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BUILDING DIGITAL ECONOMIES



EITC: New Age  
Telecommunication...

50



Nokia:  
Capitalizing on IoT

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*Featured*

**Mr. Tarig Rahamtalla**  
CEO  
Espresso Telecom

THIS MONTH

**EMERGING IoT OPPORTUNITIES**



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## Emerging IoT Opportunities

We are transitioning into a world of digital finished products, driven by sensors. It truly is a world of data. Digital economy we all are striving to create and benefit from, rests on tremendous flows of data and the robustness of telecom operators' networks on which such flows take place. Come IoT, things will change beyond our current imagination.


In this data-driven digital environment, where doing business isn't just more challenging but more rewarding as well, many transitions are underway. Such transitions reflect how the digital communications industry is redefining itself and how all market players conduct business in it. Indeed, all of these requirements and challenges— and many more— are just a few among a multitude that demand attention. In part this is so, because, our world is isn't yet ready for the onslaught of many dozens of billions of devices that will introduce a whole new meaning to the term complexity. We have only yet started to bring IoT technology to the business scene, and what telecom operators will do with it, more or less, will be determined by strategic priorities, visions and readiness for future, and real use-cases. The latter is a challenge area for IoT as it is for 5G developmental efforts.

So far, we have seen that telecom operators' IoT efforts have generally been centered on exploring the implementable idea that IoT devices could connect through bandwidths, used by smart phones or that IoT devices, powered by batteries, could just connect directly to a mobile network. There have also been experiments in collaborating with IoT device developers and other such ecosystem players. By reasonable estimates, end of 2018 will see operators' efforts on IoT accelerate, especially as focus on content and videos rises manifold. But for IoT to truly become a game-changer, successful implementation of 5G network technology will be needed. Some IoT use-cases, which are under discussion and development, would simply require much

bandwidth, low latency, and scale, to be able to become realities. Only 5G would actually make this possible.

During SAMENA Council's Leaders' Summit, industry stakeholders from both public and private domains discussed ways in which 5G would become a reality in the SAMENA region; a region which carries the highest prospects of becoming the first adopter of 5G in the world. While implementation and adoption of 5G may come in phases, before we attain a reasonable coverage relative to currently prevailing mobile technologies, there are no strict rules preventing IoT development as long as attention to two factors is paid: One - the focus on IoT device development should also take into account device maintenance, replacement or repair, and extending useful life, and two - starting a use-case driven search for commercial IoT customers and promoting the IoT offerings.

From operating networks, managing user profiles, gaining end-user trust, experience in managing already millions of devices connected to their networks (mobile handsets, that is), operating in regulatory regimes, and having been the investment engine, telecom operators are uniquely positioned to feed and help expand the emerging IoT ecosystem. They have data centers and are already investing in data analytics tools, both of which are required by IoT. Thus, it is important for operators to come forward and occupy the IoT space promptly and in a creative fashion. Moreover, operators need to do this, because operators not only have the required experience and standing but because it is crucial to demonstrate to both themselves and to regulators that lessons from the past have been learned and some disruptions have been adopted, willingly and promptly.

Moving from the OTT to the IoT environment now merits that operators take control in their own hands. 



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



**Mr. Tarig Rahamtalla**  
CEO  
Expresso Telecom



**Q. What are Expresso's latest digital service offerings, including those relating to financial services?**

**A.** Expresso is the latest entrant in the three countries where we operate, Senegal, Mauritania and Guinea Conakry. We launched in March 2018 mobile financial services in Senegal, called Expresso Cash, remedying the gaps within our competition. Mobile financial services (MFS) are such an important service for the citizens of the countries where we operate. MFS is a strong enabler to offer our subscribers and customers, giving them a reliable and easily accessible tool for financial transactions. By June 15, 2018 Mauritania will have launched similar MFS services. We have witnessed significant growth in the ecommerce business in Sudan, Senegal, Mauritania and Guinea, and are seeing a growing demand for carrier billing, so we are developing a direct billing platform which will give access to people in many countries to use our tool to make online purchases. We are even targeting countries where we do not have mobile network operations, to help expand our presence.

**Q. Where is telecom operators' current attention?**

**A.** Telecom operators are passing through a period of heightened challenges, but some of these can be turned into opportunities using the right robust agile strategy to adopt with a forward-looking approach. It is the nature of the global business ecosystem that it must undergo constant change while still remaining self-sustaining. In our opinion, sticking to the old telecom model is not a choice at all, and we can see a lot of telecom operators learning to deal with the transformation into becoming full-fledged ICT companies. Yet to create a standard benchmark, new operating models within the telecom business are required. You can say the attention among telecom operators is now about developing a counter-OTT strategy; with some acquiring OTT partners and some starting to create their own white-label OTT platforms, and others just still remain content in signing partnership agreements. In any case, something does need to be done to be able to perform better business in the OTT

environment. The biggest attention point in my opinion would be how to deal with the fast technology changes happening around us. In our markets, in particular, it is hard to convince the shareholders on a proper return of investment scenario while technology changes rapidly.

**Q. Do operators now realize that 5G development would actually be more challenging than how it was felt earlier?**

**A.** Meeting the challenge of obtaining proper return on investment in the current infrastructure (3G or 4G) to address fast emerging demands for 5G will be a serious problem, with the current declines in voice ARPU, and slow data growth in Africa, in particular. But common challenges will be in the shape of the demand for new frequencies, especially the higher bands, in which operators have no experience in operating. 5G may change the map of the different regional support mechanisms, but there will be a need to support the different frequency bands, and that will impact devices complexity and cost. I believe there will be many technical

challenges, whereas we all have already agreed that the commercial enhancement of the new technology will be an enormous task. Comparing to the 4G deployments, the 5G will indeed be a great challenge on many accounts.

**Telecom operators are passing through a period of heightened challenges, but some of these can be turned into opportunities using the right robust agile strategy to adopt with a forward-looking approach. It is the nature of the global business ecosystem that it must undergo constant change while still remaining self-sustaining.**



**Q. In Espresso's view, how can this challenge be dealt with more effectively?**

**A.** It is hard to say. Just for the fact, we are still behind in the race for 4G spectrum in our operating markets. The needs have started to grow and our strategy for the future, most definitely, cannot be accomplished without obtaining spectrum and state of the arts tools. In our opinion, governments represented by regulators, telecom operators, and network manufactures need to sit together and redraw the map of future technology adoption. Believe it or not, we see in infrastructure sharing huge gain for everyone; for the giant of the market and the disadvantaged operator. The redrawing of the frequency maps by regulator and operators may now be essential for avoiding many problems. Proper testing of the new technology and monitoring prior to implementation will surely help enhance customer experience.

**We see massive opportunities within the smart generation of internet of things. It is time for "things" to contribute to the new growth telecommunications needs in terms of improving the human lives in Africa.**

**Q. Is Espresso introducing any artificial intelligence-based systems with respect to improving customer experience?**

**A.** We are committed to digitalize our services and enhancing our customer experience by putting in the hands of our subscribers enough digital tools and services. In that regard, we here in Dubai are developing a long term active strategy to modernize our call center tools, utilizing artificial intelligence, but it is too early to reveal the details.

**Q. To what extent improving cross-border data flows could positively impact Espresso's business?**

**A.** We need to operate in a hybrid-like fashion and maintain the least amount of infrastructure to optimize our cost without jeopardizing our business, quality of service, and other operational efficiencies. To flourish, cloud services and cross-border data flexible laws, among other critical needs, are required to be fulfilled. We support centralizing services and creating strong back offices, with uncompromising respect for each country's laws and regulations, with more cross border data freedom.

**Q. What is your critique or view of support on unlimited data plans?**

**A.** Unfortunately, these types of plans were used to create a price war among competitors where there is no better deal than unlimited data. We all know the cost associated with data bundles, and somehow, we recognize the consumer capacity in term of data usage, so more or less unlimited data plans need to be targeting maximum subscriber satisfaction along with the operators' need for fulfilling their business missions.

**Q. How is Espresso supporting the development of the IoT ecosystem?**

**A.** We see massive opportunities within the smart generation of internet of things. It is time for "things" to contribute to the new growth telecommunications needs in terms of improving the human lives in Africa. The ecosystem requires collaboration of many parties within any single country and eventually regions, continents and global support platforms. We would like to recognize ourselves as a community vital player, active in enhancing people's lives positively through technology. We have developed a wide range of service portfolios, and have signed multiple partnership agreements with very active

players in the smart world, along with a solid vision to execute.

**We believe digitalizing the economy of Africa will bring massive benefits but requires heavy investments, thereby improving people quality of life and creating a greater image for Africa, and also creating new efficiencies.**

**Q. In what significant ways do you see Espresso playing a central role in developing the digital economy across your markets of operation?**

**A.** Continuing with what I mentioned above, we take the development of the digital economy across our markets as a duty rather a means of profitability only. We bid for small projects to develop state of the arts digital services for the governments of the countries where we operate. Recently, we proposed an end-to-end digital service platform to one government mitigating all the risks and addressing an unsaid need for digital services within one nation, and we went further to bring to table eager financial institutions willing to fund such projects. We believe digitalizing the economy of Africa will bring massive benefits but requires heavy investments, thereby improving people quality of life and creating a greater image for Africa, and also creating new efficiencies. We have exerted a great research and development effort within our Dubai office to create a strong portfolio of digital services and we are very proud of strong positive partnership in the consultancies and with technology providers, to be able to develop capacity and resourcefulness in order to execute digital-economy programs. 📍

# Granular Analysis for Monetizing Data and Converting Revenue Challenges into Profitable Opportunities



**Dr. Rado Kotorov**  
Co-founder & Chairman of the  
Board  
Trendalyze Inc.

**TRENDALYZE**

For most telecom operators anywhere in the world, operating in the prevailing multi-competitor environment entails overcoming a myriad of financial, operational, regulatory, technology, and innovation related challenges.

Some companies offering data analytics solutions for telecom operators have a unique understanding and perspectives as to the best ways for telecom operators to revive their central position in the digital ecosystem, in this age of digital economy and digital transformation.

*Dr. Rado Kotorov, who is chairman of a new startup, offering data-analytics services built on a platform for granular data analysis and motif-based proprietary data analytics solution, shares below for SAMENA TRENDS' readers unique insights about operators' evolving need for exploiting available network data to attain unique advantages in their struggle for improved revenue streams and to fulfill digital transformation objectives, and how such data can be monetized through micro-trend based predictive analysis.*

## **Q. What is the biggest challenge for Telcos today?**

**A.** There are actually two challenges and they are closely related. The first one is commoditization of services and the second one is erosion of revenues. Commoditization means that Telcos become merely a data pipe. Erosion of revenues means cannibalization of Telco services by non-telco service providers also known as OTT app providers. The two problems are connected. As services are being cannibalized Telcos are pushed to lower the prices of data provision in hope of regaining more data revenues. This is a dangerous vicious cycle that Telcos want to avoid now more than ever before, due to multiple shareholder, end-user, regulatory, and market related pressures.

## **Q. Can data analysis and analytics tool help Telcos combat the prevailing problem and help get out of this vicious cycle?**

**A.** In many ways, they indeed can. Data is recognized to be today's new strategic asset, but it can be analyzed only through effective analytics tools, so that it is turned into a data product at the end. Some people call data the new crude oil. This is a valid comparison as raw data is just a resource like crude oil is. This analogy makes it clear that some processing needs to take place to materialize the value in data. Let us call these – Over the Data Services (ODS, ike OTT) – to convert the raw resource into a monetizable asset.



**What is a good example of ODS?**

A. The formula for delivering such services is simple. Company A collects a lot of data from some operating equipment. Telco moves the data and stores it in its data centers. Telco then provides analysis of the data and based on this delivers value added managed services. This is analogous to real estate management by agencies. You do not own the asset; you provide value added services for its utilization.

**Q. Is there a Telco equivalent to the real estate analogy today?**

A. The closet equivalent is fleet management. The connected car is new telco customer. The value of connecting the car is the data driven services that the Telco provides to the fleet owner.

**Q. What are the types of Over the Data Services that Telcos can provide?**

A. In the aforementioned fleet management context, a wide variety of analytics is required. From reporting and dashboarding, known as Traditional Business Intelligence, to machine learning and deep learning, with the latter being referred to as data science. I do want to put emphasis here on another type of emerging analytics. We call it granular analytics and it is about discovering micro-trends in large volumes of data. Knowing the micro-trends allows

Telcos to optimize on a per unit basis. If you can optimize on per unit basis you can secure an extra margin. That has been the dream pricing for every economists; a foundation on which marginal utility theory is built.

Now, imagine that you are managing a fleet of 200,000 cars. A fleet of connected cars generates a lot of data. There are many vehicle types, routs, geographic locations, weather conditions, operating conditions, in-built engine and self-maintenance data functions, etc. Those are dimensions that are captured via data on the operational status and well-being of each smart vehicle. This creates a huge number of combinations about how the vehicle is being operated. If you can find in this haystack micro-trends that can save you \$0.10 per vehicle. For the said number of cars, this translates into \$7.3 millions in savings. Interestingly, \$0.10 are often ignored and considered just an accounting rounding error because granular analytics is difficult. But in large data small savings add quickly to big savings. UPS did this with their rout optimization analytics app. Their conclusion: saving a mile per day per vehicle led to huge savings.

**Q. How exactly do granular analytics work?**

A. Let us take the aforementioned fleet example one step further and see what the data means.

As the vehicle moves around it generates a trail of “breadcrumbs” or data points on a time series line. Think of a stock trading chart, but instead of stock ticks you have events generated by the vehicle. This is the footprint of every vehicle. Now you have 200,000 of these vehicle footprints. But you can also have rainy and shine days that make 2 footprints per vehicle, and hence, 400,000 time series. Imagine that a vehicle breaks on a rainy day and you find a pattern that leads to the failure. You search for a similar patterns within the 200,000 trails and find 10,000 vehicles that have similar patterns but have not broken down yet. You can make some quick decisions based on this information and save money. It is the ability to pull similar needles from the haystack quickly that makes micro trends analytics so powerful for tapping profitable opportunities that large data can bring forth. The trick, however, is to find high yield patterns in the captured data, and then pull out the micro segments that have similar performance or behavior. Managers typically use these micro trends to“(1) get alerts to optimize operations,

**Data is recognized to be today’s new strategic asset, but it can be analyzed only through effective analytics tools, so that it is turned into a data product at the end.**



(2) recommend alternative usage, or (3) redesign systems or equipment based on usage patterns.

**Q. Is it difficult to implement micro trends analytics?**

**A.** Micro trends analytics is difficult to implement with traditional tools. How can business intelligence analysts analyze 200,000 vehicles. The computer screen cannot even display their trails. It is just physically impossible. Think about a physician analyzing patient data. How many patients can a physician examine? Our Trendalyze platform is built to solve this problem. The platform is built to operate like Google but instead of searching for words, we search for shapes (patterns, sequences, motifs) in time series data. Google can find similar web pages within trillions of web pages. We can dig out similar patterns from billions of trend lines. If you spot a single pattern, you can pull out all similar patterns. It is easy for business analysts and engineers to spot a costly or profitable trend. It is hard for them to find all occurrences of this trend. This is what we make easy.

**I do want to put emphasis here on another type of emerging analytics. We call it granular analytics and it is about discovering micro-trends in large volumes of data. Knowing the micro-trends allows Telcos to optimize on a per unit basis. If you can optimize on per unit basis you can secure an extra margin. That has been the dream pricing for every economists; a foundation on which marginal utility theory is built.**

**Q. What if you have a lot of different patterns that mean different things?**

**A.** This is the beauty of a search-based system. It helps to organize information

and turn it into knowledge. This is done by tagging every meaningful pattern and storing it in the library. In this way different people can discover different things and share them. And the system can monitor for any number of patterns. Human knowledge grows in general through a similar process of classification and cataloging. We have just automated this process and made it easier for end users. Telcos can dramatically increase their knowledge base and operational IQ.

**Q. Can the patterns discovered be automated?**

**A.** Yes absolutely. This process is called annotation of time series. The machine algorithms that we have developed do this, but only a human being can give meanings to the different patterns and can decide how to profit from them. This is a machine augmentation of the human intelligence but the decision maker retains all the power and control over the management of desired outcomes.

The Trendalyze Platform is a central hub connecting three key areas: Healthcare Monitoring & Decision Support, Connected Patients, and IoT Time Series Data Patterns Search, Motif Discovery & Analytics.

**Self-service motif search and visualization platform for analysis and monitoring of IoT data**

The visualization platform on the tablet shows a complex multi-line graph with several data series: ART (red), HR (green), NBR (blue), SpO<sub>2</sub> (purple), etCO<sub>2</sub> (orange), and Resp (yellow). A dashed box highlights a specific region of the graph, and a legend at the bottom identifies the series.

## SAMENA COUNCIL ACTIVITY



### Leader Summit 2018: Building the Middle East's Digital Economy Requires Policy & Technology Innovation, Spectrum Harmonization, Economies-of-Scale, Digital Integrity & Human Respect

With the official patronage of the United Arab Emirates' Telecommunication Regulatory Authority (TRA), the South Asia - Middle East - North Africa (SAMENA) region's change-makers' annual leadership event, the SAMENA Telecommunications Council's **Leaders' Summit 2018** –hosted for the fifth consecutive year by Huawei Technologies and co-Sponsored by Ericsson, Emirates Integrated Telecommunications Company (Du), Alfa (managed by Orascom TMT), Sudatel Group, Numbase Group and Airspan – underpinned the importance of enabling Telecom Operators and Regulatory Authorities to collaborate and co-operate with each other to achieve mutual successes in this age of Artificial Intelligence.

In his welcome note, CEO & Board Member of SAMENA Council, Mr. Bocar BA, referred to Leaders' Summit 2018 and the focus on "Building the Middle East's Digital Economy" as an accumulation of earlier efforts to look into the future, and how data-driven economics is shaping up and will impact our future decisions with regard to policies, investments, and stakeholder collaboration, to ensure that good governance, privacy of data and human well-being, as well as sustainability of the business are realized. While Telecom Operators and other digital ecosystem players, including

Regulators, seek the digital communications ecosystem's sustainability, focusing on digital services, data regulation, spectrum resources, and addressing challenges relating to financial obligations and excessive industry fees, among other factors, could help steer the Industry toward a new positive and growth-oriented direction; a direction that leads toward building a sustainable digital economy in the region.





TRA-UAE, represented by HE Hamad Al Mansoori, Director General, acknowledged SAMENA Council's ongoing efforts with the TRA over the past five years, including on the TRA's region-wide endeavors to accelerate the next-generation of technology development and empowered stakeholder collaboration in the region.



At a time when regional efforts are required for the harmonization of spectrum for 5G development, on setting rules for ensuring data privacy, developing cross-border agreements on the flow and management of data, and to align national digital transformation priorities; and as the Industry explores revenue and growth potential in new verticals, it has become essential that Telecom Operators be enabled by Regulators to overcome constraints, especially with respect to cross-border data flows, favorable taxation policies, reduction in capital and operational expenditure, spectrum license durations and costs, among other impediments.



Likewise, it is now critical for Operators to seek partnerships with Regulators to help fulfill national ICT visions, assist in organically generating revenues for the governments, and help ensure end-user's digital privacy and overall digital integrity in the cyberspace. The imperative for Operators to learn lessons from the past and to team up across borders and develop own digital services across adjacent economic sectors is too becoming essential to thriving in the digital ecosystem.

ITU, represented by Director BDT, Mr. Brahima Sanou, drew attention to making sustainability a core focus area, and reiterated the need to think about new possibilities that exist in Health, Education, and other important sectors, where significant opportunities abound.

