17, 2016, which determined the cost-oriented price for call termination at fixed location on public telephone networks for the period 2016-2020 using a Bottom-Up Long Run Incremental Cost (BULRIC) model.

The CRC's decision included a new glide path for reduction of fixed call termination rates: from 1 November 2016 until 31 December 2018 wholesale tariffs will be charged at BGN0.0015 (US\$0.0009) per minute, with the rate dropping to BGN0.0014 per minute from 1 January 2019 onwards.

(September 28, 2016) telegeography.com



Denmark

Telecoms regulator DEA has announced the results of the auction for LTE-suitable spectrum in the 1800MHz band – which commenced on September 20 – with three applicants securing a total of 2×65MHz in the band. Hi3G Denmark and YouSee (TDC) won 2×20MHz each for DKK300.159 million (US\$45 million), while TT-Netvaerket (Telia/Telenor's joint venture) bid DKK425.239 million for 2×25MHz in the band. Under the terms and conditions of the 15-year concessions, the operators must provide mobile broadband services with downlink/uplink of 30Mbps/3Mbps in 245 underserved areas by

December 2019. In June 2014 the watchdog revealed that it was gearing up for a new spectrum tender in 2016 as the GSM-1800 licenses awarded to YouSee, Telia and Telenor will expire on 17 June 2017. The regulator disclosed that it planned to reassign the spectrum for mobile broadband services, with a decision on the auction framework published in June 2016. In August Energistyrelsen received applications for participation in the auction from three companies – TT-Netvaerket, YouSee and Hi3G. (September 30, 2016) telegeography.com



European Union

The European Commission expressed concerns about the way Poland allocated 4G spectrum before and after its long-running auction held last year, and is seeking clarifications. The auction, which ended last October, raised PLN9 billion (\$2.34 billion) for the state, with four operators – Orange, T-Mobile, Polkomtel's Plus and Play (P4) – acquiring spectrum in the 800MHz and 2.6GHz bands. Lasting a total of seven months, the auction process was however not without controversy, with operators arguing that poor preparation led to a lengthy duration. They also hit out at the government's decision to change the rules while it was ongoing, and implement a deadline to end the auction. Smaller operator Sferia, meanwhile,

was awarded a block in the 800MHz band before the auction took place, leading to a complaint to the commission by T-Mobile. An EC spokeswoman told Reuters it has decided to send a formal letter of notice to Poland in regards to its allocation of spectrum, and could reportedly take further action if it is not satisfied with the government's response. "The commission has concerns that the assignment of the 800MHz band to mobile operator Sferia did not respect EU rules on spectrum," she said. "The commission also has concerns that Poland's law on spectrum infringes on telecoms law." Poland reportedly has two months to reply to the notice. (September 30, 2016) mobileworldlive.com



Finland

The Finnish Government issued an invitation to apply for licenses to operate within the 700 MHz spectrum. The licenses will be granted through an auction process that will start on November 24. The practical arrangements of the auction are the responsibility of the Finnish Communications Regulatory Authority. The aim of the auction is to ensure both efficient use of the frequencies and access to high-quality wireless broadband. As of February 2017, it will be possible to use the spectrum for the construction of 4G

networks. One of the terms attached to the licenses is that the network must be built so as to cover 99% of the population of mainland Finland within three years of the start of the license period. Any enterprise that wishes to take part in the auction must register at the Finnish Communications Regulatory Authority by no later than November 7, 2016. (October 10, 2016) lvm.fi/en



France

French telecoms watchdog Regulatory Authority for Electronic Communications and Posts ARCEP has announced that a total of 20 operators have been awarded 4G licenses in the French overseas territories of Guadeloupe, Martinique, French Guiana, Saint-Martin, Saint Barthelemy, Reunion and Mayotte. The successful candidates were revealed as follows:

- Guadeloupe and Martinique: Orange Caraibe, Free Mobile and Outremer (800MHz, 1800MHz, 2100MHz and 2600MHz), and Digicel Antilles-Francaise Guyane (1800MHz, 2100MHz and 2600MHz)
- French Guiana: Orange Caraibe, Outremer and Digicel (800MHz, 900MHz, 1800MHz, 2100MHz and 2600MHz), and Free Mobile (900MHz,

1800MHz, 2100MHz and 2600MHz)

- Reunion: Orange, SFR Reunion and Telco OI (800MHz, 1800MHz, 2100MHz and 2600MHz) and Zeop Mobile (1800MHz, 2100MHz and 2600MHz)
- Mayotte: Orange, SFR Mayotte and Telco OI (800MHz, 1800MHz, 2100MHz and 2600MHz), and BJT Partners (1800MHz, 2100MHz and 2600MHz).

The regulator disclosed that it will now discuss the proposed spectrum allocations with the successful candidates in order to determine the preferred positioning in the frequency bands. The spectrum will be awarded in the following weeks, with a view of launching 4G services on December 1, 2016. (October 17, 2016) telegeography.com



GSMA

The GSMA has called for a renewed dialogue between the Egyptian authorities and the country's mobile industry after the offering of 4G licenses failed to attract any bids from Egypt's three mobile operators. In a statement, GSMA said it understands the existing mobile operators are ready to support and invest in 4G in Egypt if sufficient spectrum is allocated, at a fair price, so that 4G services can be operated efficiently and enable customers to enjoy significantly faster speeds. John Giusti, GSMA's Chief Regulatory Officer urged the Egyptian government to increase the amount of spectrum offered to mobile operators to facilitate the speedy roll-out of 4G services in Egypt. The existing operators Vodafone, Orange and Etisalat have complained that they would not be able to offer an efficient or affordable service

under the terms offered by the government. Based on the GSMA's international experience, the total amount of spectrum assigned to each operator for 4G needs to be in the range of 2x30MHz to 2x60MHz, across a range of coverage and capacity bands, with a minimum contiguous bandwidth of 2x10MHz in each band. In contrast, only 2x2.5MHz to 2x5MHz was proposed to mobile operators by the Egyptian authorities in the recent 4G license offering. It is also essential that the price of spectrum access is appropriate to the national market and takes into account the investment necessary to provide robust networks to enable the delivery of the long-term social and economic benefits of mobile broadband, the industry group said. (September 29, 2016) telecompaper.com