Huawei Technologies ME's President - Mr. Charles Yang, GSMA's Director General - Mr. Mats Granryd, and SAMENA Council's Chairman of the Board - Eng. Nasser Al Nasser reflected on how the future is becoming transformational and how preparation for 5G roll-out paradigm shift, which may transpire in multiple





phases, and quantum-computing capability are paving the path for AI and an utterly new generation of digital experiences. Eng. Nasser referred to Telecom Operators as the enablers of the digital economy, and how Operators are continually monitoring their pace and progress with respect to disruptive advancements, new dynamics of the markets, national aspirations, and to globally agreed goals among nations, to help materialize a sustainable digital economy.

Congregation and active participation of leaders, change-makers, and influencers from within the telecommunications industry across all SAMENA regional markets, East & West Africa, Asia Pacific, East & West Europe, and North America ensured that perspectives exchanged during Leaders' Summit 2018 would serve the Industry in planning during the course of the year, as developmental efforts to bring 5G into the SAMENA region, prospectively as the first adopter in the world, accelerate.





The Leaders' Summit 2018's Guest of Honor, the UAE's Minister of Tolerance, HH Sheikh Nahyan bin Mubarak Al Nahyan, emphasized to stakeholders of the digital communications industry that Leaders' Summit 2018 was an especially significant event as it reflected on the efforts that each stakeholder is exerting in order to positively impact the society. As digital technology accelerates globalization, new dimensions in the link between Tolerance and Telecommunications have emerged. The Industry thus must ensure that tolerance, truthfulness, and integrity prevail as "Digital life is life of truth."

Renowned regional CEOs, public and private-sector leaders, industry experts, and distinguished guests from the ICT domain and beyond, and world-renowned personalities within the digital communications industry participated in the Leaders' Summit. Core discussions of the Summit focused on understanding the dimensions of a sustainable regional digital economy in view of the Middle East's preparation toward 5G, digital development goals, and conducting a preparatory stakeholder dialogue to address complexities of the regulatory environment in the wake of advancements in networks and new digital platforms.





Industry stakeholders, including leaders representing STC Group, Batelco, Zain Group, Orange, Viva Kuwait, Etisalat Group, du, Alfa, Sudatel, Omantel, GSMA, TRA-UAE, CITC, TRA-Oman, TRC-Jordan, Huawei, Nokia, Ericsson, Google, Facebook, ESOA, Eutelsat, and Members of SAMENA Council, among others, also took part in exclusive bi-lateral stakeholder meetings, organized by SAMENA Council on a “by-invitation-only” basis to showcase SAMENA Council’s collaboration with regional regulators; to present SAMENA Council’s work on 5G development; and to see how digital service ecosystem and services are evolving, and would prove to be integral to building the regional digital economy.

Key takeaways from the Leaders’ Summit included following:

- **OTTs are still a key issue** in that there is still no **level playing field** – OTTs are competing on licensed services and operators are unable to replicate the cost structure.
- There is still a **stark imbalance between global players and national operators** and their activities – operators don’t have an OTT solution, because they are nationally / geographically

impeded by national regulatory frameworks that prevent the roll-out of cross-border services through restriction on data flows, narrow nationally constrained licenses, etc. Same services, same rules are needed.

- **Regional efforts** are required in relation to harmonization of rules on data privacy and cross-border data management. It is not cost effective to deploy data centers in every country where operators have a footprint based on data localization requirements. This is specific to Telecoms and is not applied to e.g. data collected by banks or credit cards.
- **See potential in verticals** for alternative revenue sources, but operators have to move fast.
- **Margins for IoT are very thin** and revenue uncertainties are very stark to justify investment if there are no concessions for operators (regulatory holiday etc...). Without sustainable business cases investments by mobile operators remain under threat, as IoT won’t pay for 5G.
- **The roll-out paradigm of 5G has to be different from 2G, 3G and 4G** – ubiquitous 5G coverage is not possible unless there is a strong business case.





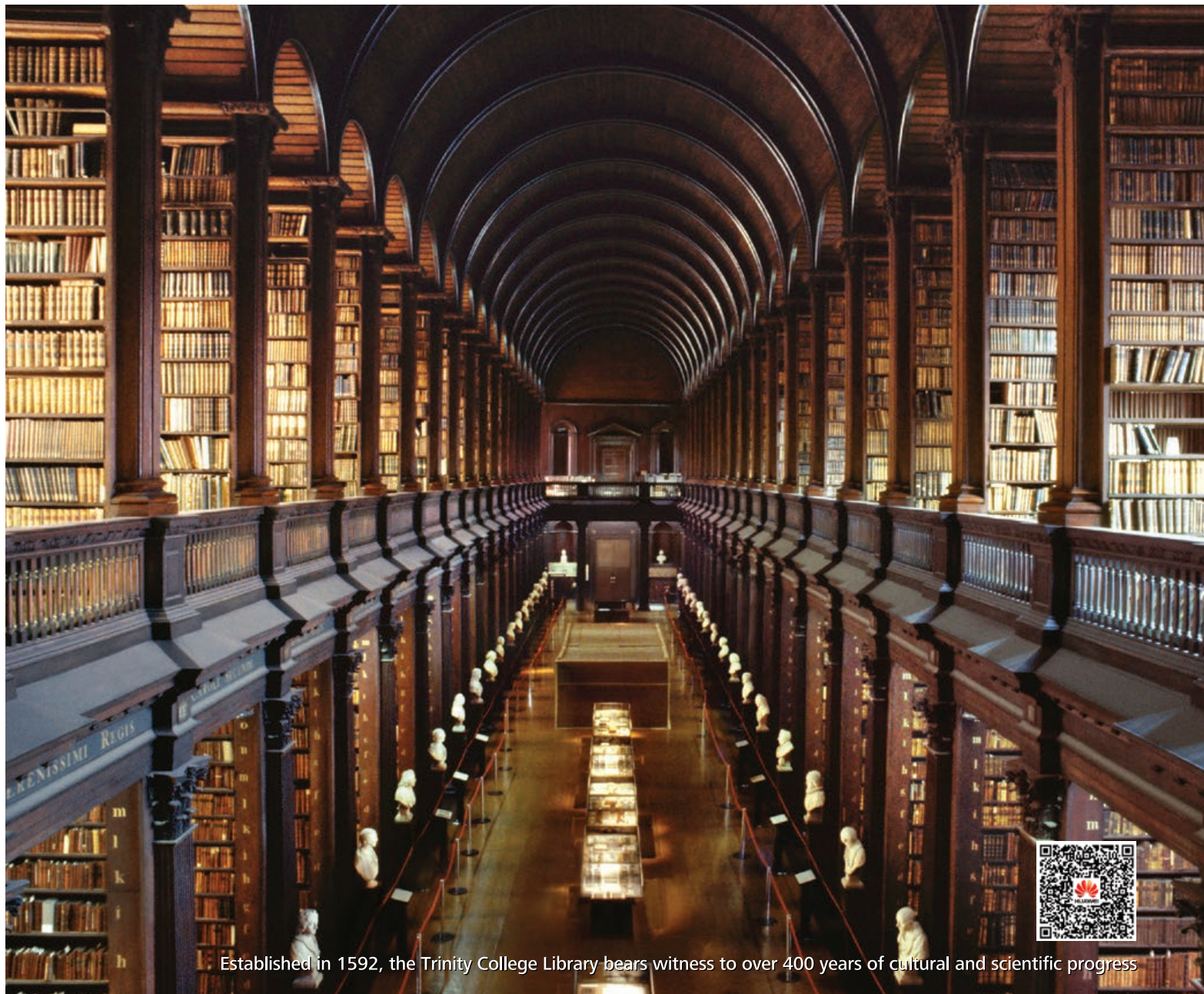
- TRA and SAMENA Council highlighted their areas of cooperation on 5G spectrum harmonization to promote deployment and investment, as well as cooperating to ensure WRC-19 in Egypt becomes a success.
- **Regulators have taken steps** towards reforming regulatory frameworks, including for taxation.
- **The cost model paper presented by SAMENA Council** to help accelerate 5G development was discussed.
- Digital Services have been around for **more than 15 years** and have proliferated across the public and private sectors, particularly in the areas of government services, finance and health, the extent of which depends strongly on the enabling environment in place.
- Operators need to identify **areas of relevance for digital services**. At the moment, revenue projections are far too low to make investment into 5G infrastructure profitable – 1.4% of mobile revenues is too low to convince the board and shareholders that investment is worthwhile, when the current 4G networks have not even paid off and relevant use cases have not been identified.
- **Two key threats** from technological development and digitalization are falsehood and hate.
- Need to think about **what AI and digitalization are doing to**

**societies** – we need to have this conversation. There needs to be a forum to deal with this subject to understand the changes that are happening to us as humans, and how these changes in social structure and interaction impact our values and creation of knowledge and culture.

Expressing his satisfaction on the successful congregation and dialogue among leaders, who participated in the Leaders' Summit 2018 from all around the world, Mr. Bocar BA, CEO & Board Member of SAMENA Council stated, "It was highly merited to delve into *building the digital economy of the Middle East* from multiple dimensions; some expertly brought into our attention by the Leaders and Excellencies who were an integral part of this year's successful leadership gathering. In doing so, we have recognized the leadership efforts of Dr. Khaled H. Biyari, former Chairman of SAMENA Council, for Industry Representation & International Co-operation Building, and of Mr. Osman Sultan, CEO of du, for his visible contributions to Telco Digital Transformation." Mr. BA also congratulated Huawei, Ericsson, du, Alfa Mobile, Sudatel, Numbase Group and Airspan for making Leaders' Summit 2018 physically possible and for enabling SAMENA Council to provide its traditional, world-class atmosphere for discussion to its Leaders and esteemed participants of the Leaders' Summit 2018. 🇸🇦







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# Exploration begins with sharing wisdom

The exchange of ideas opens up exciting new possibilities in a digital world



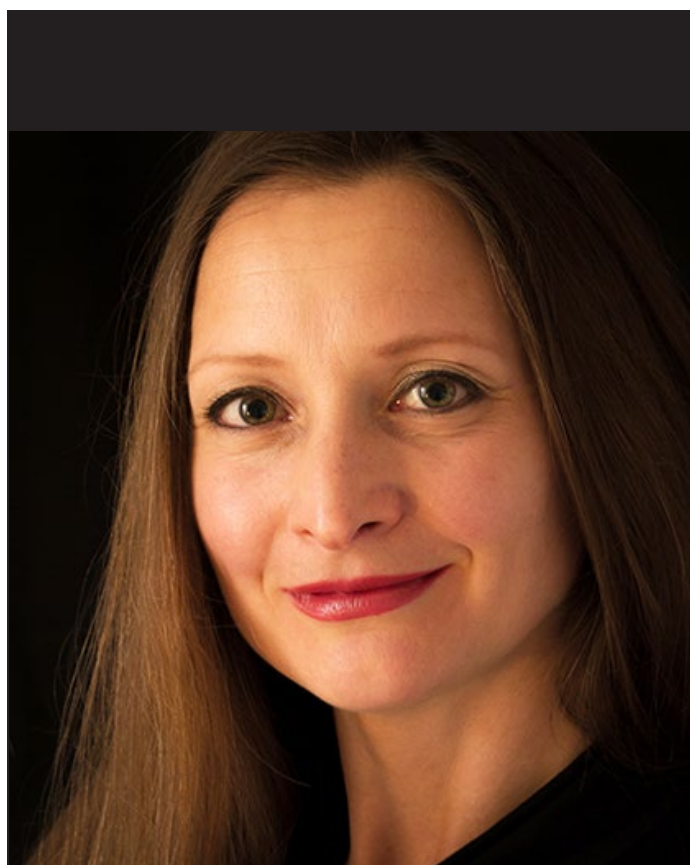
## ARTICLE

# Digital Ecosystems: Positioning for the Future Along the Digital Value Chain

Network operators in many parts of the world - keen to share in the benefits of the digital revolution - are still grappling with adapting to an all-IP environment, which has brought great disruption to the old ecosystem of telecommunications by uncoupling services from networks. Customers no longer demand and buy dedicated telecommunication services from a dedicated service provider. Instead, they buy an Internet connection to access a wide range of often free content, apps and services that have proliferated as a key means of local and cross-border communication (and more). These are offered by alternative, and often global internet platforms and

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companies, with a light asset base and lean cost structures. This has impacted network operators and their position within the digital ecosystem. For example, Juniper Research has calculated that the consumer migration from operator voice and text services to over-the-top (OTT) messaging services and social media cost network operators nearly US\$104 billion in 2017. That equates to 12% of their service revenues. At the same time, a WEF / Accenture study estimates that the value of network investment needed to keep pace with demand over the next decade is US\$ 2 trillion. For the ecosystem, this means that operators have less funds available to invest into network infrastructure, which represents the fundament of the digital economy, and which is inextricably linked and interdependent with all elements of the digital ecosystem. If one key element of the ecosystem fails, e.g. the network, then content, apps and services and the soft- and hardware and devices that feed the network, have no function and the entire ecosystem can fail.



**Imme Philbeck**

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So how can operators position themselves going forward within the Digital Ecosystem to ensure that the ecosystem does not fail? What is the key role of network operators in the future and what measures can they take to ease adaptation to the Digital Age and ensure their sustainability? Do they just provide “mere connectivity” or do they have a role further up the value stack to broaden their product portfolio and offer advanced digital services? If so, how can they move further up the value stack? Do governments or regulators have a role? The article briefly examines the Digital Ecosystem, its potential and the position that operators hold within it; and how operators can position for the future and move up the value stack, by highlighting some industry examples.

### The Digital Ecosystem

The Digital Ecosystem is manifold, increasingly complex and constantly evolving. Based on system theory as described in Donatella Meadows’ “Thinking in Systems”, it is a system of interconnected elements that is self-organized to serve a certain function or achieve a certain purpose, where the elements are the digital stakeholders along the value chain, the interconnections are the competitive, reinforcing, collaborative and interdependent stakeholder relationships, and the purpose or function is the delivery of internal and external valuable services in a sustainable way. Other sources define the Digital Ecosystem as “a distributed, adaptive, open socio-technical system with properties of self-organization,

scalability and sustainability inspired from natural ecosystems.”

Deloitte’s describes a digital ecosystem to comprise of technology, media and telecom companies that specialize in the development of hardware, content, and software applications and provide a platform for the creation, distribution, and consumption of content, applications, and services. By virtue of their complex interrelationships that are competitive, collaborative, and reinforcing, and their collective impact on each other and on a wide range of customers, digital stakeholders form an interdependent ecosystem. Types of content drive network development and vice versa, and the availability of hardware components and increasingly software determine what types of networks can be built. Apps are needed to bring content to customers in an easy-to-use way, which in turn, depend on the software available that runs on the hardware. The ecosystem interacts with consumers, who can also be part of the ecosystem as ‘prosumers’ by providing data for free as a key input generated from their everyday online and offline activities. Moreover, the ecosystem is governed by government policies, economic visions and regulatory regimes, that provide the framework within which the ecosystem can act (with the caveat that the unregulated “free” Internet has enabled unrestricted cross-border data flows and thereby only opened up the possibility for global reach business models that run on economies of scale and network effects).

Taking a business perspective, the digital ecosystem of a network operator is the combination of all relevant digital touchpoints, the people that interact with them, and the business processes and technology environment that support both. It is therefore a mix of touchpoints, people, and supporting elements and involves complex relationships with content owners, application providers, different groups of customers and providers of additional equipment, such as IoT devices, or services, such as enhanced security or services serving different economic sectors, including manufacturing, energy and utilities, public safety, healthcare, public transport, media and entertainment, automotive, finance, retail and agriculture. Also, end-services offered by operators may now be composed of attributes from different ecosystem stakeholders.

Just like an autopoietic biological ecosystem, the digital ecosystem is constantly evolving and creates value in and of itself (ecosystem services) for its stakeholders and for end-users and should be self-sustaining. But just like their biological counterparts, digital ecosystems can also be disrupted if parts of them change or evolve, for example through technological development such as the move to an all-IP environment decoupling networks from services, or network evolution and the emergence and proliferation of advanced technologies such as big data analytics, AI and ML, or the roll-out of 5G networks, which will bring greater speeds (to move more data),

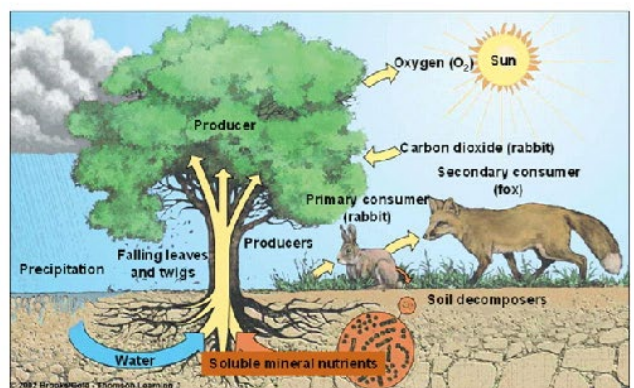
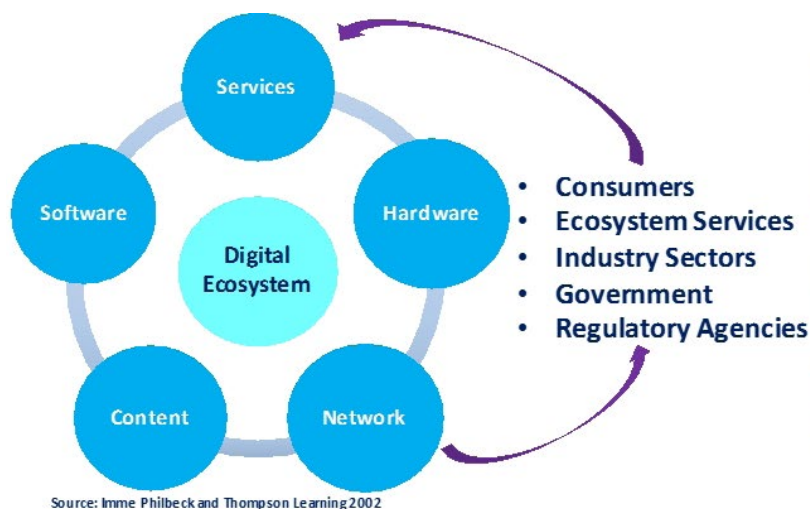


Figure 1: Digital Ecosystem

lower latency (to be more responsive), and the ability to connect a lot more devices at once (for sensors and smart devices). Other factors that can impact the ecosystem and its stakeholders include external factors such as change in human behaviour (e.g. when customers no longer trust in digital services and Internet use, key business models can fail, or when regulation imposes constraints that curb the use of inputs such as personal data). All of these disruptions will significantly impact the ecosystem and its stakeholders, where e.g. network operators are forced to completely transform internal processes, systems, structures and people to remain a sustainable part of the ecosystem.

Disruption can be good and create value (the virtuous circle of innovation / Schumpeterian creative destruction), but it may not be sustainable in the long-run if there is no self-correction (adaptation) of essential disrupted entities such as enabling infrastructure providers or if sub-sectors of the ecosystem are prone to market failure through, e.g. monopolisation, which allows firms to extract more from the ecosystem than they contribute. As Tim O'Reilly, a leading Irish businessman once said: "So many technologies start out with a burst of idealism, democratization, and opportunity, and over time, they close down and become less friendly to entrepreneurship, to innovation, to new ideas. Over time, the companies that become dominant take more out of the ecosystem than they put back in." This might push the ecosystem into imbalance, which could lead to unwanted negative consequences or tipping of the ecosystem. Disruption caused by the use of certain technologies and business models can also generate negative externalities such as the fracturing of social and political cohesion, exploiting people's vulnerabilities through data collection on social media, or widening inequalities. These negative externalities reflect the influence that such technologies have on society and how they were developed and deployed. It is therefore important to understand how technologies are developed and how they are deployed, what values, ethics and morals they include to understand how they might impact our lives and whether this impact is desirable in the long term.

## Overcoming Disruption: Positioning for the Future

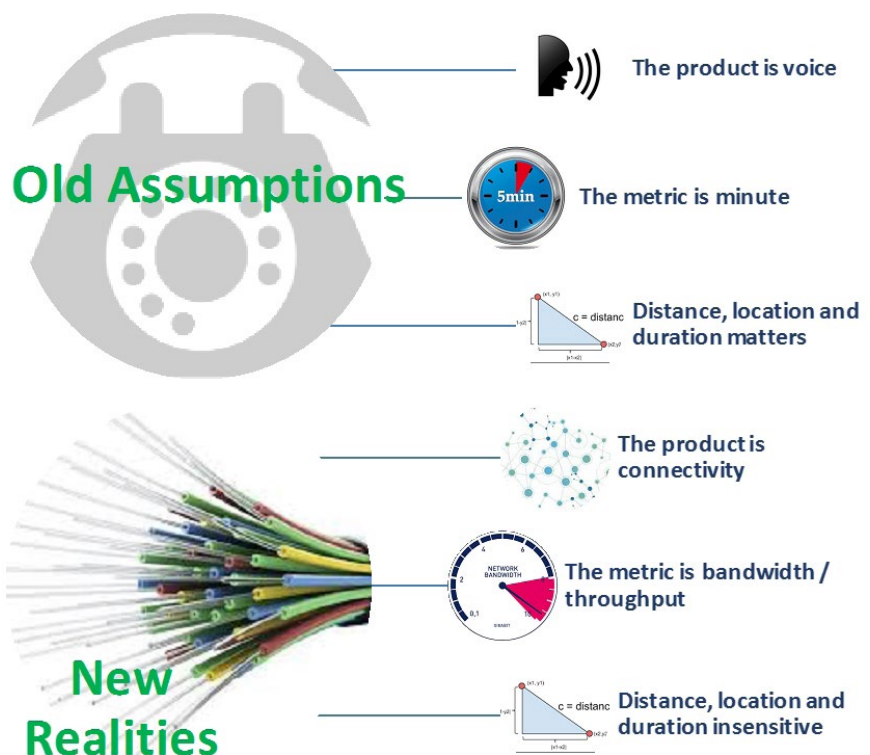
The Digital Ecosystem is currently in a disrupted state through the impact of IP. It is clear that alongside new revenue sources and new business models, new systems and processes are needed, given that old assumptions of voice as the product, minutes as the metric, and the importance of distance, duration and location do no longer hold and have to make way for new realities, where the product is connectivity, the metric is bandwidth / throughput and where distance, time and location do not matter. Moreover, transactional complexities have increased significantly with B2B2X business models, and money flows have changed, with multiple parties contributing to services and sharing in the revenues, which need to be calculated, settled and distributed accurately, and which require seamless automated order management-, billing- and settlement processes across different operations- and business support platforms and services.

To address these new realities, operators have been making great efforts in transforming their businesses and operations from being providers of connectivity to being enablers and

providers of higher value data-centric- and platform services that have the potential to make their businesses sustainable as users consume more and more bandwidth. While the path to success is not easy, operators need to adopt a three-pronged approach to address the disruption through IP to ensure their sustainability and cement their central position in the digital ecosystem, serve their shareholders, and invest in the infrastructure needed to make the goal of creating Information- and Knowledge Societies and transforming into Digital Economies a reality:

1. creating a digital company through internally transforming people, processes and systems,
2. finding and launching new digital services by moving up the value stack, and
3. connecting the digital ecosystem.

Digital transformation of networks and the introduction of new business- and operational models hold great promises towards leaner cost- and asset structures, agility and flexibility. In order to get there, a number of challenges have to be overcome. On the one hand, operators are often constrained by national footprints. This can slow the adoption of new business- and



Source: ImmePhilbeck, adapted from Robert Pepper, Facebook

Figure 2: Old Assumptions, new realities

operational models that rely on economies of scale and network effects, which in turn can impede the offering of cross-border services. Also, national regulatory regimes, e.g. the scope and conditions of national licenses, market dominance-, tariff- and access regulations, and restrictions on the free movement of data across borders, fragmented or multiple different data protection standards and data management requirements across a region provide the frame within which operators are allowed to act and provide services. If these regimes do not change (and little has been done to address these issues – in the SAMENA region, for example, there is no official classification or definition of “over-the-top” services or providers and therefore their impact cannot be quantified, there is no regional cross-border data regulation that allows the transfer, processing and storage of personal data, and there is no region-wide data protection standard that could facilitate cross border data services), it is difficult for operators to adapt and respond to the new global dynamic and competition and embrace new network virtualization technologies that could aid the building of e.g. carrier clouds, the key enablers of digital transformation and cross-border service provision. Other factors such as organizational culture can also be a key factor of slowing transformation.

On the other hand, there are also great

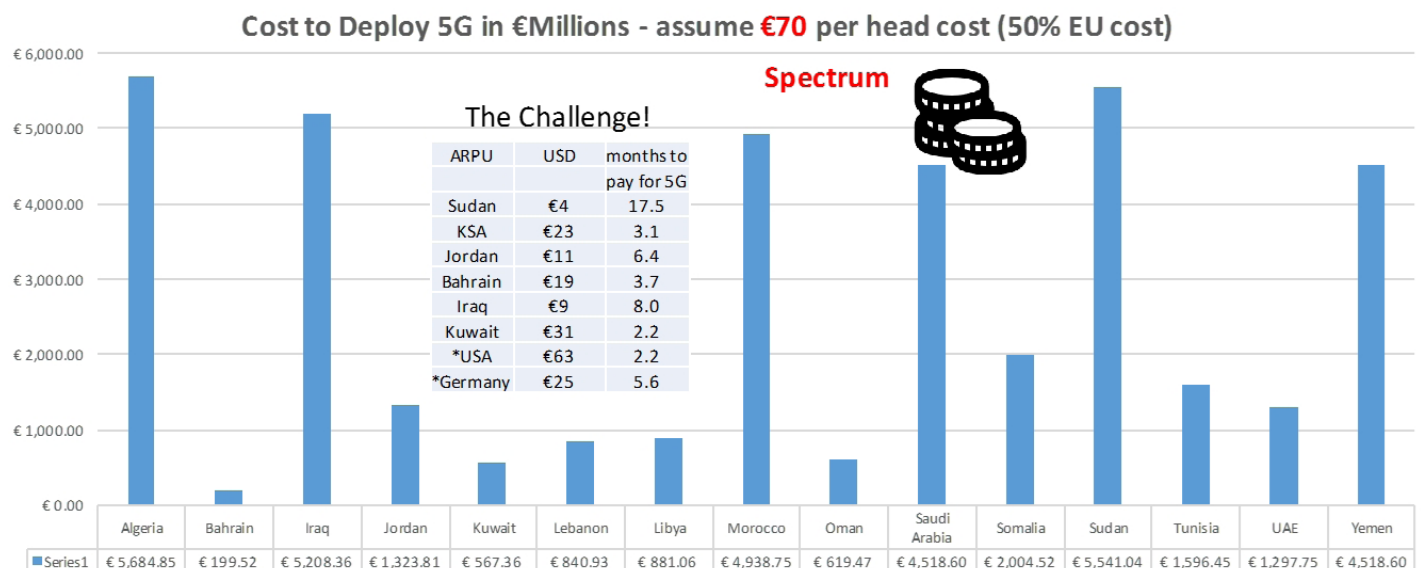
uncertainties regarding a reasonable return on the significant investments that operators must commit to network infrastructure and new network technologies such as 5G, to enable the provision of advanced types of content and services which, once in place, could create new sources of revenue. An analysis by the World Economic Forum and Accenture based on data from S&P Capital IQ estimates that the value of network investments needed to keep pace with demand over the next decade is US\$2trillion. Moreover, a recent estimation by SAMENA Telecommunications Council on 5G investment requirements highlights that the costs to deploy 5G are substantial (see Figure 3).

Numerous studies and reports are making predictions on the great potential and the vast opportunities that the digital ecosystem has in stock for ecosystem stakeholders, in particular operators, and for society at large regarding in particular 5G roll-out and digital services. Arthur D. Little and Ericsson predict that by 2026 industry digitalization investments will generate revenues for ICT players of USD3.5 trillion. Network operators may benefit from an additional 36% revenue (or USD619 billion) from 5G enabled market opportunities by 2026, with the bulk of revenue for operators coming from connectivity and infrastructure provisioning, service enablement, and apps

& service provisioning across different industry sectors.

While there is a lot of hype about 5G roll-out, the business case for ubiquitous 5G coverage is far from clear. 5G will bring three new features: greater speed (to move more data), lower latency (to be more responsive), and the ability to connect a lot more devices at once (for sensors and smart devices). The most obvious family of 5G use cases at the outset is enhanced mobile broadband with speeds up to 20Gbps. However, what are customers' expectations and can they perceive a difference in quality of experience and are they willing to pay a premium for even faster connectivity, when 4G technologies, such as WiMAX and LTE are now scaling up to hundreds of megabits and even gigabit-level speeds (up to 2Gbps)? 4G has not even started paying back and there is little in terms of use cases that provide an improvement over and above what can be achieved with LTE at this point in time.

Moreover, recent estimations on digital services revenue are very low: Analysys Mason's predictions on digital service opportunities in the Middle East and Africa Region represent only USD665 million of revenue by 2022, equivalent to 1.4% of its core mobile service revenue forecast for the region. At the global level, the report presents predictions of USD26.1 billion worldwide, with the core digital service



\* Use €140

Source: SAMENA Telecommunications Council “5G Spectrum Developments and WRC-19: How to promote 5G Deployment in the Region”

Figure 3: Cost to deploy 5G in €millions

- Revenues for ICT players of USD3.5 trillion by 2026 from digitalization investments in industry
- Network operators can benefit from US\$619 billion or 36% of additional revenue from 5G enabled market opportunities



Figure 4: 5G enabled revenue predictions

areas including mobile money, with operators' revenue to reach USD2.1 billion in 2022; mobile commerce with USD4.3 billion in revenue from m-commerce transactions accrued by operators in 2022, digital advertising, where operators could capture 5.6% of digital ad spend worldwide by 2022, equivalent to USD17.5 billion, and identity management, with an operator share of 16% of the mobile IdM market worldwide, representing USD2.2 billion in revenue by 2022.

While there is a lot of uncertainty about 5G use cases and the types of digital services

that can serve as new revenue sources, operators are making tremendous efforts to transform themselves into digital companies by completely replacing old legacy internal operations- and business support systems and processes by all-in-one new systems that can enable roll-out and support new services at scale, while taking account of the new complexities such as apportioning revenue accurately and fairly among all the parties involved in the provision of a complex, multi-layered digital service or portfolio of services. For example, aware of the complexities of multi-party, multi-layer transactions,

where the cost of service elements such as connectivity or cloud compute capacity will be paid for through e.g. sponsorship or advertising models, Saudi Telecommunications Company ("STC") has transformed its internal business support systems by replacing its legacy systems by an end-to-end B2B CRM, order- and partner management-, product catalogue- and revenue management system (see Case Study highlight box). This has enabled the introduction of B2B2X capabilities supported by revenue sharing and automation of the monetisation process.

- In the Middle East and Africa Region, digital service opportunities could represent USD665 million of revenue by 2022 (1.4% of mobile revenues)
- US\$26.1 billion worldwide (3.2% of mobile revenues), with mobile money, mobile commerce, digital advertising and identity management

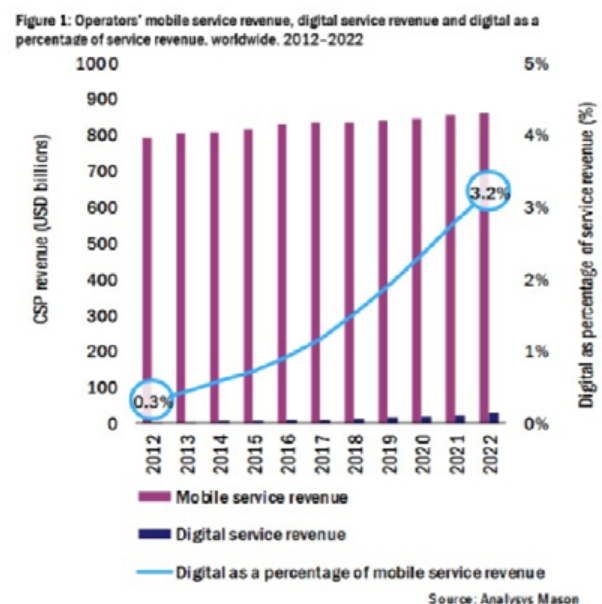


Figure 5: Digital Services Revenue predictions

## Case Study: Creating a digital company - STC's BSS Transformation

Aware of the complexities of the new digital world and ecosystem, where a transaction no longer involves only two parties – operator and customer – but multiple ones, and where old assumptions of voice as the product, minutes as the metric, and the importance of distance, duration and location do no longer hold and have to make way for new realities, where the product is connectivity, the metric is bandwidth / throughput and where distance, time and location do not matter, STC is preparing its transformation of its operations and business support systems, by focusing on new systems and processes in the area of order management, billing and settlement.

A case study published by Mobile World Live together with ZIRA and STC highlights just how STC is approaching this transformation (adapted and shortened from: "Why BSS Transformation is Vital for Operators' Success in the Digital Economy – ZIRA drives STC BSS Transformation"):

### Background

STC was looking for an all-in-one system to support partner-specific configure-price-quote processes, and enable introduction of B2B2X capabilities supported by revenue sharing and automation of the monetisation process. STC's legacy order management process relied on substantial manual work for quotation, order orchestration and fulfilment and the operator did not have the capability to audit this process. In addition, its agreement management system could not support B2B2X business models and the relationship between revenue and expense that is needed to understand the return on investment (ROI). With its legacy system, STC was not able to link the expense order with the revenue one. Therefore, it was unable to retrospectively determine the expense order details and the resale price. From a sales perspective, the sales and marketing teams did not have end-to-end visibility across the lead-to-opportunity-to- quote-to-order process, which impacted the ability of these teams to work successfully with partners. Often, these teams were working with partial information and were not aware of a customer's financial data, including open invoices, what was paid and what was in dispute. Finally, because there was no clear master data management, every system including billing, CRM and inventory was working with its own product configuration. This and the fact that the legacy system required a lot of customisation meant the operator suffered with having long time-to-market, delaying the rollout of new products by weeks.

### Order-to-Cash Transformed

STC first initiated a Business Support System Transformation (BSST) programme across all business units. As part of the programme, STC had already successfully transformed its billing and settlement processes with a new Wholesale Business Revenue Management (WBRM) system and the operator wanted to achieve the same success with its wholesale customer relationship management (CRM) with a specific focus on configure price quote (CPQ), tailored order management and product catalogue. A key goal for STC was to support the expansion of the type and number of partners it worked with, to support B2B2X business models and to build new revenue streams by diversifying its product portfolios. Part of the implementation involved the migration of the existing data. This required substantial data cleansing to be performed following the defining of and gaining approval of the correct cleansing rules and corrective actions with relevant stakeholders within a very tight implementation timeline.

### The Results

STC entirely replaced its legacy systems with an end-to-end B2B CRM, order and partner management, product catalogue and revenue management system, which has enabled STC Sales and Marketing teams to have a consolidated view of financial and billing data. This provides full coverage of the order to cash management process. The 360-degree view of financial data also provides accurate and consistent data to support STC's business decisions. From the business perspective, STC gained a dramatic reduction in time to market, a reduction in manual work from process automation, a 360-degree view of wholesale business operations and partners, cross department collaboration, improved wholesale business unit portfolio by enabling bundling and value-added service (VAS) offerings, enabling new business models by delivering a multiparty (B2B2X) perspective, improved data quality and data consistency, ability to define and monitor key performance indicators (KPIs), SLAs, alarms for effective business management, audit capabilities and flexibility for enabling new revenue streams. From an IT perspective, STC gained the ability to respond to business needs faster. It now has a highly configurable solution, a scalable, open standard platform with alignment to global standards and recommendations, and a future- proofed simplified architecture. The entire solution suite relies on a microservices and DevOps approach, ensuring continued development (CD), continued integration (CI) and continued operation (CO). Through this methodology, STC is able to perform one click deployment and upgrades, with zero downtime and no impact on business.

To move further up the value stack and find new revenue sources, most recent reports propose operators to heavily invest in acquiring the capabilities to take a larger share of digital services' value chains (e.g. investing heavily to outcompete incumbent players, for example banks for financial services or regional ecommerce leaders or collaborate with content or platform providers) and adopting a long-term innovation strategy. To this end, the way forward proposed is to either (1) compete, (2) collaborate or (3) remain neutral / resist. To demonstrate these different strategies, Analysys Mason has undertaken a global exercise in relation to Alphabet, that shows how operators could position themselves along Alphabet's product and services portfolio, including digital advertising, devices and software, connectivity, AI, enterprise, and smart homes & cities. Analysys Mason proposes for operators to collaborate in the areas of devices,

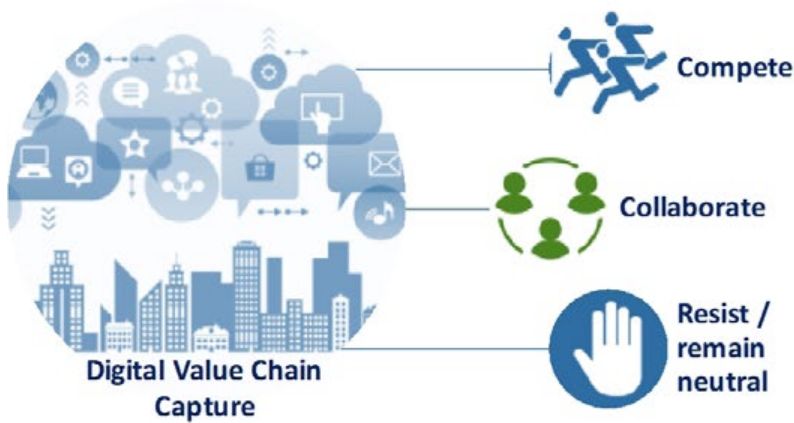


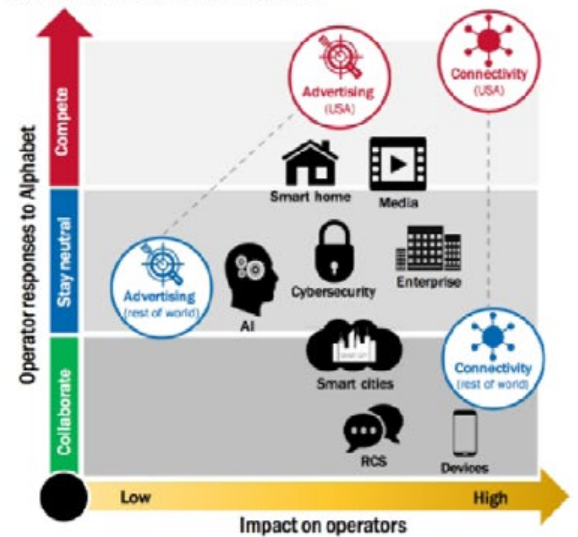
Figure 6: Strategies to capturing the digital value chain

rich communication services ("RCS"), and smart cities, remain neutral in relation to AI, cybersecurity and enterprise, and compete in the areas of media and smart home. Depending on the conditions prevalent in different parts of the world, the proposed strategies should of course vary, as they crucially depend on the economic sustainability model and content ecosystem in place and the size of the advertising and eCommerce markets

and the economic structure, including the share of consumer spent. While in the US, Analysys Mason proposes to compete on connectivity (i.e. regarding Google Project Fi) and on advertising, for the rest of the world it proposes collaboration on connectivity.