Guatemala

The telecom regulator SIT has invited operators to register their interest in one of two 900MHz spectrum permits. The licenses, which will each include a nationwide coverage stipulation, comprise frequencies in the 905MHz-907.8MHz and 950MHz-952.775MHz bands, respectively. The SIT has asked that interested parties, or those in opposition to the distribution of spectrum, submit

their details between September 28 and October 4. The Guatemalan authorities have been planning to auction 2100MHz/1700MHz AWS spectrum in Guatemala for some time, only for the projected tender to be delayed by regulatory red-tape. Going forward, frequencies in the 700MHz 'digital dividend' band are also expected to go under the hammer in the near future. (September 28, 2016) telegeography.com



Iceland

Telecoms watchdog the Post and Telecom Administration PTA has opened a public consultation on the terms and conditions for an auction for LTE-suitable frequencies in the 700MHz, 2100MHz and 2600MHz bands. The regulator is planning to auction eleven blocks of spectrum by the end of 2016 as follows:

- Block A (with 15 years validity): 2x10MHz (703MHz-713MHz/758MHz-768MHz), with a minimum bid of ISK35.0 million (USD305,000)
- Block B (15 years): 2x10MHz (713MHz-723MHz/768MHz-778MHz), ISK35.0 million
- Block C (15 years): 2x10MHz (723MHz-733MHz/778MHz-788MHz), ISK35.0 million
- Block D (five years): 2x5MHz (1935MHz-1940MHz/2125MHz-2130MHz), ISK5.5 million
- Block E (five years): 2x5MHz (1970MHz-1975MHz/2160MHz-2165MHz), ISK5.5 million
- Block F (five years): 2x5MHz (1975MHz-1980MHz/2165MHz-2170MHz), ISK5.5 million

- Block G (ten years): 2x20MHz (2500MHz-2520MHz/2620MHz-2640MHz), ISK10.0 million
- Block H (ten years): 2x20MHz (2520MHz-2540MHz/2640MHz-2660MHz), ISK10.0 million
- Block I (ten years): 2x10MHz (2540MHz-2550MHz/2670MHz-2680MHz), ISK5.0 million
- Block J (ten years): 2x10MHz (2550MHz-2560MHz/2670MHz-2680MHz), ISK5.0 million
- Block K (ten years): 2x10MHz (2560MHz-2570MHz/2680MHz-2690MHz), ISK5.0 million.

Successful bidders for Blocks A, B and C will be required to offer mobile broadband services with download speeds of 10Mbps to 95% of the population by the end of 2017, while downlink of 30Mbps must be offered to 98% of the population by December 2020. All interested parties are invited to submit their comments by November 1.

(October 18, 2016) telegeography.com



India

The Chairman of the Telecom Regulatory Authority of India termed the recent spectrum auctions a success, given that companies had bought as much airwaves as they needed. RS Sharma said the regulator would revisit the price of the 700 MHz band if the Department of Telecom decides to resell the band that found no takers in the sale that concluded last week. On the issue of failed calls between the

networks of newcomer Reliance Jio Infocomm and the big incumbents in the sector, he said there was an improvement but the number was still far higher than what the rules mandated, and that the regulator was set to take action against erring operators who had not provided adequate points of interconnection (PoIs). "They (auctions) were very successful. Telcos have bought whatever they needed to buy," Sharma

told ET. Mobile phone companies now can't use spectrum scarcity as an excuse for poor quality of services, he said. "That excuse is gone. A lot of spectrum was sold, apart from that in the 700 MHz band." Trai has noted the industry views that the reserve price of airwaves in the 700 MHz band was "very expensive", he said. "We had priced it based on various factors at that point in time. And if they (DoT) want to auction it again, they will send a reference back to us, and we will look into the pricing again based on the factors prevalent at that point in time," he said, while pointing out that the price for the band in some circles was below that set for 900 Mhz. Sharma declined to comment when asked if he felt telcos had together decided to stay away from bidding for the band. The spectrum auctions closed on October 6. The government is set to get Rs65,789.12 crore, less than what was expected, even as it sold more airwaves than in the previous four auctions combined. All seven mobile phone operators in the fray for over 2300 MHz of airwaves gave the expensive 700 MHz band – considered the best for 4G services – a miss, blaming the high starting price, and called on the government to reduce the rates and put it up for sale again. The reserve price for a unit of pan-India spectrum in the 700 MHz band was Rs11,475 crore. Analysts at Bank of America Merrill Lynch and HSBC expect the failure to sell 700 MHz to nudge the regulator to lower prices, with HSBC predicting a 15-20% cut. Pols and free offers Trai is examining complaints that Reliance Jio Infocomm violated rules by offering free voice calls for life, Sharma said. India's largest telcos – Bharti Airtel, Vodafone India and Idea Cellular – that made the complaint had also sought a clarification from the regulator on whether Jio's free voice and data offer from September 5 till the end of the year goes against rules that set a 90-day limit for promotional plans. "We had sought responses from Reliance Jio and their responses have also come. We are examining whether there is any truth in their complaints," Sharma said. On the call failures on Jio's network, Sharma said Trai is set to take action against telcos which didn't meet the quality of service standards that mandate call failures of less than 0.5% of all calls. "Some 50% (calls failed) vs 0.5% ... That's hardly an improvement. We will take action as per law against all those who have failed to meet quality of service parameters," Sharma said, adding that Trai had received responses to the show cause notices sent to errant telcos. ET reported that the call failure incidents between Jio and Airtel's networks have improved to 56% a day from nearly 73% on September 23. Between Jio and Idea, the rate has reduced to 62% from more than 75%, and Vodafone India to 75% from 83.5% earlier. Sharma had earlier

said that the high rate of call failure could only be due to inadequate Pols between the networks. According to sources, telcos, in their response, blamed the free offer from Jio for call failures, saying that it led to huge inflow of traffic clogging the network. They also said that the 14 paise a minute call termination charge that they get from Jio wasn't enough.