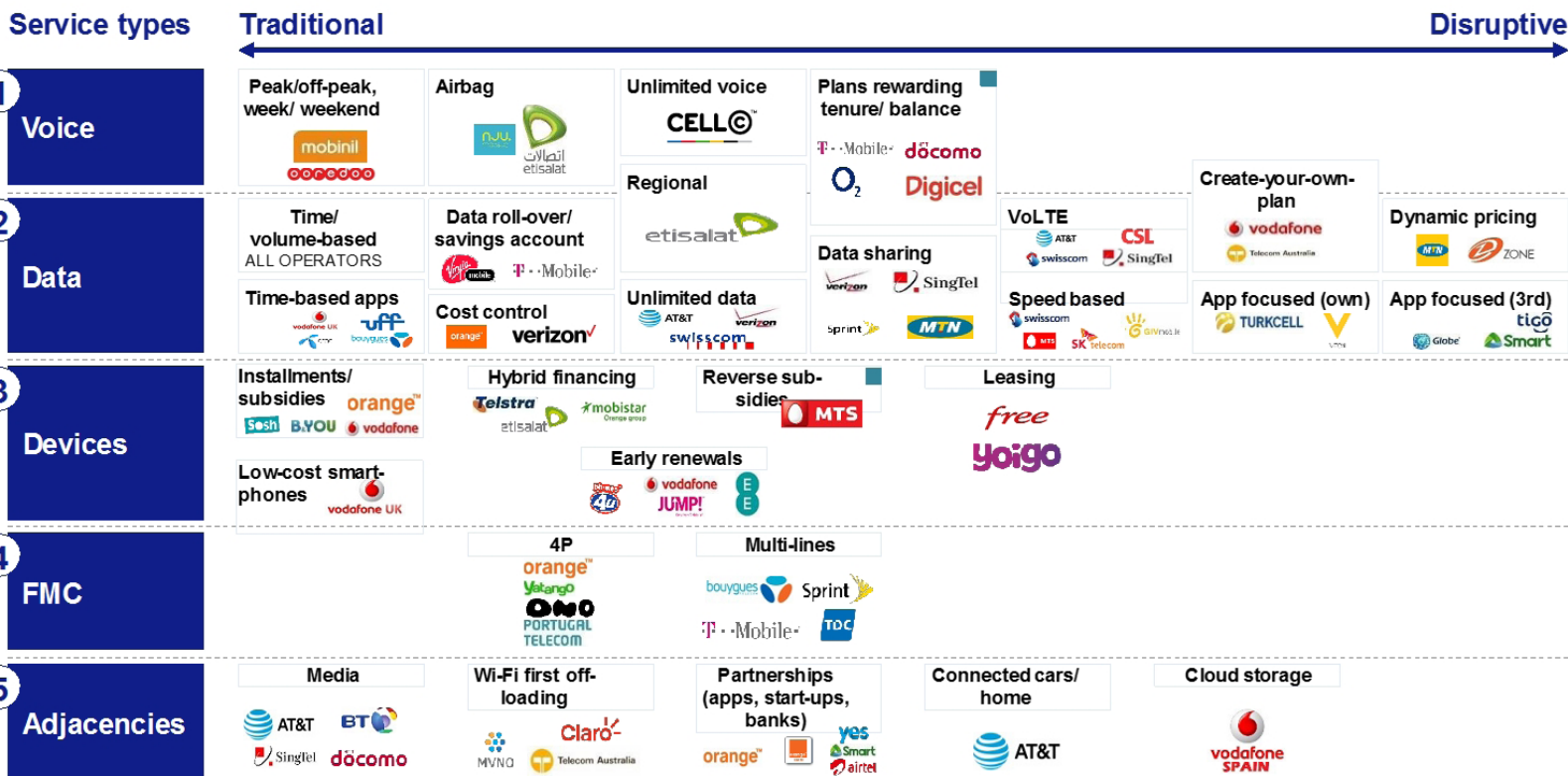
So, how are operators positioning within the digital ecosystem? A large proportion of operators remain close to their traditional

Figure 1: Potential responses by operators to Alphabet's activities



Source: Analysys Mason

models while they transform, including peak-off-peak week / weekend offers on voice, time-based offers on data and apps, and handset subsidies or handset financing models. Some operators offer unlimited voice and data plans. Depending on the state of internal transformation, other more disruptive models become possible, such as monetization of data and competing head-on with OTTs as pursued by Turkcell, or service aggregation



SOURCE: McKinsey Team Analysis

Figure 7: Traditional versus disruptive positioning of network and service providers



and building a platform that brings the digital ecosystem together through an application as introduced by Veon, and collaborative partnerships, a more traditional approach as pursued by a number of the more traditional players like Hutchison 3.

One of the successful disruptors is Turkcell, whose CEO Terzioğlu during GSMA Mobile World Congress 2018, highlighted its strategy of how taking digital transformation very seriously enabled it to create its own platform allowing it to compete directly with global internet platforms / OTTs. As network operators have substantial advantages because they own the essential infrastructure that enables the digital economy and as they are trusted by their customers to bill accurately and provide assured services, service providers can compete with OTTs directly by providing a better quality of service as well as differentiating on security and ease of payment. Following the three-pronged approach of transforming into a digital company (internal transformation, people, processes and systems), launching digital services and connecting the digital ecosystem, Turkcell was able to pursue a monetization strategy of those services that increased the demand for data. It launched digital messaging, music, tv, content and cloud services, in direct competition with established OTT players, and its strategy has been paying off: Turkcell has recorded more than 80 million downloads of its apps, making them the second largest app player in the Turkish market. Turkcell achieved significant revenue growth at group level of 40% bi-annually and 23.4% for the financial year 2017. Moreover, it achieved growth in data and digital services revenues of 51% during 2017 and managed to add an additional 1.5 million new customers and has reduced its churn rate to the lowest over the last 10 years.

## Spotlight: Turkcell Telco Transformation to Digital Experience Provider

The Turkish wireless operator Turkcell has succeeded in transforming its value proposition from a voice provider to a digital services operator by combining its mobile and fixed infrastructures and adding its services developed by bringing together telecom and OTT capabilities. During GSMA's World Mobile Congress 2018, Turkcell CEO Kaan Terzioğlu presented the success of Turkcell of meeting its digital transformation performance targets a year early with a suite of over-the-top subscription services launched by its digital division Lifecell. The platform consists of nine apps, including a social messaging app "BiP" that is similar to WhatsApp, "fizy" for music and "TV+" for video streaming. It also includes Dergilik, Lifebox, My Account, Paycell, Uppcall and RTM.



Turkcell's apps have been downloaded more than 80 million times by over half of Turkcell's customers and the app "fizy" is three times as popular as Spotify in Turkey. Turkcell attributes the company's digital success to its investments in LTE for high-speed services and bundling its "fizy" app for free into Turkcell subscriber packages. For subscribers, there's no charge for data use, while for non-subscribers, the app is free but a subscription is charged after the first month of use.

Service	Description	Subscribers in million
My account	An application for customers to track bill & usages and make transactions & purchase	17.4
bIP	An integrated IP-based communication platform	12.9
fizy	Digital music platform to stream and download music	9.1
Lifebox	A cloud service to facilitate data storage	4.3
Turkcell TV+	A platform that allow subscribers to watch live TV and on-demand content	2.9
Turkcell academy	Digital learning platform with various content	1.4
Dergilik	Digital publishing platform which enables access to more than 250 magazines	1.3

Turkcell Group has also other services mainly targeting corporate customers and government institutions

SOURCE: Turkcell data / Q1 2017

Turkcell's strategy is successful, adding an extra 63 minutes of communication with TV+, 46 minutes with BiP, 24 minutes with fizy, and 27 minutes with our publishing platform Dergilik to the 31-minute call time of its customers.

Additionally, Turkcell's customers conduct millions of transactions every day on its services, such as My Account and Paycell.

To leverage its position and promote its

services platform, Turkcell is looking to partner with operators from across the globe to market its Lifecell apps to their customers as well.

Terzioğlu emphasized during MWC 2018 that operators can only compete with OTTs that have reached billions of users in the world by combining the capabilities of telecom operators and OTT. To this effect, Turkcell has developed a variety of partnership models to suit all sizes and model of operation telcos, including co-investment, revenue sharing and white label. It also offers "OTT-as-a-service" to global partners.



A different disruptive strategy that also competes with OTT services has been pursued by the Dutch company VEON, a network operator acting as a digital platform that aggregates services and brings the digital ecosystem together through its Veon App, generating revenue through revenue share models and selling services to third parties such as billing, revenue assurance, digital identity and security. For users, the VEON App is free to use, it is personalized and offers a secure digital identity with trusted payment and privacy protection. Veon has launched the app in five of its markets to date, with Pakistan being the latest launch in October 2017. Similar to the Chinese app Wechat, the Veon app acts as a digital messaging app (such as WhatsApp), but it also serves as a digital marketplace, offering access to third-party services such as taxi hailing, music, content, media, shopping etc. Veon has signed up over 200 partnerships and it generates revenue based on revenue share agreements with partners.

A more traditional approach has been adopted by Hutchison 3, which focuses on partnerships as well as launching a few of its own services such as TV and cloud. The Ecosystem Partnering Toolkit that Hutchison 3 provides, delivers guidance to both business and technical audiences who need to rapidly design, implement, operate and monetize digital services with partners in extended value chains. One important aspect of a partnership is the revenue sharing agreement, and the benefits that service providers can provide for OTTs such as zero-rating, marketing and sales as well as billing, which is a quick win-win service, where operators can quickly deploy and deliver secure, accurate billing to third parties as well as authentication and identity. The benefits of partnerships to operators mainly lie in improving brand positioning, churn reduction and subscriber acquisition.

The four examples of STC, Turkcell, VEON and Hutchison 3 show that operators are moving forward and taking steps to transforming into digital companies and positioning themselves for the future by adopting moderate to radical changes to their internal operations and value propositions. So, in conclusion to revisit the key questions that the article was out to examine: how can operators position themselves going forward within the Digital Ecosystem to ensure that the ecosystem does not fail? What is the key role of network operators in the future and what measures can they take to ease adaptation to the Digital Age and ensure

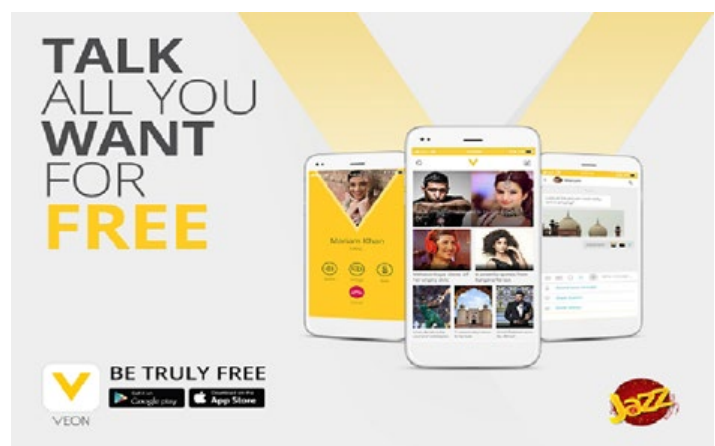


Figure 8: VEON App

their sustainability? Do they just provide "mere connectivity" or do they have a role further up the value stack to broaden their product portfolio and offer advanced digital services? If so, how can they move further up the value stack? Do governments or regulators have a role?

It is clear that the digital ecosystem will continue to evolve and that operators will continue to play a central role within the digital ecosystem going forward. A lot more efforts must be made by operators to ensure that they will remain sustainable parts of the digital ecosystem. As demonstrated by the positive examples of operators successfully transforming and repositioning, if conditions are right, internal digital transformation and positioning for the future along the digital value chain are possible. Adapting to the disruption that the advent of IP and the Internet and corresponding cross-border scale-, network effects and data-driven business models have brought is not easy, and it should be emphasized that the enabling environment including regulatory frameworks need to be revamped to enable this transformative journey. There is no going back to a legacy world and regulatory frameworks need to guarantee that operators can offer cross-border services in competition with global "free" services by enabling cross-border transfer, processing and storage of data and that regulatory frameworks really change going forward to be flexible, light-touch, and open and consider converged scenarios, that include global services where appropriate.

## MEMBERS NEWS



### Eng. Nasser Al Nasser Calls for Building a Sustainable Digital Economy as a Priority for the Region

Eng. Nasser Al Nasser, STC Group CEO, called for building a new and sustainable digital economy in the region that is in line with the rapid changes in the industry and in modern technologies. He stressed, in a speech at Telecom Leaders' Summit 2018 organized by SAMENA Telecom Council, stressed on the importance of accelerating development efforts and building new

partnerships in order to build a new digital economy in the region. He also, emphasized on understanding challenges to benefit from the dynamic changes in the sector, especially regarding the accelerating technologies, supporting digital economy, and understanding the best practices. He explained that any digital or economic challenges can be surpassed and invested optimally whenever there is an enhancement to the benefit of partners and an understanding of their interests, especially the interaction between economic policies and trends of the telecom sector and the digital world, which will contribute largely in the success of government policies and provide high quality services for consumers and communities. In his first speech as a chairman of SAMENA Telecom Council, he expressed his hope that the Council will play a vital role for the benefit of the members from the leaders of the governmental and private sectors, through the exchange of views and visions and stimulate positive discussions in order to raise the efficiency of planning and development efforts. Eng. Al Nasser, presided the annual meeting of the organization in Dubai in the presence of a number of executives and leaders of Telecom Companies and regulatory bodies.



### Eng. Nasser Alnasser Appointed as CEO of STC Group

STC announced the appointment of Eng. Nasser Alnasser as a Group CEO effective from 07/06/2018. Alnasser has extensive experience in the telecommunications sector started with the launch of mobile services in 1996, where he played a key role in the establishment of the mobile network and its expansions. He then moved to CITC. During that period, he played a key role in opening the market and issuing mobile and data licenses. He also worked for Mobily in charge of the network and

information technology sector. In 2015, he moved to Saudi Telecom Company as a senior VP for technology and operations. In 2018 he was appointed Chief Operating Officer of Saudi Telecom Company, and was assigned as a Group CEO last February. He is the Chairman of the Board of Directors of STC Solutions and a member of the Board of Directors of the Turkish Telecommunications Company, and the Turkish company Avia.



### STC Reports a 2.1% Increase in Net Income for Q1 2018

Eng. Alnasser says that the overall telecom market landscape particularly with respect to consumer business segment remains challenging amid economic and regulatory changes that are taking place.

STC's net income for Q1 2018 has increased by 2.1% compared to the comparable

quarter last year. Gross Profit for the quarter reached to SR 6,997 million (\$1866 million) an increase of 1.05% compared to the corresponding quarter last year. STC will distribute a total of SR 2,000 million (\$533 million) in cash dividend for Q1 2018, representing SR 1 (\$0.27) per share. Eng. Nasser S. Alnasser, acting CEO, STC said

that the increase in net income was a result of the continued comprehensive program to improve operational efficiency and cost optimization initiatives. Eng. Alnasser also noted that the overall telecom market landscape particularly with respect to consumer business segment remains challenging amid economic and regulatory

changes that are taking place. Further, the DARE strategy is well aligned with the information revolution that is taking place globally through technologies such as Internet of Things, Information Security, Data Analysis and Artificial Intelligence. He emphasized that such a technological advancement in the areas of digitization and connectivity is a critical contributor

towards the Kingdom vision 2030 and NTP 2020. At the 2018 Mobile World Congress (MWC) in Barcelona, where STC signed important MoUs and agreements with companies like Nokia, Huawei, Ericsson, ZTE and Juniper in the areas of IoT, 5G, smart content and digital infrastructure. Additionally, STC has signed a MoU with The General Sport Authority (GSA), the

Saudi Arabian Football Federation (SAFF). The agreement gives STC the right to obtain the exclusive broadcast rights for the local competitions, the Saudi Professional League, the King Cup, the Crown Prince Cup, professional league matches and all the Saudi national team matches, of which SAFF retains the broadcasting and sponsorship rights.

## STC Claims a 5G Launch; Shelves Plan to Sell Mobile Towers

Saudi Telecom Company (STC) has launched a 5G network in the Kingdom of Saudi Arabia. The company said in a

statement: 'This launching is the initial phase for operating the service once 5G special devices are available in the global

markets.' STC previously claimed that it had 'successfully carried out advanced technical experiments and trials of 5G technology' back in January 2017. Elsewhere, STC has shelved plans to sell its mobile towers, CEO Nasser Al Nasser told news agency Argaam. The executive was cited as saying: 'We are seeking to set up a new partnership project to efficiently manage these towers and make the best out of them.' The telco is adopting a new strategy aimed at expanding investments in new areas and it is looking to boosting added value in technical solutions, digital platforms, as well as other applications and content services to improve its lower subscriber base, which has impacted its revenue.



## Batelco Achieves ISO 22301:2012 Certification in Business Continuity Management

Batelco, Bahrain's leading communications solutions operator has been awarded with ISO Certification in Business Continuity (ISO 22301:2012), following a thorough and vigorous auditing process conducted by Bureau Veritas. The ISO 22301:2012 Certification has been awarded to the following units of Batelco:

- IT Units: Operations, Development and Support.
- Network Units: Network development, Core NGN & IP Transmission, Network Operation Centre, Access Network, Cyber Security Operation Centre, Mobile Core & VAS, Radio Access, Power O&M Development.

A number of experienced Batelco staff,

headed by the Business Continuity team, have worked together to establish comprehensive practices and ensured that they meet all the requirements of the international ISO standard; which were further verified by an independent auditing team from Bureau Veritas. ISO 22301 is a comprehensive standard that represents the highest level of commitment to business continuity and disaster preparedness. By achieving ISO 22301 certification, Batelco continues to demonstrate its focus on high availability and business continuity, as well as the commitment to constantly provide reliable services to its customers. Batelco Bahrain CEO, Mohamed Bubashait expressed his thanks and gratitude to all the teams who participated in this

achievement. Batelco is among the largest telecommunication companies in terms of size and specialized departments and its board of directors pays special attention to building flexible and resilient practices. "Achieving ISO Certification demonstrates that we take business continuity seriously and are committed to providing best in class service to our customers. Batelco always emphasize its commitments to the regulatory commitments of the TRA," Mr. Bubashait added. Batelco Business Continuity Manager Maha Ali added, "Batelco's achievement of ISO 22301:2012 certification reflects the top management's commitment to the efforts of teams working towards achieving a common goal."

## Batelco Participates in the International Telecoms Week 2018

Batelco, in line with its efforts to expand its global reach, is participating at the International Telecoms Week (ITW) 2018 event, which is taking place from May 6 to May 9 in Chicago, USA. As part of Batelco's increasing focus on the global business market, the ITW event serves as an excellent platform for Batelco to showcase its portfolio of global solutions and network with leading industry players to explore mutual business opportunities. Batelco's latest portfolio of innovative products and services includes the newly launched cable system, Batelco Gulf Network (BGN), Cloud Connect, Regional

and Global Data Centers among other products and services. Batelco also seeks to demonstrate its global infrastructure and network, which has more than 25 Point of Presence (PoPs) around the globe. The ITW event is an annual event that attracts international carriers, service providers, ICT providers, VOIP providers, vendors and enterprises, offering a platform to venture subjects related to wholesale and enterprise businesses, including voice, data, cloud, peering, data centres and content services. Batelco Chief Global Business Officer Adel Al-Daylami and his team will be attending the ITW event,

helping to reinforce and position Batelco's global footprint and capabilities in line with the Kingdom's global vision and company's digital vision. "As a major player in the telecommunications industry, Batelco is ambitious in continuously growing its global presence and reach by supporting the requirements of businesses worldwide. This enables us ongoing growth to meet the ever-growing telecommunication demands of multinationals and global carriers through the provision of global solutions." said Adel Al-Daylami.

## Batelco Group Announces First Quarter Financial Results for 2018



Batelco Chairman, Shaikh Mohamed bin Khalifa Al Khalifa who announced the Q1 2018 financial results following the meeting of the Board of Directors on May 3 at Batelco's Hamala Headquarters said that he was very pleased with the excellent start for 2018 with double digit improvements in the financial results over the first quarter of 2017. "Across our group of operations, we are working diligently on our strategic plans to provide reliable and future proof networks that meet the needs of each location, with their specific requirements. At home, we remain focused on ensuring that Bahrain is among the best-connected countries in the region, in support of the Bahrain government's initiatives for the communications sector. Digitization across all sectors of the community remains high on our agenda, with ongoing investment in fiber networks, Tier III Data Centers and the development of our digital solutions portfolio." Gross revenues are up by 11% from BD89.7M (US\$237.9M) reported in Q1 2017 to BD99.5M (US\$263.9M) supported by strong performance at Batelco Bahrain and Umniah Jordan. In Bahrain, revenues were boosted by improvements in mobile and broadband services and in Umniah revenues were up in all revenue streams with notable growth in adjacent services and fixed broadband. BITDA for the first quarter of 2018 stands at BD36.6M (US\$97.1M) compared to BD32.3M (US\$85.7M) in Q1 2017, representing an increase of 13% and EBITDA margin of 37%. The improved EBITDA is bolstered by the revenue gains and the Group's cost containment

programs. Operating profit also improved by 43% over Q1 2017 from BD14.2M (US\$37.7M) to BD20.3M (US\$53.8M). Following the same trend, the Group's Net Profit was BD13.1M (US\$34.7M); a 60% increase from BD8.2M (US\$21.8M) for Q1 2017. The Group's balance sheet continues to be strong with total assets of BD935.5M (US\$2,481.4M) compared to BD932.5M (US\$2,473.5M) in Q1 2017, net assets of BD496.4M (US\$1,316.7M) compared to BD502.5M (US\$1,332.9M) in Q1 2017 and substantial cash and bank balances of BD167.8M (US\$445.1M). Total Equity attributable to equity holders of the company was BD452.8M (US\$1,201.1M) compared to BD461.9M (US\$1,225.2M) in Q1 2017. Earnings per share for the first quarter of 2018 are 7.9 fils compared to 4.9 fils in Q1 2017. Batelco Group CEO Ihab Hinnawi said that positive performances at home in Bahrain and at a number of the Group's international operations led to the very promising start to the year reflected in gross revenues and net profits. Mr. Hinnawi continued by saying, "The solid execution of our strategic plans across all our OPCOS is starting to be reflected in the bottom line, and we are naturally delighted to get off to such a good start to 2018. Our plans, which include strengthening our digital capabilities, are having the positive impact that we hoped for. Our transformation agenda, to create a leaner and more agile organization, continues to be rolled out across all operations and we are very optimistic for the future." "On the mergers and acquisitions front, we are still in the market of assessing new opportunities within the communications field and across adjacent industries to increase the Group's value," Mr. Hinnawi said. "Throughout the Group, we are pleased to note that broadband subscriber numbers have increased. Notable increases include growing customer numbers for Broadband products in Bahrain with numbers up by 4% over Q4, 2017 and 27% year-on-year. Umniah and Dhiraagu have also posted improved broadband numbers with both companies showing an increase of 13% over Q4, 2017 and year-on-year increases of 84% and 65% respectively." For the period, 61% of Revenues and 52% of EBITDA was attributable to operations outside of Bahrain.



## du Set to Roll Out UAE 5G Network in 2018

The availability of 5G services in the UAE is one step closer to reality as du announced its full readiness and ongoing network evolution to offer 5G network during the course of 2018, ahead of the anticipated commercial rollout of 3GPP-compliant 5G terminals in 2019. As part of its 5G readiness, du recently put on air the first 5G site – achieving download throughput of 1.5 Gbps, which was recently demonstrated at du's headquarters in Dubai Media City. Preparation of 5G deployment is currently underway in major clusters like Expo 2020, Burj Khalifa Downtown and Yas Island, among others. Emirates Integrated Telecommunications

Company's chief infrastructure officer Saleem AlBlooshi said, "The commercial availability of 5G terminals, globally, is only expected in 2019 as standards and technologies are still being finalized. As a transparent and innovative company, we are excited to announce our complete network readiness this year, in anticipation of its 2019 roll out. The mass adoption of 5G in the UAE will completely transform the landscape when it comes to how residents utilize their various connected devices, and further strengthen the Internet of Things (IoT) services in the region, which du provides. This will allow us to offer a number of innovative use cases including

Augmented Reality, Artificial Intelligence, Virtual Reality, Internet of Things (IoT), Smart City applications and Remote Surgery, among others. "Our vision is to open the door to endless possibilities for a new generation, and we are working with best-of-breed global partners to enable us to launch 5G services this year." Virtual reality and augmented reality will be two of the main uses of the 5G era, according to du. The firm believes they have huge growth potential, with a market value expected to be approximately \$110 billion by 2025.

## du Achieves PCI-DSS Compliance Across All its Payment Channels and Data Center Hosting Services

du, from Emirates Integrated Telecommunications Company (EITC), continues to provide innovative digitalized services that create secure e-commerce environments for its customers. du's payment channels – comprising of du stores, Payment Gateway, IVR, voice calls, du mobile app, myaccount.du.ae, WiFi UAE, du Dealer Sales Portal are now Payment Card Industry Data Security Standard (PCI-DSS) accredited – which is an endorsement of the security of transactions and customer data. The announcement will enhance the lives of du customers with highly secure credit cards and debit cards belonging to the 5 major card issuers: Visa, Mastercard, American Express, JCB and Discover. Fahad Al Hassawi, Deputy Chief Executive Officer, Telco Services, EITC said: "With the rapid proliferation of e-commerce and a more digitalized world, it is imperative that electronic transactions are secure. The PCI-DSS accreditation bears testament to du's commitment to adhering to the highest standards of transparency and integrity at all times and across all its operations, thus, paving for the UAE to become a forerunner in the provision of simple and secure electronic payments. PCI-DSS Compliance means that our customers can conveniently make electronic payments through various channels with complete peace of mind – knowing that their data is fully secure and tamper-proof." du is one of the few companies in the lead which has obtained PCI DSS compliance certification in the UAE for all its payment channels as well as data center hosting services in Dubai & , Abu Dhabi. With this latest compliance, du customer's cardholder data is protected from theft and misuse when used on the du payment channels. Furthermore, du has systems and processes in place to respond to any cardholder data breaches that limit the extent of theft and misuse of cardholder data. As such, PCI DSS compliance requires mandatory activities to be undertaken by du staff on regular basis,



and requires certification every year. PCI DSS stands for "Payment Card Industry Data Security Standard" which provides many benefits to card merchants around the world. It is maintained and enforced globally by the Payment Card Industry Security Standards Council. The Council was founded in 2006 by Visa Inc., MasterCard, American Express, Discover and JCB International. These card schemes share equally in governance and execution of the Council's work. The security benefits associated with maintaining PCI compliance are vital to the long-term success of all merchants who process card payments. This includes continual identification of threats and vulnerabilities that could potentially impact the organization. Most organizations never fully recover from data breaches because the loss is greater than the data itself.



## Etisalat Group's Revenue Hits AED 13Bn Q1

Emirates Telecommunications Group (Etisalat) reported a 5% year-on-year growth in revenues during the first quarter of 2018, registering AED 13.1 billion. The Abu Dhabi-listed company's earnings before interest, taxes, depreciation, and amortization (EBITDA) rose 2% year-on-year to AED 6.5 billion in Q1-18, according to a company statement released. In the three-month period ended March 31, 2018,

consolidated net profit after federal royalty reached AED 2.1 billion, the telecom firm noted. "Etisalat's first quarter results are a continuation of previous quarters' solid performance, and a promising start for the current year, alluding positive prospects for both customers and shareholders," Etisalat Group's CEO Saleh Al Abdooli commented. The Emirati telecom giant's national subscribers grew to 12.9 million

in Q1-18, Etisalat's data showed. "Etisalat has continued its efforts to align its business with its digital initiatives which have enabled us to develop a healthy business portfolio," Al Abdooli added. Etisalat's consolidated revenues registered AED 13.1 billion in the first three months of 2018, while the company's revenue went up 3% year-on-year to AED 7.8 billion in the same period.

## Etisalat Delivers Value to Customers Using Blockchain-Enabled Services

Etisalat Digital concluded its participation as the strategic partner at the inaugural Future Blockchain Summit which brought together over 7,000 chiefs of industry and visionary technologists from around the world to accelerate blockchain application in Dubai and beyond. Hosted by the Smart Dubai Office at the Dubai World Trade Center, the inaugural Future Blockchain Summit from May 2-3 was the world's first experiential blockchain festival hosted by a city. Salvador Anglada, Chief Business Officer, Etisalat who was a keynote speaker at the event, highlighted how Etisalat is using blockchain-enabled services to deliver value to customers in various industries and Etisalat's own internal use cases around the technology. He also discussed how individuals increasingly find themselves living in a world of accelerated change where people, businesses and governments exist in a digital mesh, bound together by data. Anglada also stressed how companies need to transform themselves, positioning digital at the core in order to succeed in this new environment, and discussed how Etisalat had gone through this journey and actively contributed to the digital transformation market. The summit is in line with the Dubai Blockchain Strategy, announced by His Highness Sheikh Hamdan bin Mohammed bin Rashid Al Maktoum, Crown Prince of Dubai and Chairman of The Executive Council, which mandates that Dubai becomes the world's first-ever government to execute all applicable transactions using blockchain



technology by 2020. The two-day event featured over 70 sessions which delved into real-world applications, creating opportunities and catalysing adoption across a range of sectors - retail and ecommerce, creative economy, healthcare, transportation, education, food, hospitality and tourism, energy, fintech and banking as well as safety and security. It also included the world's first Global Leaders Exchange program, closed door sessions gathering senior government blockchain champions and C-Level industry enablers resulting in a white paper report; a free to the public, experiential exhibition set to showcase pilot projects and innovative advancements from over 60 government and private organizations and; the grand

finale of the Smart Dubai Blockchain Challenge, a startup pitch competition for blockchain-powered entrepreneurs. Further, the event will offer complimentary workshops, such as Blockchain 101, designed to demystify blockchain technology. The flagship event hosted over 60 speakers, with over 50 percent making their regional debut, including blockchain entrepreneurs and tech world headliners Imogen Heap, 2x Grammy Winner and Founder of Mycelia, an experimental music distribution platform using blockchain-based technology and Dr. Larry Sanger, Co-Founder of Wikipedia and CIO, Everipedia, a Wikipedia 2.0 built on the blockchain.

## Etisalat Inaugurates the Digital Security Conference for Small and Medium Businesses

Etisalat staged a Security Conference in Dubai to address the challenges facing Small and Medium Business (SMBs) in securing their business assets with the increasing cyber threats, lack of resources and expertise. Under the theme "Small businesses, big targets... Security is the priority, no matter the size of your business", the event brought together 200 business decision-makers at the Ritz-Carlton, Jumeirah Beach Residence to exchange ideas and best practices, highlight information security challenges and discuss ways to mitigate them. Although awareness of security is increasing among SMBs, a large number of businesses do not even realize they have become victims of cyber-attacks and are unaware how to effectively secure their business. Esam Mahmoud, Senior Vice President, SMB, Etisalat, said: "Small and Medium Businesses are not immune to cyber-attacks. Etisalat's mantra 'Your business grows with us' reflects our commitment to the country's SMB sector. In addition to helping SMBs better manage their business, increase their business

productivity and importantly, profitability, we offer digital trust and empower them to manage modern risks. To help SMBs protect their business, Etisalat is building an intelligence-driven digital security strategy that will provide enterprise-grade security solutions for SMBs." Nidal Taha, President, Z Services MENA, said: "Backed by the unique partnership with Etisalat, we at Z Services have tailored our leading cyber security services including Web and Email Security to fit the SMB Market needs and requirements by offering a cloud-based, cost-effective cyber security services through Etisalat to secure and control both web and email communications with a complete monthly recurring OPEX model and Zero Management. SMBs are equally vulnerable to cyber-attacks as large organizations. To illustrate why SMBs should be worried about cyber security, Firas Khaled Ghanem, General Manager, Sales, Z Services ME, cited some statistics: 49% of cyber-attacks target SMBs, 78% of small businesses will be 'fully adopted' cloud users by 2020; and 55% of respondents

say their companies have experienced a cyber-attack in the past 12 months. SMBs are referred to as the backbone of the nation's economy, accounting for 94% of all companies in the UAE and 86% of the workforce. Kamran Ahsan, Senior Director, Digital Security Solutions, Etisalat Digital, highlighted the four quadrant approach, namely Device Security, Communications Security, Cloud and Apps Security and Security Management, to address the security challenges in today's world. Murat Eldem, Senior Director, Digital Payments & eCommerce at Etisalat, discussed the Mobile Cashier service which transforms merchants' smart devices like phones or tablets into business-grade point of sale terminals, enabling them to accept debit, credit and pre-paid cards in a secure and simple-to-use environment and the latest offering includes bundled point-of-sale terminals, attractive mobile voice and data plans, a free smartphone every year, and for the very first time in UAE zero bank commission.

## Redefining the Future with '5G' and 'Futuristic Technologies'

Today we are witnessing colossal advancements across all technologies with 5G to be a game changer as it aims to bring in evolution that would elevate services, performance and enablement revolutionizing verticals like transport, energy, smart cities, security/surveillance, health opined Khalifa Al Shamsi, Chief Strategy & Governance Officer, Etisalat Group at the 1st ICT Future Foresight Forum. The one-day forum held in Dubai organized by UAE Telecom Regulatory Authority (TRA) in collaboration with the International Telecommunications Union (ITU) for the first time in the country aims to explore and discuss future challenges faced in the ICT sector and also discuss future technologies and solutions that will make a larger impact in the ecosystem. Technology heads from the local and global markets along with senior government officials were present to share their expert opinions and share experiences. Khalifa Al Shamsi, Chief Strategy & Governance

Officer presented 'The Future-Impossible Redefined' focusing on the evolution of technology and the potential emergent technologies bring to new business models, impacting daily lives and bringing together new challenges and exciting opportunities. He highlighted to the audience 5G's advanced capabilities that will substantially benefit multiple industries giving a platform for advanced solutions that will push the future boundaries to the new machine era. Al Shamsi said: "Today Etisalat plays an integral role an ICT service provider by enabling an ecosystem with an advanced network and futuristic solutions like artificial intelligence and robotics. The UAE ranks number one in digital adoption among Middle Eastern countries having implemented core digitization initiatives. This was only possible as future technologies are pushing boundaries into a digital era that is witnessing technology innovation, advancements with various applications that will allow limitless

connectivity, reach and access. "The launch of the 5G network and associated applications will also bring in an immense potential for all stakeholders providing them a platform to innovate, launch futuristic applications and empower the next generation with digital capabilities. As a company our vision 'Driving the Digital Future to Empower Societies' is also focused on making this digital future a reality by facilitating innovation, creativity and bringing technologies of the future to all our audiences across our markets." Keeping in line with its vision of bringing in digital innovation, Etisalat was on track as the first operator in the MENA region to launch the first commercial 5G wireless network achieving a technology milestone and set an industry benchmark. Etisalat is the first operator to have a fully developed commercial 5G network available to provide gigabit internet services to its customers.





## Omantel Upgrades Network with Imagine Communications' Selenio Platform

Imagine Communications recently completed a major upgrade for Omantel, the Sultanate's national telecoms company. The upgrade, which relied heavily on Imagine's Selenio Media Convergence Platform (MCP), significantly boosts the performance and resiliency of Omantel's contribution and distribution networks. The new project saw Omantel migrate its operations from an outdated transmission technology to Synchronous Optical Networking (SONET) and Synchronous Digital Hierarchy (SDH) through the addition of networking modules to the Selenio MCP, which supports both digital video and long-distance connectivity over fiber in the same 3RU chassis. The result is mission-critical, real-time video transport based on open standards over both media and telecoms networks. The Selenio MCP enables media companies to combine baseband digital audio and video, and compressed and uncompressed IP media signals into common workflows. Omantel, which was the launch customer for the Selenio MCP, leverages the power and flexibility of the platform to operate a highly agile network linking 55 sites over dedicated fiber providing high-quality HD contribution and distribution services to studios and transmission centers across the country. The same platform also supports backhaul operations for remote productions, including sports and national events. The Selenio MCP solution's support for baseband and IP protocols enables Omantel to use a single device for both SDI and MPEG-2 transport streams on the broadcaster side, significantly reducing operational complexity. Signals are encoded or transcoded as needed for cost-optimizing the Omantel fiber network, while helping to ensure resilience through redundant paths. In addition to feeding all terrestrial transmitters in Oman, the telco's network provides contribution circuits for live broadcasts, such as sports and major public events, to the broadcasting center. This ensures a reliable solution while reducing operational costs typical of traditional links vehicles from remote areas. Where live coverage is required from a location outside of Omantel's extensive coverage area, Imagine Communications has provided portable kits to extend the network. Speaking about the upgrade, Said Abdullah Al Ajmi, VP of Operations at Omantel said: "Our goal in designing this network was to meet the quality and reliability requirements of our clients in a very cost-effective way, using open telecoms



Anas Hantash (l), Sales Director Middle East and South Asia, Imagine Communications with Said Abdullah Al Ajmi (r), Vice President of Operations at Omantel.

standards. Imagine Communications was our preferred partner as they possess the broadcast technology, the interfaces to telecoms standards, the vision to create the network we sought and the local support to work with us to deliver excellence consistently. The core platform has performed exactly as we had hoped, and we continue to work with Imagine to extend the capabilities to meet our clients' demands." Anas Hantash, Director of Sales for MENA at Imagine Communications, added that with this deployment, "Omantel has seized the opportunity that real-time IP connectivity offers". "They are building out a network that takes advantage of the latest in telecoms techniques to deliver very high standards of resilience and consistency. Our Selenio MCP provides the perfect bridge between SDI and IP, as well as telecom and broadcast, ensuring that Omantel's broadcast customers get the quality and reliability they demand. We continue to work closely with Omantel. This year's project to upgrade the network modules is just one way we are striving together to achieve even better standards of performance."



## Orange Jordan is the Exclusive Telecom Provider for Aqaba Company for Ports Operations and Management

Orange Jordan has recently renewed its agreement with Aqaba Company for Ports Operations and Management, under which it will provide the company with mobile services. This new agreement is part of a

previous agreement between both parties, where Orange Jordan offered fixed line services and the internet becoming the exclusive telecommunications provider for Aqaba Company for Ports Operations and

Management. CEO, Jérôme Hénique signed the agreement on behalf of Orange Jordan, during a recent visit to the South, and on behalf of Aqaba Ports Management and Operation Company, its General Manager,



Engineer Mohammad Mubaydeen. During the signing ceremony, Hénique expressed his pleasure in continuing the partnership with the Aqaba Company for Ports Operations and Management, which is considered to be one of the most important elements of maritime transport sector in the Kingdom and a major center for Jordanian trade. Adding that “As the strongest provider for business solutions, it is our responsibility at Orange Jordan to provide integrated telecommunication solutions and to provide our customers with an unmatched experience, the thing which falls in line with our five-year corporate

strategy Essentials 2020, which aims to connect people to all that matters to them and is essential in their daily lives”. From his side, Orange Jordan Chief Enterprise Officer Smeirat said “We at Orange Jordan are proud to continue expanding our partnership with Aqaba Company for Ports Operations and Management which started several years ago, assuring that the company is constantly seeking to provide the best and latest solutions and innovative services to enrich the experience of its corporate customers in order to improve their businesses. Aqaba Company for Ports Operations and

Management will benefit greatly from the mobile services, especially after the launch of the advanced 4G + that provides high speeds.” Mohammad Mubaideen, General Manager of Aqaba Company for Ports Operations and Management said that he is happy signing this special agreement, saying that, “We appreciate the continuous efforts of Orange Jordan to cover our headquarters with telecommunication services and offer business solutions, which facilitates our internal and external communication.” Orange Jordan is committed to providing high-quality, integrated telecommunications solutions to deliver significant digital advances across the Kingdom. In order to achieve its objectives, the company has invested hundreds of millions of JDs in the past years to develop the telecommunications sector, through allocating substantial amounts for the acquisition of new frequencies, and developing its networks, especially those that provide broadband internet services to ensure the quality of coverage and the provision of high capacities, in addition to renewing 2G and 3G networks. The company has also invested heavily in New Generation Networks (NGNs), including LTE, Fiber-To-The Home (FTTH), Fiber-To-The-Business (FTTB), as well as extending coverage of 4G, 4G+ network.