(October 14, 2016) telecom.economictimes.indiatimes.com

India's massive spectrum auction ended after five days with bidding hitting \$9.8 billion but 60 per cent of frequencies left on the shelf. The strongest interest was in the 1.8 and 2.3GHz 4G bands in the service regions covering the major cities. But there was no interest in the highly efficient 700 and 900MHz bands due to the high reserve prices. The government had hoped the 700MHz band alone would bring in an estimated INR4 trillion (\$59 billion), but the band went unsold. The Department of Telecom (DoT) had put more than 2,300MHz of spectrum up for auction, which was forecast to raise as much as INR5.6 trillion (\$83 billion). But just 965MHz of the total was sold. All of the 2.3GHz airwaves were bought, but only 75 per cent of the 1.8GHz, 60 per cent of the 2.5GHz, 34 per cent of the 800MHz and 20 per cent of the 2.1GHz (3G) band were purchased, the Economic Times said. As expected Vodafone was the top bidder, spending INR203 billion (about \$3 billion) to expand its 4G coverage to 17 regions to close the gap on rivals Bharti Airtel and 4G newcomer Reliance Jio, which both have 4G spectrum in all of the country's 22 service areas. Vodafone acquired 2x82.6MHz of FDD and 200MHz of TDD spectrum in the 1.8, 2.1 and 2.5GHz bands. Vodafone Group last month injected more than \$7 billion into its India subsidiary, reducing its debt by half and preparing it for the auction. Airtel, the market leader, acquired spectrum in three bands (1.8, 2.1 and 2.3GHz) for INR142 billion, while Jio also picked up spectrum in three bands for INR137 billion. Jio said it acquired 15MHz (four regions) in the 800MHz band, 39.6MHz (eight regions) in the 1.8GHz band and 160MHz (16 regions) in the 2.3GHz band (unpaired) at a 6.5 per cent premium to the reserve prices. The country's third largest player Idea Cellular spent INR128 billion on 349MHz of spectrum in four bands to expand its mobile broadband footprint nationwide. It acquired 74.6MHz in the 1.8GHz and 2.1GHz bands (paired) and 200MHz in the 2.3GHz and 2.5GHz bands. Its total spectrum holding increased to 890MHz, which Idea chairman Kumar Mangalam Birla said filled its spectrum coverage requirements, the Times reported. He said it paid less than a 1 per cent premium over the reserve price.

Overpriced

The weak demand for the 700MHz band was expected. The reserve price was set at INR11.5 billion per MHz, meaning a company would have to spend a minimum INR57.5 billion for a block of 5MHz. Operators and the GSMA had long urged the government to lower it. Rajan Mathews, director general of COAI, said in a statement that it is hopeful the government and DoT will recalibrate the 700MHz price so that spectrum could be put up for auction, maybe in two years.

(October 7, 2016) mobileworldlive.com

India has launched its largest ever spectrum tender. The 1,800 MHz and 2,300 MHz bands, for provision of 4G services, saw the highest bidding interest after five rounds on October 1, ET reports, citing data released by India's Department of Telecom (DoT). Bharti Airtel, Vodafone India, Idea Cellular and Reliance Jio Infocomm have placed bids worth a total INR 535.3 billion. The 700 MHz band failed to attract bidders in the first day of auction. The 700 MHz spectrum is on

sale at a reserve price of INR 114.8 billion per MHz. The Indian government expects to raise a record INR 5.56 trillion (approximately US\$ 83 billion) in this spectrum auction. The figure represents a 4-fold increase compared to the INR 1.1 trillion raised by the Indian government in India's last spectrum auction carried out in 2015. The 2,300 MHz band frequencies on offer saw the fiercest bids from Reliance Jio, Airtel and Vodafone. The band attracted bids worth a total INR 153.9 billion, according to an unnamed source cited by the newspaper. In the 800 MHz spectrum, bidders focused on four circles, namely Gujarat, Punjab, Rajasthan and Uttar Pradesh East. Starting October 3, each round will last 60 minutes, compared to 90 minutes on October 1. In its current auction, India is offering 2,354.55 MHz of spectrum in seven bands including 700 MHz, 800MHz, 1,800MHz, 2,300MHz and 2,500 MHz, 900MHz and 2,100MHz.

(October 3, 2016) telecompaper.com

**Indonesia**

Ministry of Communications and Information Technology (MCIT, known locally as KemKominfo), through the Directorate General of Post and Information (SDPPI), is considering options to allocate additional spectrum for mobile broadband. SDPPI director general Ismail is quoted by IndoTelko as saying that it faces a challenge to resolve the issue of 'the crisis of spectrum' shortage in Indonesia, suggesting that an additional 350MHz of new frequencies are needed to meet future demand for internet access. Dr. Ismail says that one measure is likely to be refarming, as well as opening the field to new technologies – in part to help develop network infrastructure in underserved rural communities. Whilst he concedes that coverage is being ramped up in urban areas, the director general claims that other areas face 'a crisis of mobile infrastructure' that needs to be addressed. Mobile network operators have been clamoring for KemKominfo to

launch a tender for additional spectrum blocks in the 2.1GHz and 2.3GHz band for 3G services. Telkomsel for one has argued that its ratio of subscribers per megahertz is among the highest in Asia. 'For us, the additional spectrum is considered not only important but critical to Telkomsel,' said the cellco's VP of Technology and Systems, Ivan C. Permana. He adds that without the additional frequency blocks, any attempt to invest in 3G and 4G rollouts in rural areas is likely to be delayed as it focuses instead on trying to deepen coverage in cities and towns. 'Wastage such as this could have been avoided if the government had already allocated additional spectrum to Telkomsel,' he notes. According to local sources, there is 10MHz (2100MHz) and 30MHz (2300MHz) unallocated, while the second auction of spectrum refarming is currently awaiting completion at 1900MHz and 800MHz. (October 25, 2016) telegeography.com

**Italy**

There is concern in Italy that the government's plan to renew mobile spectrum licenses in the 900MHz and 1800MHz bands could hold up the merger between Wind and 3 Italia and delay the entry of the country's new fourth mobile network operator (MNO) Iliad. The state is looking to raise around EUR1.8 billion (US\$2 billion) from the renewal of concessions held by TIM, Vodafone, Wind and 3 Italia which are due to expire on June 30, 2018; the licenses will be extended to December 31, 2029. Wind and 3 are due to merge their operations from the start of next year, with a deal already agreed to sell part of their spectrum assets to French firm Iliad. A report from Il Sole 24 Ore suggests

that the French group is unhappy at having to pay Wind and 3 Italia EUR450 million for spectrum in the 900MHz, 1800MHz, 2100MHz and 2600MHz bands only to then have to pay around EUR300 million to renew the 900MHz/1800MHz frequencies. TIM and Vodafone are expected to pay around EUR550 million each to renew their own licenses, while the combined Wind-3 will be asked to pay around EUR350 million. (October 26, 2016) telegeography.com

The government is hoping to raise around EUR 1.8 billion next year by extending the concessions on 900 MHz and 1800 MHz band spectrum rights, according

to details of its Draft Budgetary Plan 2017 seen by news agency Ansa. The plan sent to the European Commission by finance and economy minister Pier Carlo Padoan includes a reorganization of frequency concessions set to expire on 30 June 2018, with the government proposing that the current rights holders make a flat-rate advance payment to extend the rights until 31 December 2029 to pave the way to 5G technology. However, a report in *Il Sole 24 Ore* suggests renewing the concessions currently in the hands of Telecom Italia, Vodafone Italia, Wind

and 3 Italia could serve to prevent the entry of new operators and may also indirectly affect the merger of Wind and 3 Italia, who agreed to free up assets to help France's Iliad create a fourth network operator in Italy. The EC only approved the merger because Wind and 3 Italia committed to sell radio frequencies in the 900 MHz, 1800 MHz, 2100 MHz and 2600 MHz bands, and share or transfer several thousand mobile base station sites to Iliad. (October 18, 2016) [telecompaper.com](#)



Japan

Japan's three mobile operators – NTT Docomo, KDDI and SoftBank – have been given administrative penalties by the communications ministry for offering customers excessive discounts on Smartphones. The three companies reportedly gave customers coupons to buy Smartphones, a type of subsidy that violates government guidelines, the *Japan Times* reported. The penalties, or administrative action, require that the three develop and submit measures by the end of the month to the ministry on how to end the practice. The operators, despite being warned about the discounts in April, continued to offer the excessive discounts, the Ministry of

Internal Affairs and Communications said. It noted the companies' handset subsidies, for example, allow customers to obtain the 32GB iPhone 7 for free. The ministry believes that excessive handset subsidies contribute to high mobile tariffs and earlier in the year announced plans to put pressure on the three mobile operators to reduce mobile tariffs and give customers a wider variety of data plans. The three have introduced low-cost plans but only for customers using small amounts of data and voice each month. (October 13, 2016) [mobileworldlive.com](#)



Malta

The Malta Communications Authority (MCA) has received three expressions of interest in 800MHz spectrum which can be used for 4G LTE mobile services. Established cellular operators Vodafone Malta, GO and Melita have all come forward to request frequencies, and the regulator says that since there is sufficient spectrum to serve all three firms then it can proceed directly to the assignment phase. It will now ask the applicants to participate in a qualification procedure to check they meet the

criteria to be awarded licenses. The MCA has not disclosed when it expects the 800MHz licensing process to be completed. Last month, the MCA is looking to award 60MHz of spectrum in the 800MHz 'digital dividend' band (791MHz-821MHz paired with 832MHz-862MHz). Vodafone and GO have already introduced LTE technology using 1800MHz and 2600MHz frequencies, while Melita has still to announce plans for a commercial 4G launch. (October 6, 2016) [telegeography.com](#)



Netherlands

The Dutch senate is voting on how and to what extent European rules on net neutrality will be implemented in the Netherlands. The government wants positive price discrimination – by offering certain services outside data bundle capacity, for example – to remain illegal in the Netherlands. But the European rules allow this, [nu.nl](#) reports. Should the Senate, the Eerste Kamer in Dutch, vote against the government's plan, more flexible rules can take effect in the country. P.V.V. senator Rene Derksen filed a motion calling on the government to follow the European rules on this. According to him, it is unsustainable that the Netherlands continue on its own path. This motion will also be voted on Tuesday. In anticipation of the European rules on net neutrality being implemented in the Netherlands, T-Mobile launched a new service in the Netherlands on Tuesday. Customers can

now stream music without using data from their data bundle. T-Mobile announced that the service – called "Data-free Music" – will be added to Stel Samen & Stel Bij subscriptions with a data bundle of 6 GB or more. Subscribers pay no extra for this service. The Authority for Consumers and Market (ACM) immediately launched an investigation into this new service. The current Dutch rules state that all data traffic should be treated the same, and excluding some traffic from data limits would constitute "positive price discrimination", according to ACM. The outcome of the investigation will likely depend on how the Eerste Kamer votes another term for making certain services available without using MB's from the bundle is "zero-rating". This is explicitly banned by the Dutch net neutrality law, but not by the European rules set to replace it. Minister

Henk Kamp of Economic Affairs previously stated that zero-rating will remain banned, even under the European rules. According to the Minister, the European rules leave plenty of room for individual EU Member States to make their own decision on this matter. T-Mobile customers with Data-free Music can stream music from services like Spotify, Deezer and Napster without using their data bundle, which is exactly zero-rating. There is a proposal that can

ban this", Tisha van Lammeren, marketing director at T-Mobile, said to nu.nl. "At the same time this service complies to the European legislation and regulations adopted in August. It would thus be allowed to European citizens, but not Dutch. We think that's strange. We are going for it because we believe that this has to happen." (October 12, 2016) nltimes.nl



Niger

Niger will merge its public telephone and mobile communications companies into a single entity in order to expand its market share in the West African nation, the telecommunications minister said. Niger currently has two state-owned companies - Sonitel, which operates landlines, and Sahelcom, a mobile operator. They will be brought into a single company called Niger Telecom, with capital of 23.4 billion CFA francs (\$40.04 million), Yahouza Sadissou said in

a statement late on Wednesday following a cabinet meeting. He said the goal of the merger was to pool technical and financial resources and make the public operator's services more attractive to clients. Niger has 7 million mobile subscribers and four mobile operators, including Sahelcom, Bharti Airtel of India's local unit, France's Orange, and Moov. (September 30, 2016) reuters.com



Nigeria

The Nigerian Communications Commission (NCC) has approved a request by CDMA operator Visafone Communications to transfer 100% of its shares and subscriber base to MTN, following its acquisition by the South African firm late last year. 'The NCC, in line with its procedure granted a Final-Approval to Visafone for the change in its shareholding structure,' Reuters cites a statement from the Nigerian regulator as saying. According to the NCC, Visafone also applied to transfer its spectrum license to MTN, but this has not yet been approved. In December last year MTN finalized the acquisition of Lagos-based Visafone for approximately US\$240 million and began migrating Visafone's roughly 2.1 million subscribers onto its own GSM network, with a view to using the 800MHz spectrum to roll out LTE in selected cities. However, the NCC has now clarified that it has not yet made a decision on whether to approve the transfer of Visafone's spectrum license to mobile market leader MTN.