## Telecom Egypt Signs US\$200 Million Financing Deal with African Export-Import Bank Managed by ADIB Egypt



Telecom Egypt and Abu Dhabi Islamic Bank – E (ADIB - Egypt) announced the signing of a US\$200 million short-term facility from the African Export-Import Bank (AFREXIMBANK) to finance working capital and investments in Telecom Egypt's infrastructure. ADIB in its capacity as general coordinator and financing consultant served as the financial advisor for the short-term facility. Mr. Mohamed Ali, CEO and Managing Director of ADIB, said “We are proud to have been involved in a transaction of this size. It is a testament of ADIB Egypt's growth and expansion strategy and its commitment to support cooperation efforts with both local and international companies and institutions. The success we've had in managing and

coordinating this deal is yet another chapter in the bank's success story in Egypt, which was validated with the award for Best Islamic Financial Institution in Egypt 2018. It also gives us even more motivation to continue providing the highest quality products and services." Eng. Ahmed El Beheiry, Managing Director and CEO of Telecom Egypt added: "Telecom Egypt's Board of Directors had approved the short-

term renewable financing facility from the African Bank for Import and Export, managed by Abu Dhabi Islamic Bank, for a maximum of US\$200 million. This deal will provide the necessary liquidity to finance our working capital requirements and provide the necessary funding for investment at the lowest possible cost." Dr. George Elombi, Afreximbank's EVP for Governance, Legal and Corporate Services

stated: "This transaction has a direct impact on the development of the regional infrastructural network that serves as a lifeline for many African countries. Such cooperation will make significant contributions towards unlocking the full potentials of telecommunications in Africa and delivering the much-needed developmental impact on the continent."

## Egypt Sees Growth in ADSL Users in January

The ADSL market acquired 129,500 new users in January this year, increasing its base from 5.20 million users in December 2017 to 5.33 million. In a different context, Telecom Egypt gained 232,218 new landline clients in December, increasing from 6.91 million in June 2017 to about 7.15 million in December 2017. The internet market added

6.4 million customers in December, as the total number of internet users increased from 34.9 million in November 2017 to reach 41.3 million in December. The growth in mobile internet users contributed to an increase in the total number of internet users, as mobile internet users increased by 23.3%. The mobile internet user base

increased from 26.6 million in November 2017 to 32.8 million in December 2017. In addition, USB modem users increased slightly from 3.2 million in November to 3.3 million in December 2017. Similarly, ADSL users also increased by 1.7%, rising from 5.1 million in November to 5.2 million in December 2017.



## Viva Bahrain Introduces New Digital Services

Telecom operator Viva Bahrain has introduced a host of digital services like Self Service Machines (SSM) and a smart queue management service as part of efforts to enhance customer experience. Expanding its digital services portfolio, the new Viva Self-Service Machines (SSM) introduced at all Viva outlets is a digital channel that offers a completely new digital service portfolio into Viva's retail arena. With this, Viva customers now have the flexibility to login and access the specialized services, or use without having to separately log in. Furthermore, customers will also have the option to make multi- and other-payments on its SSM's as also with QuickPay and use its services to purchase and manage Add-ons, Prepaid Vouchers, International Credit Transfer, SIM card replacement and much more. A more simplified and efficient way for customers to manage their communications needs at their own convenience through the new SSM machines. Adding to this, another new digital offering from Viva Bahrain is the new smart queue management service

within its mobile application that allows customers to book a priority queue ticket at any of Viva's 18 outlets. This new service powered by Viva's partner, Skiplino, allows Viva customers to join a queue ahead of their arrival at the branch, keep them updated on the estimated time to reach the branch, the status of the queue and which desk will be servicing them. In case of any delays, this service allows Viva customers to update their status through the app and hold their spot for an extra 10 minutes. Customers can even rate and submit instant feedback about their experience, allowing Viva to continue enhancing its customer service. Viva Bahrain CEO Ulaiyan Al Wetaid emphasized on the great effort Viva is investing in digitizing its service experience and making it more relevant to the needs of today's online, digitally-savvy customers. He said: "Keeping up with technological changes and adhering to evolving customer requirements is a top priority for us at Viva, enabling us to introduce digital services that are fast, easy-to-use

and accessible 24/7." "The new offerings, which is an extension of our overall digital transformation journey, are powerful and simple solutions designed to enrich the lives of our customers and create a truly integrated digital experience for them at Viva. We look forward to continuing on digitally-enabled innovation growth and achieve more milestones in this area," he added further. The telecom operator has also enhanced its Viva Mobile App with new navigation design and additional menu features to assist customers with bill payment and cycle, balance transfer, data usage and benefits, Viva Rewards, AutoPay for Postpaid plans as well as Auto Recharge for Prepaid plans. Through the Viva App, customers can also book a visit to the Viva store with Skiplino and manage bulk payment options including the option to save credit cards. All customers have to do is download the Viva App and enjoy the ease of accessing their accounts while on-the-go.

## VIVA Wins “Best Network Development” Award at 5G MENA 2018

VIVA, Kuwait's fastest-growing and most developed telecom operator, has been recognized with an award as “Best Network Development”, in the MENA region, presented at the third annual 5G MENA Awards 2018 Ceremony, held in Dubai from 7th to 9th April 2018. Eng. Zarrar Khan, CTO at VIVA commented: “We are proud at VIVA to receive such accolade that fosters our leadership in the telecom market. 5G is the next generation mobile technology that will become a game changer to the society, consumer and enterprise, therefore VIVA will be the “engine” to support the digital transformation for the country of Kuwait across the society and all verticals (education, health care, mobility...). He added: “In the latest years, VIVA has continued its efforts to innovate its network by testing both 4.5G technology in 2016 and 5G technology in 2017, so we remain in the leadership path to bring the latest mobile innovation for the country.” 5G MENA brings together telecom operators, solution providers, regulators, OTT players, and IoT specialists from across the region to define clear



use cases, debate new business models, and drive the connected revolution towards LTE-A, IoT, Smart Cities, and 5G. This year, the conference featured a new, more balanced focus on both the technical and commercial aspects of LTE and 5G Networks, incorporating issues such as early 5G trials and use cases, IoT networks and services, digital transformation, service innovation.



## Zain Group Reports 7% Net Profit Growth to Reach KD 41 Million (US\$ 137 Million) and Revenue Growth of 5% to Reach KD 259 Million (US\$ 864 Million) for Q1 2018

Zain Group, a leading mobile telecom innovator in eight markets across the Middle East and Africa, announces its consolidated financial results for the first quarter (Q1) ending 31 March 2018. Zain served 46.9 million customers at the end of the period, reflecting a 2% increase year-on-year (Y-o-Y). For financial reporting purposes for the first three-month period of 2018, Zain applied the new IFRS 9 and IFRS 15 accounting standards that negatively impacted Zain's key financial indicators, particularly EBITDA.

Group Key Performance Indicators (KD and USD) for Q1, 2018

Total Active Customers:  
46.9 million up 2% on Q1, 2017  
Consolidated Revenues:  
KD 259 million - (USD 864 million)  
EBITDA:  
KD 84 million - (USD 281 million)  
EBITDA Margin:  
32.5%  
Net Income:  
KD 41 million - (USD 137 million)  
EPS;  
9 Fils - USD 0.03

Zain Group generated consolidated revenues of KD 259 million (USD 864 million) for the first quarter of 2018, up 5% compared to the same period in the previous year. EBITDA for the quarter reached KD 84 million (USD 281 million), down 21% Y-o-Y, reflecting an EBITDA margin of 32.5%. Net income for the quarter reached KD 41 million (USD 137 million), up 7% Y-o-Y reflecting Earnings Per Share of 9 Fils (USD 0.03). For Q1, 2018, foreign currency translation impact, predominantly due to the 38% currency devaluation in Sudan from an average of 15.5 in Q1, 2017 to 24.9 in Q1, 2018 (SDG / USD), cost the company USD 38 million in revenue, USD 16 million in EBITDA and USD 7 million in net income. Excluding the currency translation impact, Y-o-Y revenues would have grown by 9%.

Key Operational Notes for three months ended 31 March, 2018:

The company held its General Assembly Meeting (AGM) on 28 March, and approved the distribution of a cash dividend of 35 fils (USD 0.11) per share for the 2017 financial year. Group data revenues (excluding SMS and VAS) increased 10%

Y-o-Y, representing 26% of the Group's consolidated revenues. The application of IFRS 15 standards significantly impacted EBITDA predominantly due to two main factors, one, the Cost of Sales (COS) related to handsets that could no longer be amortized, and two, the company's investment in attracting Enterprise (B2B) customers. Zain Kuwait and Zain Iraq record strong growth, while significant currency devaluation in Sudan, and loss of customers and other factors in Saudi Arabia impact overall performance. During the quarter, Zain entered numerous agreements with world-leading entities to support its digital lifestyle aspirations. These included with Google's Apigee to launch the Zain Group Application Program Interface (API) Platform that will see the operator exposing its APIs, thereby helping to remove a significant barrier to developing potential digital partnerships from across the globe. Another agreement was a strategic partnership with Apigate, a subsidiary of Axiata Digital, to procure and provide API services via Zain's API Hub for its operating companies and end users. Zain Group and its operations also

entered Memorandum of Understandings (MoU) with leading technology solutions provider Ericsson, Huawei and Nokia and other entities in areas of developing 5G roadmaps as well as in rollout exciting and compelling innovative solutions to enrich the enterprise (B2B) market and exploit the vast opportunities in cloud services, gaming, digital content and e-commerce, all key and lucrative growth areas. Commenting on the results, the newly appointed Chairman of the Board of Directors of Zain Group, Mr. Ahmed Al Tahous said, "It is a great honor to have been appointed Chairman of Zain Group, a company with a rich history that has created substantial returns for all shareholders as well as extensive positive socio-economic benefit for the countries we operate in over the years." The Chairman continued, "The encouraging first quarter 2018 results were achieved as a result of the transformation strategy implemented several years ago by the company to focus on innovative programs to improve the efficiency of the operations as well diversifying income sources primarily from digital related areas. The Board is working closely with management in further fostering these value accretive areas as well as seeking new opportunities in driving the business forward." Vice-Chairman and Group CEO, Bader Al-Kharafi said, "Management's transformational and digitization efforts are resulting in sound operational progress across several of our key markets as reflected in our robust results for the first quarter, highlighted by the improving performance in our home market of Kuwait and similarly in Iraq, as well as in the strong growth of data revenues. If it were not for unavoidable externalities such as the prolonged currency issue in Sudan and various adverse factors in Saudi Arabia, as well as the application of the new IFRS accounting standards, the Q1, 2018 results would have been even more impressive." Mr. Al-Kharafi added, "The data monetization, Enterprise (B2B) and smart city initiatives implemented in Kuwait, Saudi Arabia and across other key operations are growing at impressive rates and we will continue to develop the required infrastructure and invest resources to further benefit from these lucrative and strategic business areas." The Vice-Chairman and Group CEO concluded, "Although we operate in

many markets with diverse levels of socio-economic challenges and technological maturity, we are committed to our digital lifestyle strategy and leveraging our state-of-art networks. We remain focused on enhancing shareholder value and actively seeking lucrative opportunities in the digital space as well as ensuring the mobile experience for our customers is second to none."

Operational review of key markets for the three months ended 31 March, 2018

#### **Kuwait:**

Maintaining its market leadership, the flagship operation of Zain Group saw its customer base serve 2.8 million in a very challenging period that saw improving financial performance for the quarter. Revenues generated for the quarter increased 21% reaching KD 96 million (USD 320 million), and net income increased 16% to reach KD 19 million (USD 63 million). Zain Kuwait's EBITDA amounted to KD 26 million (USD 87 million), a 15% decrease with EBITDA margin standing at 27% for the quarter. Data revenues (excluding SMS and VAS) grew by 4% Y-o-Y representing 29% of total revenues.

#### **Iraq:**

Zain Iraq performed exceptionally well in Q1, 2018 when compared to the corresponding 3-month period with revenues reaching USD 275 million, a 9% increase Y-o-Y and EBITDA reached USD 96 million, up 12% reflecting an EBITDA margin of 35%. The operation reported a net profit of USD 8 million, substantially up on the USD 283,000 profit recorded for Q1, 2017. The expansion of 3.9G services across the country and restoration of sites in the West and North, combined with numerous customer acquisition initiatives, especially in core regions, resulted in impressive addition of 2.2 million customers (18% increase) to reach 14.5 million. Also contributing to the operation's financial revival was the significant growth of data revenues, robust growth in enterprise (B2B) segment, and the revamping of its call centers significantly improving customer service.

#### **Sudan:**

In local currency (SDG) terms, the operator continues to perform well, as revenues grew by 26% Y-o-Y to reach SDG 2.1 billion (USD 85 million, down 20% in USD terms) for Q1, 2018. EBITDA increased by 35% to reach SDG 802 million (USD 33 million,

down 14% in USD terms), reflecting an EBITDA margin of 38% while net income increased by 18% to reach SDG 305 million (USD 14 million, down 17% in USD terms). Data revenues (excluding SMS and VAS) formed 16% of total revenues, with an impressive annual growth of 41% in SDG terms. Zain Sudan now serves 13.8 million customers.

#### **Saudi Arabia:**

Zain Saudi Arabia performance for the quarter was affected by a 17% Y-o-Y (1.7 million) reduction of its customer base due to exodus of expat community, bio-metric measures and a two-sim policy for expats. In addition, the increase in depreciation and amortization due to acquiring spectrum and additional property equipment and one-off charges in Q1 2018 relating to the absorption of VAT customer related fees negatively impacted the operation. The company reported quarterly net losses of SAR 77 million (USD 21 million) compared to a SAR 45 million (USD 12 million) net profit in Q1, 2017. Revenues decreased by 12% in Q1, 2018 reaching SAR 1.686 billion (USD 450 million). The company recorded a 14% decrease in EBITDA to reach SAR 571 million (USD 152 million) in Q1 2018, resulting in an EBITDA margin of 34%. Impressively, data revenues (excluding SMS and VAS) represents 55% of total revenues.

#### **Jordan:**

Zain Jordan serves a customer base of 3.8 million customers as at Q1, 2018, maintaining its lead in the market. Y-o-Y revenues were stable at USD 119 million, with EBITDA decreasing 18% to reach USD 48 million, reflecting an EBITDA margin of 40%. Net income reached USD 18 million. With the continual expansion of 4G services across the country, data revenues (excluding SMS and VAS) grew by 5% Y-o-Y which now represents 39% of total revenues.

#### **Bahrain:**

During Q1, 2018, Zain Bahrain generated revenues of USD 44 million. EBITDA for the period reached USD 10 million, reflecting an EBITDA margin of 22% while net income increased 120% to reach USD 2.9 million. The operation's focus on new, attractive packages coupled with a totally revamped 4G network saw the customer base served reach 650,000, with data revenues (excluding SMS and VAS) representing 45% of overall revenues.



## Artificial Intelligence to Add US\$182 Billion to UAE Economy by 2035, Accenture Research Shows

Artificial intelligence (AI) has the potential to boost economic growth in the United Arab Emirates by 1.6 percentage points and add US\$182 billion to the national economy by 2035, according to a recent report by Accenture (NYSE: ACN). The report looked at 15 industries in the UAE and 13 in Saudi Arabia to determine the potential sector-specific impact of AI on the economies of the Middle East. The research found that in the UAE, AI will have the greatest impact on the financial services, healthcare, and transport and storage industries, with increases of US\$37 billion, US\$22 billion and US\$19 billion, respectively, in their annual gross value added (GVA), which measures the output value of all goods and services in a sector. Even the labor-intensive sectors of education and construction will see increases of US\$6 billion and US\$8 billion, respectively, in their GVA over the same period, with AI enabling people to be

more productive, thus leading to gains in profitability. The effects of AI will also be felt in Saudi Arabia, where it is expected to increase GVA by US\$215 billion. Accenture research has shown that, globally, AI could boost profitability by an average of 38 percent, leading to an economic boost of US\$14 trillion by 2035. "The level of growth that AI stands to bring to the UAE's economy is unparalleled," said Amr El Saadani, managing director of Accenture's Financial Services practice in the Middle East and Turkey. "The nation's leaders already understand the impact of this powerful technology, evidenced by the appointment of the first Minister of AI last year. "While AI-led growth will be felt across a wide variety of industries, the financial services sector has the most to gain – which isn't surprising, given that many of its jobs can be significantly augmented with AI and machine learning. In addition, Accenture reports have already shown that banking

executives globally are taking action to transform their businesses through the use of AI." The report identifies five key strategies for policy makers to consider when looking to implement AI: growing the local talent pipeline using AI; advocating for a code of ethics for AI; becoming the global testbed for social AI; preparing the next generation of workers for the AI future; and minimizing the impact of labor market dislocation. "With governments in the region looking to break free from a decades-long dependence on oil, AI can act as a key driver to future growth," El Saadani said. "However, to overcome the social and economic challenges that can arise from a shift of this magnitude, governments will have to put in place a robust roadmap to enable their countries to fully reap the rewards of this powerful technology."

## DIFC Signs Fintech Agreement with Accenture

Dubai International Financial Centre (DIFC) has signed a memorandum of understanding (MoU) with professional services company Accenture, to develop Financial Technology (fintech). Under the MoU, Fintech Hive at DIFC will collaborate with Accenture's Fintech Innovation Labs in New York, London and Hong Kong, to share resources and knowledge on the latest research and trends in financial technology. In line with DIFC's Growth Strategy 2024 and Dubai Vision 2021, Fintech Hive at DIFC aims to fill a void in the market by giving financial companies access to state-of-the-art technologies to support their digital transformation. "What sets us apart is our ability to harness the assets to grow fintech locally that will ultimately create more jobs, attract investments and support the economy as a whole," said Arif Amiri, chief executive officer of DIFC Authority. The Fintech Innovation Labs are annual 12-week accelerator programmes that bring together early-stage financial technology companies



and the world's leading financial institutions. Globally, the Labs' alumni companies have raised more than US\$1.07 billion in venture financing after participating in the programmes.

## Accenture Interactive Named Largest Digital Network Worldwide By Advertising Age

Ad Age has named Accenture Interactive the largest digital network worldwide in its Agency Report 2018. This is the third consecutive year in which Accenture Interactive was ranked the largest digital

network worldwide. The analysis is based on an evaluation of more than 600 agencies, networks and companies. This ranking both reinforces Accenture Interactive's position as industry leaders

and reflects increasing demand for the company's customer experience services in a highly competitive market.



## Cisco to Advocate That It's Time to Put Security above Everything at GISEC 2018

Cisco will address the maturing and more sophisticated tradecraft by attackers and will spotlight how adversaries are evolving their approaches to exploit new technology security gaps at this year's Gulf Information Security Expo & Conference (GISEC). Themed, Security Above Everything, Cisco believes that organizations need to start building an industry wide culture - whether they are moving to the cloud, launching a new product, bringing on new digital devices - where security must be top of mind and integrated seamlessly into everything the organizations does. As a Platinum Partner, Cisco will address why securing networks and IT infrastructure is mission-critical for businesses to succeed today and build for tomorrow and discuss the evolving role of security. The event will be held at the Dubai World Trade Centre (DWTC) from May 1 – 3, 2018. Organizations use technology throughout their operations to drive the pace of business with most having moved to the cloud in some way, shape or form. Employees get more done from wherever they are thanks to the fact they can log into cloud apps or email over guest Wi-Fi from laptops or phones from the road. The cloud also has powered data

center explosions with networking teams overseeing applications instantly moving between the cloud and data centers to support dynamic business needs. At GISEC, Cisco will address whether by this move to the cloud, endpoint security for workers and the data center have kept pace. "While it's easier to deploy new IT services, there may be impact to visibility and control mechanisms unless changes are made to the way security is implemented and managed. The security tools and processes that work for networks and data centers will not necessarily work in public clouds. We experience limits to visibility into the behavior of users, the disposition of data, and the network. Yet privacy and data must be protected, along with the ability to detect and respond to threats across cloud environments," said Scott Manson, Cybersecurity Lead - Middle East and Africa, Cisco. "Cisco delivers the breadth of innovation, so network and security teams can set the pace for securing their organizations with the visibility and protection necessary for users and workloads that drive business. Our portfolio is built on coordinated threat intelligence becoming an action to detect, prevent or respond. If we want to succeed

in the fight to protect our networks, it's time to put Security Above Everything." In the recent Cisco 2018 Annual Cybersecurity Report (ACR), 27 percent of security professionals said they are using off-premises private clouds, compared with 20 percent in 2016 for various reasons including better data security (57 percent); scalability (48 percent) and ease of use (46 percent). The report further revealed that while cloud offers better data security, attackers are taking advantage of the fact that security teams are having difficulty defending evolving and expanding cloud environments and that malware sophistication is increasing as adversaries begin to weaponize cloud services and evade detection through encryption, used as a tool to conceal command-and-control activity. The Cisco 2018 Security Capabilities Benchmark Study further revealed that defenders are implementing a complex mix of products from a cross-section of vendors to protect against breaches. A staggering 23% of MEA companies manage more than 21 vendors leaving organizations with security stacks that are too complex to manage, spew too many alerts, and miss the really important outcomes.

## Cisco among Top 10 Best Places to Work in the UAE

Cisco has been ranked among the top 10 best places to work in the UAE, by Great Place to Work® (GPTW), a global research, training and consultancy firm that identifies the best workplaces in over 50 countries worldwide. The top 25 companies were awarded at the GPTW annual event, recently held at Jumeirah Zabeel Saray in Dubai. Cisco UAE was recognized for its commitment to creating a workplace that fosters trust, pride and fairness amongst its employees. "Receiving this recognition as one of the best places to work in the UAE in our first year of participation is both exciting and a great honor. We believe that technology alone doesn't drive innovation, people do – which is why we aspire to give our employees the space, freedom and support to make amazing things happen. Our people and culture remain crucial to our success, and this recognition provides us with the opportunity to continue learning, improving and transforming Cisco UAE into an even greater place to work," said Shukri Eid, Managing Director – East Region, Cisco Middle East. The GPTW's mission is to build a better world by helping organizations become great places to work. It analyzes policies, process and practices in

each participating company along with data obtained from direct surveys with employees offering a rigorous representation of the organization from an employee perspective, and an overall portrait of the workplace culture.





## DE-CIX Supports Hybrid Network Connections to Google Cloud with DE-CIX DirectCLOUD

DE-CIX - the world's leading Internet Exchange (IX) operator - announced support for Google Cloud Partner Interconnect, a service from Google Cloud that allows customers to connect to Google Cloud Platform from anywhere. Google Cloud Partner Interconnect is a new product in the Google Cloud Interconnect family. Last September, Google announced Dedicated Interconnect enables provides higher-speed and lower cost connectivity than VPN, and has become the go-to

solution to connect on-premise data centers with the cloud. With Partner Interconnect, customers can now choose DE-CIX to provide connectivity from their facility to the nearest Google edge point of presence. In addition, they will also be able to select from a variety of substrate interface speeds varying from 50 Mbit/s up to what Google allows. "Partner Interconnect gives Google Cloud customers even more connectivity choices for hybrid environments," said, John Veizades, product manager, Google

Cloud. "Together with DE-CIX, we are making it easier for customers to extend their on-prem infrastructure to the Google Cloud Platform." "We are happy to add Google Cloud to the DE-CIX DirectCLOUD Exchanges at our locations in Frankfurt, Munich, New York, Dallas and Marseille. Through our DirectCLOUD remote offerings customers can also benefit from Google Cloud's global network at further DE-CIX Internet Exchanges", says Ivo Ivanov, CEO of DE-CIX International.

## Mumbai-IX, Powered By DE-CIX, Expands Footprint by Adding a Point of Presence at GPX

Mumbai-IX, powered by DE-CIX, the leading Internet Exchange (IX) in the Indian market, will make its services available at GPX's Tier IV Internet data center in Chandivali, Mumbai. Starting this May, content providers and networks in GPX will be able to take advantage of Mumbai-IX's local presence inside the data center. Customers of the Internet Exchange will be able to start exchanging traffic with around one hundred other connected networks instantly. The GPX Internet Data Center is home to many Indian and internation-

al content and eyeball networks. This is Mumbai-IX's fourth point-of-presence in the metro market. The carrier and data center-neutral IX serves around 90 providers, incl. many of the world's largest content providers. "Expanding our footprint to GPX is an important step, allowing all networks in the building to benefit from the Mumbai-IX offering. We will install our award-winning DE-CIX Internet Exchange infrastructure to allow maximum scalability and robustness for Mumbai-IX", says Ivo Ivanov, Board Member of the Mum-

bai-IX operating company, DE-CIX Interwire India. Mumbai-IX, the first DE-CIX Exchange on the Indian sub-continent, connects all kinds of Internet providers, including broadband providers, content delivery networks, and cloud companies. The company facilitates the direct and settlement-free exchange of Internet traffic between all participants and it is the first IXP to be fully licensed by the Department of Telecommunications, as well as being the only Indian IXP that has been awarded the prestigious Open-IX certification.

## Angola Cables to Become New DE-CIX Reseller

Angola Cables, S.A. a rising African IP carrier's carrier, has announced that the company is entering into a reseller relationship with DE-CIX, the world's leading Internet Exchange (IX) operator, to offer connectivity as well as remote peering solutions to its customers, reaching out to the main DE-CIX hubs in North America and Europe. Angola Cables S.A. - who serves main markets in Southern African Development Community (SADC), plus recently Brazil - enables and connects African business hubs as well as South American metropolitan areas with European and North American key markets by offering a diversity of routes and international wholesale carrier services. This will empower African and South American networks locally to keep their transit costs down and keep traffic

within their regions. "We are proud to become the first Angolan reseller of DE-CIX premium interconnection services, targeting Africa and South America. The recent implementation of DE-CIX reseller services highlights our commitment to helping our customers expand into new markets, lessening the digital divide, and improving the Internet experience for end-users in main markets of Africa and South America", comments Antonio Nunes, CEO of Angola Cables. The agreement with DE-CIX implies that the African and South American networks will have an alternative route to connect to Europe and North America. "Ever since 2013, we at DE-CIX have had a very strong and trustful partnership with Angola Cables. By adding them to our reseller portfolio, we are taking our cooperation to the next

level. DE-CIX is known for building peering bridges from Europe to Africa and vice versa. With peering and cloud enablement from DE-CIX, customers can connect to 1300+ international and national networks, experience the fastest interconnection possible, and also reduce latency and IP transit costs", says Ivo Ivanov, CEO of DE-CIX International. The DE-CIX reseller program allows third parties like Angola Cables to resell peering ports in any area where they have an infrastructure. Remote peering enables network expansion by connecting customers to an IX remotely, eliminating the need for extra infrastructure, dealing with contractual and legal issues and different technical teams. Angola Cables will connect to the DE-CIX locations in New York, Frankfurt, Madrid and Marseille.





## Eutelsat Completes US\$373 Million Hispasat Divestiture

French fleet operator Eutelsat finished a lengthy 302 million euro (\$372.9 million) sale of its stake in Spanish fleet operator Hispasat after gaining long-awaited approval from Spain's government. The divestiture was first announced last May and expected to close that year, but required approval from Spain's Council of Ministers, which didn't occur until two weeks ago. Hispasat on April 19 said that Eutelsat's 33.69 percent stake was split between Spanish toll Road Company Abertis and the Spanish government's Centre for the Development of Industrial Technology (CDTI). Abertis gained 32.63 percent of Eutelsat's stake, with the remaining 1.06 percent going to CDTI. Eutelsat in the past had expressed interest in becoming a majority owner of Hispasat, but faced resistance from the Spanish government over foreign ownership. Hispasat is the majority owner of Spanish defense satellite operator Hisdesat in addition to running its own fleet of commercial telecom satellites. Abertis now owns 89.68 percent of Hispasat and CDTI holds 2.91 percent. Spain's state-owned industrial holding company Sociedad Estatal de Participaciones Industriales's (SEPI) stake remains the same at 7.41 percent. The five Eutelsat executives on Hispasat's 19-person board of directors relinquished their

positions to five Abertis executives, Hispasat said. Eutelsat said April 18 that the Hispasat divestment was "in line with the Group's strategy of rationalising its portfolio of assets in order to maximise cash generation." Hispasat generates nearly two thirds of its revenue from Latin America, and reported a profit of 80.5 million euros from 235 million euros in revenue for 2017. Eutelsat cemented its position in Latin America by acquiring Mexican fleet operator Satmex in 2014 for \$831 million, a move that caught Hispasat officials off-guard.



## Eutelsat Communications: Third Quarter and Nine Month 2017-18 Revenues

Eutelsat Communications (ISIN: FR0010221234 - Euronext Paris: ETL) reported revenues for the Third Quarter and Nine Months ended March 31, 2018. Rodolphe Belmer, Chief Executive Officer, commented: "In the third quarter, the overall revenue trend of our five operating verticals improved further at -1.1% after -1.8% at the half-year stage. Video continued to progress, notably with improving trends at our HOTBIRD video position, while in Government Services the outcome of the latest US Department of Defense renewals was positive once again, at above 95%. On the other hand, 'Other Revenues' are running behind expectations following the outturn of the Third Quarter. We are working on a handful of active "Other Revenues" opportunities in the pipeline which would enable us to land at the low end of our Full Year total revenues objective of -1 to -2%. However, in the event that none of these "Other Revenues" materialize in the fourth quarter, the decline in revenues could be up to c. -3.5%. This has no impact on our other objectives for the current and following two years which are fully confirmed. The year to date has seen significant headway on our strategic roadmap. In particular the procurement of KONNECT VHTS, represents a major milestone in

our growth strategy in Connectivity and comes with major multi-year distribution commitments with Orange and Thales. Elsewhere, the disposal of our stake in Hispasat will contribute to accelerating our deleveraging in line with our commitment to financial optimization."

### RECENT HIGHLIGHTS

Since the start of 2018, Eutelsat has made further headway on its strategic roadmap: The procurement of KONNECT VHTS, a major milestone in the Group's growth strategy in Connectivity with significant multi-year distribution commitments with Orange and Thales and representing the optimum solution from a commercial, technical, financial and operational perspective; Closing of the sale of the Hispasat stake for €302m, an important step in the rationalization of the Group's portfolio, maximizing cash and accelerating deleveraging; Landmark MoU with China Unicom to address the satellite communications market in the framework of the "Belt and Road" initiative, followed up by the commercialization of the remaining HTS capacity on EUTELSAT 172B to UnicomAirNet, representing a backlog of over \$100 million; Several other commercial highlights including: In Government Services, the favourable

outcome of the Spring 2018 renewal campaign with the US Department of Defense with a renewal rate above 95%; Further contracts in Government Services at the 174° East orbital position following the relocation of EUTELSAT 172A; The reservation of a significant portion of the capacity on EUTELSAT QUANTUM by Peraton, meaning the satellite is now largely reserved; On HOTBIRD, a multi-year capacity agreement with Mediaset to accelerate its transition to High Definition as well as a multi-year, multi-transponder renewal with TVN, one of Poland's leading broadcasters. [1] Evolution of Revenues at constant currency and perimeter, excluding other revenues. [2] At constant currency and perimeter. The variation is calculated as follows: i) Q3 2017-18 USD revenues are converted at Q3 2016-17 rates; ii) Q3 2017-18 revenues are restated from the net contribution of Noorsat. [3] Other revenues include mainly compensation paid on the settlement of business-related litigations, the impact of EUR/USD currency hedging, the provision of various services or consulting/engineering fees and termination fees.

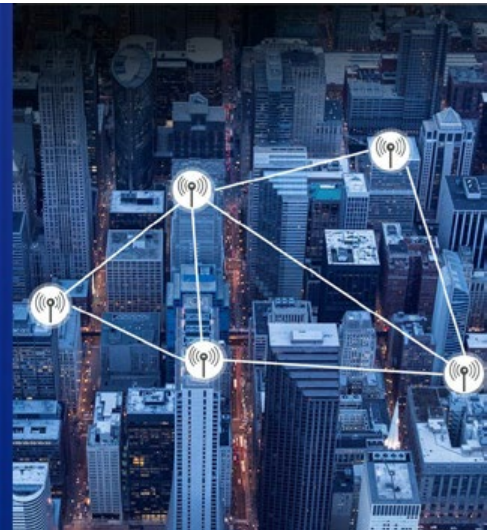


## Facebook's Terragraph Technology to get Chipsets from Qualcomm

Qualcomm Technologies is on board with Facebook's Terragraph project and will be integrating its QCA6438 and QCA6428 family of pre-802.11ay chipsets with Facebook's technology. Terragraph was announced about two years ago and has made remarkable progress with Facebook's backing and participation by the likes of Deutsche Telekom and Nokia. The collaboration with Qualcomm will enable manufacturers to build 60 GHz millimeter wave solutions using the unlicensed 60 GHz spectrum and provide Fixed Wireless Access (FWA). The companies expect to begin trials of the Qualcomm-designed solution in mid-2019. "We're excited to work with Qualcomm to advance the adoption of pre-802.11ay and 802.11ad 60 GHz technologies and build a robust ecosystem of interoperable solutions based on Terragraph," said Yael Maguire, VP of Connectivity at Facebook, in a statement. "With Terragraph, our goal is to enable people living in urban areas to access high-quality connectivity that can help create new opportunities and strengthen communities." Terragraph uses the 60 GHz band for bringing high-speed internet connectivity to dense urban areas; a trial network is already set up in San Jose, California. The idea is to deliver fiber-like connectivity where it's needed. Deutsche Telekom is actively evaluating use cases across Europe for the technology and plans

### Qualcomm and Facebook to Bring High-Speed Internet Connectivity Over 60GHz to Urban Areas

1. Qualcomm Technologies will integrate its QCA6438 and QCA6428 family of pre-802.11ay chipsets with Facebook's Terragraph technology
2. Uses unlicensed 60GHz spectrum to provide Fixed Wireless Access
3. Trials of Qualcomm Technologies-designed solution mid 2019.



to deploy a Terragraph field trial in the Budapest area (via its subsidiary Magyar Telekom). Telenor has also announced a trial in Kuala Lumpur. Qualcomm worked with Facebook on a number of things for the Terragraph platform to make it ideal for the specific implementations it's trying to deliver. Some of those things include time synchronization of the nodes, channel bonding and massive antenna array, according to Jesse Burke, marketing staff manager, Connectivity at Qualcomm Technologies. "I think we're seeing a lot more excitement around using millimeter wave, whether it be unlicensed 60 GHz or 5G for these next-generation experiences because of the capabilities for ridiculously

fast speeds and ultra-low latency, which are going to be required for a lot of these next-generation user experiences," Caleb Banke, marketing senior manager, Connectivity, Qualcomm Technologies, told FierceWirelessTech. There could be some overlap between IEEE 802.11 technologies and 3GPP 5G standards, but "I think both will progress in parallel," he said, and both will be required to meet next-gen requirements. Burke agreed, noting that there are parts of the world just ramping up for 4G. "We obviously expect 5G to become the global standard and that will be sooner rather than later," he said, but there are scenarios where the 60 GHz technology will be ideal.



## Huawei and MTN Switch on Fixed Wireless 5G Trial in South Africa

Huawei has joined forces with Africa's biggest mobile operator, MTN, to conduct the continent's first live 5G trial of fixed wireless broadband. The field test took place in the South African capital of Pretoria and delivered download speeds of 520Mbps and upload speeds of 77Mbps. The test shows how operators in Africa could use 5G to deliver fixed wireless broadband services, which could eventually provide gigabit connectivity

to Africa's rural and hard to reach populations. "These 5G trials provide us with an opportunity to future proof our network and prepare it for the evolution of these new generation networks. We have gleaned invaluable insights about the modifications that we need to do on our core, radio and transmission network from these pilots," says Babak Fouladi, Group Chief Technology & Information Systems Officer, at MTN Group, told African news

site TechFinancials.za. "It is important to note that the transition to 5G is not just a flick of a switch, but it's a roadmap that requires technical modifications and network architecture changes to ensure that we meet the standards that this technology requires. We are pleased that we are laying the groundwork that will lead to the full realization of the boundless opportunities that are inherent in the digital world," he added.



## A New Step, a Arofound Vision and Mobily is “Up For It”

Mobily, a leading Telecom and IT company, launched its new campaign targeting ambitious citizens to drive their potential and achieve their aspirations. This initiative is in support of Vision 2030 and also Mobily's latest step in its “UpForIt” campaign, whereby the company is determined and committed to providing

the best to its customers, be that services or customer experience. “In the first three stages of the campaign we set out to encourage the youth to be up for the challenge and realize their potential. Now, it is Mobily's turn to show them that it is up for their ambitions, hopes, and passions, and together we will be an essential

part of today's Kingdom development,” commented Mobily CEO Ahmed Aboudoma. Aboudoma added, “#UpForIt next stage objective is to introduce customers to new Mobily services and offers that are tailored to suit every customer, business, and situation.”

## Mobily Increased Its Revenues for the Second Consecutive Quarter

Mobily decreased its quarterly losses in Q1 2018 by 49% to SAR 93 Million compared to SAR 182 Million in Q4 2017. This was mainly due to the growth of revenues driven by better mix of products mainly from data, the increase of efficiency in managing the operational expenses, the impact of implementing IFRS 9 and 15 and the reversal of certain provisions that are no longer required. Revenues improved for the second consecutive quarter reaching in Q1 2018 SAR 2,833 Million compared to SAR 2,827 Million in Q4 2017, a slight increase of 0.2%, despite the following:

- The impact on sales in the beginning of the year due to the implementation of the Value Added Tax.
- The reduction in interconnection rates by 45%.
- The seasonality of handset sales, and its increase in Q4 2017.
- The seasonality decrease related to the number of days in Q1.