(October 11, 2016) telegeography.com

The Independent Communications Authority of South Africa (ICASA) has opened a public consultation on Transnet's application for a spectrum allocation in the 1800MHz band. The regulator said that the company has applied for a 5MHz block in the 'centre gap' of

the band for broadband data use in Port Elizabeth, Cape Town, Durban Port, East London, Saldanha and Richards Bay. The regulator has invited all interested parties to submit written comments regarding the application within 14 working days of the publication of the notice in the Government Gazette. (October 11, 2016) telegeography.com

MTN Group is considering abandoning its purchase of Nigerian operator Visafone Communications, after the Nigerian Communications Commission (NCC) ruled that the 800MHz spectrum should not be included in the deal. In December last year MTN finalized the acquisition of Lagos-based Visafone for a total cash consideration of ZAR3.43 billion (US\$250 million) and began migrating Visafone's roughly 2.1 million subscribers onto its own GSM network, with a view to using the 800MHz spectrum to roll out LTE in selected cities. However, last week the NCC ruled that taking control of the frequencies would increase MTN's dominance in the country. According to an unnamed source, MTN is now deciding whether acquiring Visafone is still worth it, if the spectrum is excluded from the deal. MTN Group refuted allegations raised by Nigerian lawmakers that it had illegally transferred US\$13.92 billion out of the country over a ten-year period. (October 4, 2016) Bloomberg



Philippines

The Philippines telecoms regulator announced plans to hold a 3G and 4G auction early next year, with interest from a number of companies looking to launch a new mobile network. Gamaliel Cordoba, a commissioner at the National Telecommunications Commission (NTC), told the Inquirer that the auction,

which will only be open to new players and be the NTC's first, will likely involve assistance from the World Bank, which would consult on spectrum valuations. "Early next year, we can put this together, but the final approval will come from the Department of Information and Communications Technology,"

Cordoba said. The specific frequencies and the lot sizes have yet to be worked out, but Cordoba said it could include spectrum returned to the government after two merger deals over the last five years, the newspaper reported. The country's president Rodrigo Duterte last week warned the country's two dominant mobile operators – PLDT-Smart and Globe Telecom – that he will open the market to Chinese competition if they fail to improve their poor service. Smart and Globe, which control 99 per cent of the country's mobile connections, in May jointly purchased the telecoms assets of San Miguel Corp, which previously was considering launching a third mobile operation in partnership with Australia's Telstra to inject some much-needed competition into the market. The Philippine Competition Commission (PCC) attempted to review the deal, which included most of the country's valuable 700MHz spectrum, but has been blocked by the courts after Smart and Globe filed for temporary restraining orders in July. PCC issued a statement in late August warning that the deal is "likely" to negatively impact competition. Before the auction can move ahead, the dispute over the deal must be resolved as it would impact spectrum availability, Cordoba said. The Inquirer said Smart and Globe control about 78 per cent of the available mobile spectrum. (October 18, 2016) mobileworldlive.com

The Philippine competition regulator needs time to study how much spectrum is required to support a third mobile player in the country. The Philippine Competition Commission's Mergers and Acquisition Office issued a report warning that the acquisition of San Miguel Corp's telecoms assets by PLDT and Globe Telecom would "leave a limited amount of spectrum to a potential third player", according to InterAksyon. The report went on to say that "the amount of available spectrum post-transaction may not be sufficient for a new player to exert competitive pressure on PLDT and Globe". The agency said it needs time to conduct research and

speaking with experts about the impact of the PHP69 billion (\$1.5 billion) acquisition by the two operators, which control 99 per cent of the country's mobile connections. PCC commissioner Stella Quimbo said this is why it wants to conduct a comprehensive review, InterAksyon reported. Two weeks ago the regulator asked a court of appeals to lift an order stopping its review of the deal, which includes most of the spectrum in the highly efficient 700MHz band. The PCC late last month hit a stumbling block in its attempt to halt the country's two dominant operators' controversial joint acquisition, when an appeals court granted PLDT's request to temporarily stop it from conducting further proceedings for its pre-acquisition investigation. PCC issued a statement in late August warning that the deal is "likely" to negatively impact competition. Both PLDT and Globe filed for temporary restraining orders in July, asking for a halt of the review, with both arguing the "transaction is already deemed approved".

(October 1, 2016) mobileworldlive.com

The Philippine Competition Commission (PCC) says it will need more time to assess how much frequency is actually needed to adequately support the entry of a third telecoms player in the country. A report from InterAksyon cites a document published by the PCC Mergers and Acquisition Office (MAO) regarding PLDT and Globe Telecom's multi-billion peso acquisition of the telecoms assets of San Miguel Corp, which the agency notes 'will leave a limited amount of spectrum to a potential third player'. The PCC's initial suspicions seemingly support wider concerns that 'the amount of available spectrum post-transaction may not be sufficient for a new player to exert competitive pressure on PLDT and Globe', although it stops short of pinpointing exactly how much spectrum will be required, saying it needs more time to conduct research and consultations.

(September 29, 2016) telegeography.com



Singapore

Singapore officially launched the new Info-communications Media Development Authority (IMDA), the body that replaces the Info-communications Development Authority (IDA) and Media Development Authority (MDA), as the government seeks to adapt its regulatory structure to better address the rapidly-changing and increasingly converged telecoms and media sectors. At the launch event, Minister for Communications and Information Dr. Yaacob Ibrahim said: 'IMDA's mission is to lead Singapore forward into a digital future, where infocomm media convergence and technological change will change the way we live, work and play ...

[the new board] will achieve its mission by focusing on three broad strategies. Firstly, by developing a strong ICM sector to power and transform the economy; secondly, by building an environment of trust; and third, by ensuring that every Singaporean benefits from convergence and technological progress.' Soon after, the minister also confirmed that amendments to the Telecommunications Act will be tabled in parliament 'very soon', although he stopped short of detailing the nature of the amendments involved.

(October 3, 2016) telegeography.com



South Africa

The South African government has approved the ICT Policy White Paper, which has been in development since 2012, with the document outlining the establishment of a Wireless Open Access Network (OAN). Under the new framework, all wireless service providers in the country will be required to return their previously assigned spectrum, which in turn will be allocated to the OAN. 'This will ensure that operators with significant market power do not leverage access to their infrastructure and critical resources to maintain dominance and deny market access to competition', the white paper states. Following the adoption of the White Paper, the Independent Communications Authority of South Africa (ICASA) will be required to conduct an industry-wide public consultation process to determine the terms and conditions, as well as the time frame, under which the currently exclusively/individually assigned high

demand spectrum will be returned to the regulator. Meanwhile, ICASA has been ordered by the North Gauteng High Court to halt its planned LTE spectrum auction. 'ICASA is interdicted and prevented from implementing the licensing steps and processes referred to in the Invitation to Apply [ITA]', judge Roland Sutherland said, adding that the regulator was also banned from accepting any bids for the ITA pending an application from Cell C to launch court proceedings against it, provided that the papers are served before 14 October. The ruling was handed after South Africa's Minister of Telecommunications and Postal Services, Siyabonga Cwele, filed an application in August 2016 to block the proposed auction of LTE-suitable spectrum in the 700MHz, 800MHz and 2600MHz bands – scheduled to take place in March 2017. (October 4, 2016) TechCentral



Sweden

The fourth largest wireless operator by subscribers in Sweden, Hi3G Access Sweden (3) has won an auction held by the regulatory body Post & Telestyrelsen (PTS) for 2x5MHz of technology-neutral frequencies in the 1800MHz band. 3 was the only company to apply for the license and paid SEK100.05 million (US\$11.22 million) to secure the spectrum. The license will be valid for a period of ten years, running from June 1, 2017 to December 31, 2027. In a press release on 3's website, Johan Johansson, CEO of 3 Sweden, said that the company plans to use its 1800MHz frequency to expand its 4G LTE network, which is currently operating in the 800MHz and 2600MHz bands. (October 25, 2016) telegeography.com

National Post and Telecom Agency (PTS) has identified the 3.5GHz frequency band as suitable for 5G mobile development as part of a wider range of spectrum, and has decided to postpone the allocation of the band until the 3400MHz-3800MHz frequency range can be reassigned in its entirety. The regulator made its conclusions following a consultation with interested parties on a recent PTS report, which found that existing usage of the 3.5GHz and 3.7GHz bands is low. The aim of managing the wider 3.4GHz-3.8GHz range together is in line with the recent decision by the European Commission on the international harmonization of the band for mobile communications, the PTS added. (October 18, 2016) telegeography.com



Tanzania

The government of Tanzania regained full ownership of the country's PTO Tanzania Telecommunications Company Limited (TTCL), following the signing of a memorandum of understanding (MoU) in June this year with minority shareholder Bharti Airtel of India. The 35% stake has been valued at around TZS14.6 billion (US\$6.7 million), with Bharti Airtel having already rejected a TZS5 billion offer from the government in November 2014. The MoU was signed in Dar es Salaam on 23 June by the Treasury Registrar, Lawrence Mafuru, and the CEO of Bharti Airtel Africa, Christian De Fariasees, to transfer

Airtel's 35% stake in TTCL to the state. TTCL's Board Chairman, Professor Tolly Mbwette, was cited as saying that the repossession of shares will allow the operator to implement its business strategy, while it is noted that TTCL – the country's oldest operator and largest fixed line player – plans to list on the Dar es Salaam Stock Exchange as part of its five-year plan to raise USD330 million to improve and expand its operations. Talks with Bharti Airtel lasted six years and were delayed by wrangling over price. (September 27, 2016) telegeography.com



Thailand

Thai telecoms regulator the National Broadcasting and Telecommunications Commission (NBTC) has scheduled the auction of the 45MHz block of 1800MHz spectrum currently used by Digital Total Access Communication (DTAC) for July 2018 – two months before the concession is due to expire. Takorn Tantasith, Secretary General of the NBTC,

says the reserve price for the 1800MHz auction will be THB3 billion (US\$86.5 million) per MHz, or THB45 billion for each 15MHz block, meaning that it will generate at least THB135 billion in total. The official noted that the reserve price for the 2018 auction is based on the winning prices paid in 2015's 1800MHz auction, adjusted for inflation. Mr.

Takorn commented: 'An early auction should take place in order to ensure a smooth transition from concessions to a new licensing regime and maintain service continuity for customers. The winning prices of the 2018 auction must not be lower than last year's auctions'. In November 2015 the NBTC auctioned off two 1800MHz licenses, each comprising 2x15MHz of spectrum. Advanced Info Service (AIS) and True Corp won the two 18-year concessions for a combined price of THB80.78 billion. AIS bid THB40.99 billion for 'License 2' (1725MHz-

1740MHz / 1820MHz-1835MHz) while True paid THB39.79 billion for 'License 1' (1710MHz-1725MHz / 1805MHz-1820MHz), far exceeding the reserve bid price of THB15.91 billion. A third bidder, Jas Mobile Broadband (owned by Thai fixed network operator Triple T Broadband's parent Jasmine International) pushed the prices upwards, eventually being outbid by the two established Thai cellcos after placing its final offer of THB39.00 billion. Fourth bidder DTAC dropped out of the auction earlier with its last bid of THB17.50 billion. (October 4, 2016) telegeography.com



Togo

Togo's Minister of Post and the Digital Economy Cina Lawson has begun talks with officials of the two incumbent mobile network operators (MNOs), Togo Cellulaire (Togocel) and Moov Togo, concerning the award of 4G licenses in the country. The Togolese government hopes that in granting a new license, or licenses, it will drive down prices, improve service quality and boost the availability of broadband internet on a national level. In February this year Ms Lawson went on record as saying that the government hoped to kick off the bidding process for 4G mobile licenses in 2016, dependent on 'the enthusiasm of investors to trade in our market' and demand

for 4G in Togo. The minister launched a study into 4G licensing in November 2015. In February 2015 Togocel, the mobile arm of fixed line incumbent Togo Telecom, announced plans to launch the tiny African nation's first 4G mobile network and roll out mobile banking before the year end. The launch never materialized, though, and critics argued that, with the cellco's current 3G network being inadequate at best, efforts should be made to improve that before even considering 4G. Attempts to introduce a third player to the market in 2014 also came to nothing. (October 24, 2016) telegeography.com



United Kingdom

OFCOM said Vodafone must pay a total of GBP 4.62 million for breaching consumer protection rules in a "serious and sustained" manner. The UK regulator said the imposition follows the completion of two investigations, resulting in two penalties. In the first investigation, OFCOM found that Vodafone took money from pay-as-you go customers, without providing a service in return. This occurred when the operator moved customers to a new billing service. In the second investigation, OFCOM found flaws in Vodafone's complaints handling procedure, including mis selling and inaccurate billing. The first investigation showed that Vodafone failed to credit the accounts of 10,452 pay-as-you-go customers after they paid to top-up their mobile phone credit. The affected customers collectively lost GBP 150,000 over a 17-month period. Vodafone also failed to act quickly enough to identify or address these problems, which stemmed from the company transferring to a new billing system. Steps were taken only after OFCOM intervened. Vodafone also breached OFCOM billing rules, because the top-ups that consumers had bought in good faith were not reflected in their credit balances. For this, OFCOM has fined Vodafone GBP 3.7 million. The second investigation revealed that Vodafone's customer service agents were not given sufficiently clear guidance on what constituted a complaint, and that processes were insufficient to ensure that all

complaints were appropriately escalated or dealt with in a fair, timely manner. Vodafone's procedures also failed to ensure that customers were told, in writing, of their right to take an unresolved complaint to a third-party resolution scheme after eight weeks. The fine for breaches from this investigation was set at GBP 925,000. The money must be paid to OFCOM within 20 working days. The penalties incorporate a 7.5 percent reduction to reflect Vodafone's agreement to enter into a formal settlement, which will save public money and resources. As part of this agreement, Vodafone admits the breaches. It has also reimbursed all customers who faced financial loss, except for 30 it could not identify, and made a donation of GBP 100,000 to charity. (October 24, 2016) telecompaper.com

OFCOM has announced a number of decisions in relation to the 700 MHz refarming programme, which aims to clear the spectrum between 694 and 790 MHz from its current usage and make it available for mobile data services. One of the main decisions concerns the timing of the programme. OFCOM states that it will accelerate its completion by eighteen months, targeting the spectrum release in Q2 2020. The regulator has also ruled that 20 MHz of spectrum in the part of the 700 MHz band known as the 'centre gap' should be allocated to mobile downlink services. The announcement

follows the consultation period between March and May when OFCOM sought input on the 700 MHz spectrum clearance, which affects digital terrestrial television (DTT) services and wireless microphones (also referred to as 'audio PMSE devices'). With regard to the latter, OFCOM has announced that it is serving notice on PMSE users that operate in the 700 MHz band, stating that from 01 May 2020 they will no longer have access to spectrum in this band. Linked to the ruling on the 'centre gap', OFCOM also announced the decision that some temporary DTT services, known as 'interim multiplexes', will continue operating in this part of the spectrum until at least 01 May 2020, or until mobile downlink services are deployed. (October 17, 2016) [telecompaper.com](#)

Communications regulator OFCOM has opened a consultation on the first tranche of its 5G spectrum auction. The consultation presents its initial thinking on how it could expand spectrum access for mobile services in the 3.6 – 3.8 GHz band, said the regulator. The band is currently used by fixed links and by satellite services for space to Earth reception. "We consider this band a high priority band for future mobile use, due to the large amount of spectrum available and the interest in this band for the rollout of future 5G services (the fifth generation of mobile connectivity technology, which is currently being developed)," it said in a statement. National regulators across Europe and industry have identified the wider 3.4 to 3.8 GHz band as a potential first 5G band. OFCOM is proposing to make 116 MHz within the 3.6 to 3.8 GHz band available for mobile and 5G services. However, as ISP Review points out, 5G technology is expected to deliver its best speeds using much higher frequencies. International 5G standards are also yet to be set and are not expected to come into force until 2017. OFCOM has promised there would be enough spectrum available for 5G

networks by the time they became commercially available in 2020. The regulator is also expected to open a consultation on its delayed spectrum auction for further 4G capacity. But a number of telcos have called on the regulator to impose a 30 per cent cap on operators bidding in the next spectrum auction. That move would limit the proportion of airwaves an operator can own, and inhibit bids from EE and Vodafone. The consultation for 5G spectrum will close on by 5pm on 1 December 2016.

(October 7, 2016) [theregister.co.uk](#)

Rivals of British fixed line incumbent BT have called on telecoms regulator OFCOM to restrict the amount of spectrum that any company can own, ahead of an upcoming frequency auction. In a letter to OFCOM, the chief executives of TalkTalk, CityFibre, PCCW-owned Relish and the Federation of Communications Services have suggested a 30% cap on the amount of spectrum a company can hold, arguing that such a limit would have 'no downside or negative consequences', while ensuring all four of the country's mobile network operators (MNOs) can compete. This proposed limit would stop BT, which owns cellco EE, and Vodafone – which already hold the most spectrum – from bidding strategically to restrict the amount of frequencies that O2 UK and Three UK could get. OFCOM, for its part, has yet to decide on whether to implement a cap as part of a spectrum auction that was originally scheduled for this year, but was pushed back as a result of the negotiations linked to the now-blocked acquisition of O2 UK by Three UK owner CK Hutchison. Commenting on the matter, the report cites an unnamed OFCOM spokesperson as saying: 'We plan to publish a consultation in the autumn, which will set out our plans for the 2.3GHz-3.4GHz spectrum award.' (October 4, 2016) [The Financial Times](#)



United States

The FCC's third attempt to find a match between television broadcasters and telecom operators for 600 MHz spectrum is set, though will result be the same? The Federal Communications Commission's third attempt to match television broadcaster financial demands with telecom industry willingness to pay for 600 MHz spectrum licenses is set to begin on November 1. The FCC said it would begin stage three of reverse auction bidding with plans to clear 108 megahertz of total spectrum from television broadcasters that it would then repackage into 80 megahertz of clean spectrum for telecom operators to bid on as part of the forward auction process. If achieved, telecom operators will be bidding on a total of 3,303 blocks of spectrum, each of which

with 10 megahertz of capacity. The licenses would be broken into partial economic area-sized chunks, with each PEA having up to eight blocks of spectrum up for grabs. The two previous attempts to align financial demands with willingness to spend failed to find match. Stage one of the process witnessed broadcasters requesting more than \$86 billion for 100 megahertz of clean spectrum, with telecom operators halting their bidding at a mere \$23 billion. Stage two had broadcasters asking for \$56.5 billion for 90 megahertz of cleared spectrum, which failed to generate more than one round of forward auction bidding from telecom operators. In terms of timing, stage one and two of the reverse auction each lasted for about a month, which could push the completion

of stage three into December if taking into account days off connected with upcoming holidays. With the FCC needing about a week to repackage reverse auction spectrum, stage three of the forward auction could begin sometime in early December. Analysts have noted the 70-megahertz clearing target is the more likely round in which supply and demand meet, noting the band plan associated with that stage most aligns with repackaging challenges and telecom operator interest. The 70-megahertz mark is also the magic number for T-Mobile US and other carriers with a dearth of sub-1 GHz spectrum holdings. Pre-auction rules included a set aside provision that called for 30 megahertz of at least 70 megahertz of spectrum to be auctioned off outside the reach of companies with a dominate position in sub-1 GHz spectrum holdings, which among larger operators is limited to Verizon Communications and AT&T.

(October 26, 2016)rcrwireless.com

AT&T on Saturday agreed an \$85.4 billion (€78.4 billion) acquisition of Time Warner, a deal that promises to turn the U.S. telco into a content powerhouse, provided it passes muster with the regulators. Time Warner owns premium content network HBO, film and TV studio Warner Bros. Entertainment, and media conglomerate Turner, which owns the rights to broadcast NBA basketball. The acquisition builds on AT&T's recent purchase of DirecTV, a deal that made AT&T the U.S.'s biggest TV provider by customers, and enabled it to ramp up its TV-everywhere strategy. It also sends a strong message not only to AT&T's main rival Verizon - which is busy building media assets by launching mobile TV services and acquiring the likes of AOL and Yahoo - but also to OTT video providers like Netflix, Amazon, and YouTube, all of which are out to grow their cross-platform audience share. Acquiring Time Warner would put AT&T in a position to discriminate against rival content owners trying to distribute programming over AT&T's networks, he warned in a statement published shortly before the deal was officially confirmed. The U.S. telco could also potentially make it more expensive for rival distributors to carry Time Warner content. Competition authorities should "determine whether the substantial competitive dangers are either outweighed by demonstrable benefits or whether the dangers can be prevented with thoroughly enforceable conditions," Bergmayer said. "If not, it [the deal] should be blocked." The last time a big network operator merged with a major content player was in 2009, when cable giant Comcast agreed to acquire media owner NBCUniversal. That deal was subject to intense scrutiny by the Federal Communications Commission (FCC) and the Department of Justice

(DoJ). While the transaction ultimately received conditional approval, the review process took 13 months to complete. AT&T has had mixed fortunes lately when it comes to convincing regulators to permit large takeovers. In 2011, the company abandoned its \$39 billion proposal to acquire rival operator T-Mobile US, amid stiff opposition from the DoJ. The aforementioned \$48.5 billion acquisition of TV provider DirecTV - struck in May 2014 - was subject to a review that lasted more than a year, but eventually received the green light. The deal announced on Saturday will see AT&T pay \$107.50 per share for Time Warner, comprised of \$53.75 per share in cash and \$53.75 per share in AT&T stock. That implies an equity value of \$85.4 billion. When Time Warner's debt is included, the transaction value rises to \$108.7 billion. After the deal closes, Time Warner shareholders will own 14.4%-15.7% of AT&T shares. AT&T said the cash portion of the acquisition will be funded through a combination of cash on hand and new debt. AT&T said it expects the deal to generate \$1 billion in annual synergies within three years of the deal closing. Furthermore, AT&T listed three diversification benefits that Time Warner brings with it, namely: a diversified revenue mix - Time Warner will represent about 15% of the combined company's revenues - as well as lower capital intensity and lighter regulation compared to its core telco business. AT&T and Time Warner expect to complete the deal before the end of 2017.

(October 24, 2016) totaltele.com

Stage Two of the Federal Communications Commission's (FCC's) 600MHz Broadcast Television Spectrum Incentive Auction ('Auction 1002') came to an abrupt end this week after a single round of bidding. In total, bidders offered US\$21.520 billion for TV broadcasters' airwaves in the so-called 'Forward Auction', far short of the US\$54.586 billion 'clearing cost' that was necessary to bring the proceedings to a definitive end. As a result, the FCC must now reduce the amount of 600MHz spectrum it will free up for wireless purposes and stage a third 'Reverse Auction' with the country's TV broadcasters, as it seeks to bring down the cost of the spectrum and reignite the bidding process. Stage One of the Forward Auction ended on August 30 with the watchdog racking up US\$23.108 billion worth of bids after 27 rounds of bidding. Stage One of the Reverse Auction previously saw the clearing cost for 126MHz of spectrum established at US\$86.423 billion, significantly exceeding analyst expectations. A total of 62 companies registered to participate in the process, including mobile giants Verizon Wireless (bidding as Cellco Partnership d/b/a Verizon Wireless), AT&T Mobility (AT&T Spectrum Holdings) and T-Mobile

US, while Sprint Corp opted to sit out the process. In addition, cable giant Comcast will be bidding under the CC Wireless name, while satellite TV firm DISH Network will bid as ParkerB.com Wireless.

(October 21, 2016) telegeography.com

The Internet Corporation for Assigned Names and Numbers (ICANN) has completed the transition to a new governance model, ending the US government's control over the internet authority. The United States Department of Commerce and its National Telecommunications and Information Administration (NTIA) confirmed their management contract expired September 30, leaving ICANN under a new organization model based on input from international stakeholders. "This community validated the multistakeholder model of internet governance," said Icann Chairman Steven Crocker. "It has shown that a governance model defined by the inclusion of all voices, including business, academics, technical experts, civil society, governments and many others is the best way to assure that the

internet of tomorrow remains as free, open and accessible as the internet of today." Internet users will see no change or difference in their experience online as a result of the stewardship transition, ICANN said. The handover occurred despite a number of last-minute attempts by US lawmakers to maintain control of the body. A court case brought by several states seeking an injunction against the change was rejected, while members of Congress were unable to push through legislation blocking the changes at ICANN. A number of industry groups were active in ensuring the handover took place as planned. The Internet Association, along with Internet Infrastructure Coalition, Internet Society, Computer & Communication Industry Association, NetChoice, Mozilla, Packet Clearing House, ACT|The App Association, American Registry for Internet Numbers, Information Technology Industry Council and Access Now filed an amicus brief in US court to help prevent an injunction requested by states to delay the transition. (October 3, 2016) telecompaper.com



Vietnam

Vietnam has granted 4G licenses to three of the market's major mobile operators - MobiFone, military-run Viettel and state-owned VNPT. The operators have been granted permission to roll out LTE services over the 1800-MHz band, VietNamNet Bridge reported. Each of the three operators have been piloting LTE and LTE-Advanced services in multiple cities, with Viettel launching a trial in late 2015, VNPT testing services since January this year and MobiFone commencing a pilot in July. The licenses

will be allocated as part of Vietnam's government-approved telecommunications development plan, which includes a target of covering 95% of the population with 3G and 4G services by 2020 as part of efforts to ensure nationwide coverage of broadband infrastructure. According to the report, major operators have indicated they will be ready to launch LTE soon after receiving the licenses. They will be valid until 2024. (October 19, 2016) telecomasia.net



Zimbabwe

The Postal and Telecommunications Regulatory Authority of Zimbabwe (POTRAZ) has said it is working with local cellcos in an effort to lower prices for mobile data services. According to a report from TechZim, the country has the third most expensive data tariffs in Africa, and this is hindering both consumer access and businesses. The watchdog says it hopes its discussions with operators will

lead to the introduction of cheaper data services within the next few months. The bulk of internet access in Zimbabwe is via mobile networks, with the country of more than 13 million people home to only around 100,000 fixed broadband subscribers by mid-2016. There are three mobile network operators: Econet Wireless, NetOne and Telecel. (October 14, 2016) telegeography.com

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