Without the decrease of the interconnection rates, the revenues would have grown by 2%. Gross profit increased in Q1 2018 by 6.6% to SAR 1,663 Million compared to SAR 1,560 Million in Q4 2017. This increase is mainly due to the reduction in interconnection rates during Q1 2018 compared to the ones of Q4 2017 and the reduction in equipment costs in Q1 2018 compared to Q4 2017. EBITDA amounted in Q1 2018 to SAR 1,036 Million compared to SAR 911 Million in Q4 2017. EBITDA margin improved to 37% compared to 32% in Q4 2017. This was mainly due to the decrease of interconnection rates, the continuing efforts to increase the



Company's operational efficiency, the impact of implementing IFRS 9 and 15 and the reversal of certain provisions that are no longer required. Mobily managed to decrease its quarterly losses in Q1 2018 by 43% to SAR 93 Million compared to SAR 163 Million in Q1 2017. This was mainly due to the improvement in revenues driven by a better mix of products mainly from data, the increase of efficiency in managing the operational expenses, the impact of implementing IFRS 9 and 15 and the reversal of certain provisions that are no longer required. Mobily managed to grow its revenues for the second consecutive quarter. Q1 2018 revenues slightly decreased by 1% (SAR 33 Million) to SAR 2,833 Million compared to SAR 2,865 Million in Q1 2017. Mobily achieved a stable level in revenues despite the general economic and regulatory changes, including:

- The impact on sales in the beginning of

the year due to the implementation of Value Added Tax.

- The reduction in interconnection rates by 45%.

Without the decrease of the interconnection rates, the revenues would have grown by 1% year over year. Gross profit stabilized at SAR 1,663 Million in Q1 2018 compared to SAR 1,665 Million in Q1 2017 with a slight decrease by 0.12%, despite the slight decrease in revenues. The Company managed to increase EBITDA margin in Q1 2018 to 37% compared to 33% in Q1 2017. Q1 2018 EBITDA amounted to SAR 1,036 Million compared to SAR 932 Million in Q1 2017. This was mainly due to the decrease of interconnection rates, the continuing efforts to improve the operational efficiency, the impact of implementing IFRS 9 and 15 and the reversal of certain provisions that are no longer required.



## Nokia Acquires SpaceTime Insight to Expand its IoT Software Portfolio and Accelerate Vertical Application Development

Nokia has acquired SpaceTime Insight to expand its Internet of Things (IoT) portfolio and IoT analytics capabilities, and accelerate the development of new IoT applications for key vertical markets. Based in San Mateo, California, with offices in the U.S., Canada, U.K., India and Japan, SpaceTime Insight provides machine learning-powered analytics and IoT applications for some of the world's largest transportation, energy and utilities organizations, including Entergy, FedEx, NextEra Energy, Singapore Power and Union Pacific Railroad. Its machine learning models and other advanced analytics, designed specifically for asset-intensive industries, predict asset health with a high degree of accuracy and optimize related operations. As a result, SpaceTime Insight's applications help customers reduce cost and risk, increase operational efficiencies, reduce service outages and more. The acquisition supports Nokia's software strategy by bringing SpaceTime Insight's sales expertise and proven track record

in IoT application development, machine learning and data science to the Nokia Software IoT product unit. It will strengthen Nokia's IoT software portfolio and IoT analytics capabilities, and accelerate the development of Nokia's IoT offerings to deliver high-value IoT applications and services to new and existing customers. The addition of SpaceTime Insight will also broaden the company's ability to deliver new, advanced applications for key vertical markets, including energy, logistics, transportation and utilities. Paul Lau, Chief Grid Strategy and Operations Officer at Sacramento Municipal Utility District, said: "We've partnered with SpaceTime to help us be more responsive, more efficient and ultimately able to deliver more value to our customers. Combining their innovative solutions with Nokia's world-class portfolio will provide customers with powerful new tools to better manage assets, maximize efficiencies and deliver new capabilities." Bhaskar Gorti, president of Nokia Software, said: "Adding

SpaceTime to Nokia Software is a strong step forward in our strategy, and will help us deliver a new class of intelligent solutions to meet the demands of an increasingly interconnected world. Together, we can empower customers to realize the full value of their people, processes and assets, and enable them to deliver rich, world-class digital experiences." SpaceTime Insight and its CEO Rob Schilling will join the IoT product unit within the Nokia Software business group. Rob Schilling, CEO of SpaceTime Insight, said: "Today marks a transformational moment for SpaceTime, and I'm delighted to join forces with one of the world's top organizations—a global brand that is reshaping the future of networking and intelligent software. I am excited for this incredible opportunity to help accelerate and scale Nokia's IoT business and provide a new class of next-generation IoT solutions customers cannot find anywhere else."

## Nokia and SFR First in France to Conduct a 5G New Radio Call Using 3.5 GHz Spectrum

Nokia and SFR have successfully completed a 5G call, using the 3GPP-compliant 5G New Radio (NR) system over-the-air on the 3.5GHz frequency band. The test took place on May 3rd, 2018, at the Nokia 5G Test Network and Competence Center in Paris-Saclay, France. The 5G call used Nokia 5G NR technology, incorporating the Nokia 5G-ready AirScale radio platform and Cloud RAN technology together with 3GPP-compliant end user test devices. A cloud infrastructure based on the Nokia AirFrame Datacenter solution was built to support Cloud RAN. The 5G New Radio NR standard, agreed by the 3GPP in December 2017, is designed to support a wide variety of 5G applications and enhanced mobile broadband (eMBB) services. Nokia 5G NR systems use smart antennas to deliver multi-gigabit throughput speeds and millisecond low-latency. This will enable operators such as SFR to increase network capacity in spectrum below 6GHz frequency bands to deliver wide-area coverage. Nokia is a key supplier to SFR, specifically on the radio access network, and this latest milestone is fully in line with SFR's ambition to be at the forefront of innovation for the benefit of its customers. François Vincent, head of Mobile Network at SFR, said: "SFR is developing a roadmap for the evolution of its networks that takes into account the benefits and complexity of implementing 5G. The



joint projects and trials will enable us to meet future data demand in the most effective way, while exploring new ways to deliver our media content that will increase the subscriber experience." Marc Rouanne, president of Mobile Networks at Nokia, said: "Nokia is pleased to support SFR in accelerating its implementation of 5G and developing new business models that will enrich the user experience. By testing 5G technologies now, we can place SFR ahead of the needs of its data-hungry customers while preparing the operator for the launch of next-generation services."

## Personal, Nokia Trial 5G at Buenos Aires HQ

Telecom Personal has teamed up with Finnish vendor Nokia to trial 5G mobile technology at the company's headquarters in Puerto Madero, Buenos Aires. The tests achieved download transmission speeds of up to 10Gbps, using 400MHz

of spectrum in the 28GHz millimeter wave (mmWave) band, augmented with 8x8 MIMO functionality. Miguel Fernandez, chief technology officer at parent company Telecom Argentina, commented: 'We will undoubtedly be ready to fully adopt this

technology as soon as the 5G standard has been defined [around] the world. The market is ripe for [5G] adoption in our country.'

## Nokia Launches Industry-First Edge Cloud Data Center Solution for the 5G Era, Supporting Industry Automation and Consumer Applications



Nokia has launched the industry's first Edge Cloud data center solution to meet the stringent and diverse low-latency data processing demands of Cloud RAN and advanced applications for consumers and industries. The Nokia AirFrame open edge cloud infrastructure expands the Nokia AirFrame portfolio to deliver a layered network architecture that optimizes performance and operator costs as they evolve their networks and prepare for 5G. The AirFrame open edge cloud infrastructure has been developed for the 5G era, as the next generation wireless technology will create opportunities for operators to support advanced applications for consumers and industries, such as virtual and augmented reality video and real-time industry automation. Technologies such as Cloud RAN will be key to deliver on the 5G promise of ultra-low latency and massive data throughput, and will need to be supported by a highly efficient cloud infrastructure solution. To balance costs and functionality, 5G will encourage operators to implement a layered cloud architecture. This will include centralized and regional data centers as well as high-processing capabilities deployed at the network edge - closer to where traffic is generated and where space

is traditionally limited. The Nokia AirFrame Open Edge server, which will begin shipping during the third quarter of 2018, extends the Nokia AirFrame data center solution portfolio to make these edge deployments a reality. Designed in an ultra-compact size for deployment even at base station sites, the Nokia AirFrame open edge server will meet the most stringent end-customer data demands. Nokia's comprehensive portfolio of AirFrame data center solutions enables operators to optimize network resources and intelligently distribute workload across the network, based on the type of data traffic as well as latency and throughput needs. The hardware solution is complemented with a real-time, Open Platform for NFV (OPNFV)-compatible, OpenStack-distribution built to run in small data centers while providing the performance and low latency required by the edge environment. In addition, Nokia cloud-wise services and Cloud Collaboration Hubs will help operators successfully plan and execute their edge cloud deployments. Dimitris Mavrakis, Research Director at ABI Research said: "The requirement for edge computing in telecom networks is rapidly changing, as use case, application and 5G requirements continuously increase. Nokia's AirFrame

open edge cloud infrastructure distributes established AirFrame capabilities to the edge and offers a graceful introduction of edge computing. Its orchestration and feature compatibility with existing Nokia products will provide for a lower friction transition to a distributed environment." Dan Rodriguez, Vice President, Data Center Group; General Manager, Communications Infrastructure Division at Intel, said: "The edge cloud is an integral part of 5G network architecture, bringing more processing capabilities closer to where data is generated and consumed. Nokia's new AirFrame open edge solution is built on Intel® Xeon® Scalable processors, which offer the needed balance of compute, I/O and memory capacity for the edge cloud to work seamlessly across the wide range of workloads deployed on the edge. With AirFrame, Nokia and Intel are bringing the performance and capabilities of Intel architecture-based cloud data centers to the edge to deliver the optimal end user experience for 5G deployments including virtual reality, augmented reality and industrial automation." Marc Rouanne, president of Mobile Networks at Nokia, said: "The edge cloud will play an essential role in delivering the compute power required for 5G. By expanding our AirFrame and 5G Future X portfolio we can provide a network architecture that meets the needs of any operator and their customers. Used with the Nokia ReefShark chipset and our real-time cloud infrastructure software, the Nokia AirFrame open edge server will deliver the right decentralization of 4G and 5G networks. We can work with operators to ensure that data center capabilities are deployed exactly where they are needed to manage demands as they expand their service offering."

## PCCW Global

# PCCW Global and Colt Expand Their Blockchain Trial While More Carriers Join the Initiative

PCCW Global, the international operating division of HKT, Hong Kong's premier telecommunications service provider, and Colt Technology Services have further progressed their blockchain Proof of Concept (PoC). Additional members of the ITW Global Leaders' Forum (GLF) are also getting involved in the initiative. PCCW Global and Colt, in conjunction with blockchain start-up Clear, revealed in March that the parties had undertaken a trial that demonstrated how the inter-carrier settlement of wholesale international services could be automated through the use of blockchain. By using blockchain technology, the PoC was able to reduce this labor intensive process from hours to minutes. The initial PoC used historical data as a test of the technology and its use case for the sector. Now, the parties have taken the trial a step further by ingesting actual live data feeds into the ledger, enabling traffic to be automatically verified and settled between carriers. While the original two carriers are now using live data to verify and settle traffic, other members of the GLF have also seized the

opportunity to get involved in the initiative, with the aim being to soon expand the bilateral testing between PCCW Global and Colt to encompass a multilateral series of relationships among the wholesale telecommunications industry as a whole. Fellow GLF members now getting involved include BT, HGC Global Communications, Telefónica and Telstra. Mr. Marc Halbfinger, Chief Executive Officer of PCCW Global and the Chairman of the GLF, said, "We are very pleased that this PoC is expanding to include more carriers. A lot of the conversations at the GLF have been around how innovative technologies such as blockchain can be used to improve the overall efficiency of the industry. With the PoC expanding to include more carriers, it is clear that the industry is seeing the benefit of becoming further aligned. Industry cooperation in this area will be incredibly powerful for the whole sector." Mr. Carl Grivner, Chief Executive Officer of Colt, said, "We were optimistic by the success of the initial trial, but utilizing live data was an important next step to prove the use case for blockchain technology in our industry.

Not only did the second iteration of the PoC do what was intended – accurately match and settle wholesale traffic independently with live information – but it also signaled the future of telecommunications, whereby previously intensive manual practices can be securely automated to allow businesses such as Colt to invest resources into driving both our and our customer's businesses forward." Mr. Andrew Kwok, Chief Executive Officer of HGC, said, "This expanded trial which now includes HGC, shows the momentous initiative of the GLF led blockchain work stream. This initiative eventually if positive, would certainly demonstrate a new business relationship among global carriers and reshape our business practice in the industry." Mr. Juan Carlos Bernal, Chief Executive Officer of Telefónica International Wholesale Services, said, "We are convinced that blockchain is a relevant technology that will not only help the wholesale business to gain efficiency, but also significantly improve the efficiency of launching new services."

## Viu Original Leads in Asia with over 900 Episodes of Locally Produced Content by Award-Winning Filmmakers and Local Talent Scouted Through Crowd-Sourcing

Viu, a leading pan-regional OTT video service by PCCW Media Group, is set on a course to actively develop its Viu Original initiative this year which will see 70 titles and over 900 episodes of locally produced content by the end of 2018. Produced in Indian, Chinese, Indonesian and Arabic languages, Viu Original spans the full spectrum of TV content genres and has extended its production scope to movies. Viu Original enjoys great popularity and support among viewers who embrace Viu's freemium model, which provides free access (ad-support) content for all viewers while offering enhanced features to premium subscribers. Viu now boasts over 16 million monthly active users across Asia. Ms. Janice Lee, Managing



Director, PCCW Media Group, said, "With the evolution of OTT streaming service and consumers' adoption, quality content with

strong relevance is key to our continued high engagement with viewers. Viu aims to introduce refreshing local production

in various markets, including Spotlight 2 produced by Bollywood director Vikram Bhatt, and Kenapa Harus Bule? by award-winning Indonesian director Andri Cune. Our latest Viu Original series development of The Bridge is a remake of a popular international TV series with Asia context and filmed in Singapore and Malaysia. By working with top tier local talent and production houses, we fulfil our brand promise to provide Viu-ers with compelling localized entertainment." Besides working with top award-winning directors and production talent in the markets, Viu employs a highly innovative way to come up with new ideas for Viu Original. For example, in Indonesia, Viu "crowd sources" Viu Original ideas in an event called Viu Pitching Forum, where young filmmakers are encouraged to pitch their ideas before a team of renowned experts, including award-winning producers, directors and scriptwriters. Viu will fund shortlisted ideas and collaborate with professional filmmakers to produce them for airing. Back to its home base in Hong Kong, Viu enlists local YouTubers and KOLs to join the production team. Such an initiative maximizes engagement with the local creative community to create content

relevant and engaging to the Millennials. Ms. Lee added, "We are encouraged by the overwhelming positive response from viewers for Viu Original and we will continue to create many more fresh and engaging originals tailored to our Millennial Viu-ers. We are especially proud to provide a platform for young talent in local markets to showcase their creativity and gain popularity among our viewers." Viu Original has recently launched an array of full feature movies. High Jack, which is coproduced with award-winning Phantom Films in India, is scheduled to be screened in 450 Indian theatres followed by viewing on the Viu platform. Kenapa Harus Bule? a Viu Original satirical comedy movie with a deep message of valuing inner beauty and pride of being Indonesian, was screened in Indonesia recently. Working along its broadcast partners, Viu aims to bring Viu Original to free-to-air and pay-TV audience around the world. Viu has collaborated with Zoom TV, a pay-TV channel owned by Sun Network, and Gemini TV, a Bollywood pay-TV channel, to deliver its original content to free TV and pay-TV audience in India. Viu can also connect and engage with Millennials and thereby increases its appeal to

advertisers targeting them through Viu Original's engaging content. Drama series and variety shows co-produced with advertisers have been gaining traction with these audiences and advertisers' response to Viu Original is stellar with Viu adding an enviable list of advertisers to its roster. Mr. Achmad Alkatiri, Chief Marketing Officer of Lazada Indonesia, said, "We believe that engaging in an innovative format brings us closer to our Millennial audience. Viu helps us connect with our audience through a compelling story that they appreciate." Mr. MK Machaiah (Mac), Chief Innovation Officer of Mindshare South Asia, also welcome this initiative by Viu: "We are always discovering and experimenting with novel areas of content via machine learning, creativity and adaptive marketing in order to curate focused and sharp solutions for our brands. Smart content is the need of the hour and this collaboration with Viu has helped us connect with the right audience effectively. Viu continues to support us in the brand journey to engage with the millennial audience through premium and commercially vibrant content and we are confident that together we will set higher benchmarks."

## Virtutel Selects PCCW Global's nTwine UCaaS Platform for Cost-effective, Scalable Business Communications



PCCW Global, the international operating division of HKT, Hong Kong's premier telecommunications service provider, and Virtutel, an Australia-based wholesale and enterprise telecommunications specialist, have signed a service agreement to bring hosted unified voice services to Australia and New Zealand using PCCW Global's multi-tenant nTwine Unified Communications-as-a Service (UCaaS) platform. PCCW Global will provide a turnkey nTwine hosted telephony and collaboration service to Virtutel, enabling it to take this highly innovative offering rapidly to market in both Australia and New Zealand. PCCW Global's service includes the provision of fully white-labelled hosted platform together with a best-of-breed fully automated orchestration operation and business system, enabling Virtutel to offer unique service propositions to its customers while leveraging PCCW Global's coverage across five continents. Traditionally, companies acquire and deploy their own communications infrastructure, purchasing and implementing on-premises telephone PBX switches to avoid the cost of individual phone lines for each employee. PCCW Global's nTwine UCaaS platform utilizes the advantages of cloud technology to provide far more flexible, easily scalable and cost-effective communication solutions for both large and small businesses. The nTwine UCaaS service makes use of

PCCW Global's own resilient fiber network spanning over 3,000 cities in 150 countries and its relationships with more than 200 global operators to provide international voice and VoIPX services, eliminating the need for businesses to invest in and run their own communications infrastructure. PCCW Global's nTwine solution is now available in over 30 countries and continues to expand. Globally, UCaaS and Hosted PBX services are growing in popularity because they enable businesses to scale their communications via an agile deployment, minimizing up-front capital expenditure while reducing

the overall time to implement. According to Gartner (April 2018), the market for cloud based telephony and messaging will grow by 14.4% CAGR to reach US\$22 billion in 2022. Ms. Ronnie Klingner, President, Mobility and Digital Solutions, PCCW Global, said, "The nTwine platform will add value to Virtutel's expansion plans in the Australian and New Zealand markets and supports multinational enterprises providing a ubiquitous service globally. Our full-featured, multi-tenant orchestration solution will help Virtutel to service both wholesale channels and direct enterprise customers, while the web portal

provides them with end-to-end control over the entire customer life cycle." Mr. David Allen, Managing Director of Virtutel, said, "The PCCW Global team has been extremely committed to our partnership and the nTwine uCaaS solution is a perfect fit for our business growth in the coming years. Thanks in large part to the transformative power of cloud computing, in most markets the idea of what makes an office is rapidly changing. We expect that the technologically savvy and forward-thinking business leaders in Australia and New Zealand will appreciate the advantages the nTwine service provides."

## PCCW Media Launches 'Now E' OTT Platform

PCCW Media, a pan-Asia entertainment and media company, has launched Now E, a one-stop entertainment OTT platform with international and Asian dramas and movies, and sports events, for viewers to enjoy content anytime, anywhere. Now E has partnered with leading content partners including HBO, MOVIE MOVIE, Now Baogu, Viu, and top international studios, offering thousands of hours of premium content ranging from Hollywood blockbusters, US dramas, Asian movies and dramas, and variety shows. Also, sports fans can catch live action of world-class sports content on the same app, including the upcoming 2018 FIFA World Cup and many more to come. Users can also access the latest Hollywood and Asian blockbusters and concerts on a pay-per-rent basis from July. Now E will be available for download on Apple App Store and Google Play later this month. Each user can register up to five devices,

enjoy video viewing with two concurrent streams, and Airplay/Chromecast to TV. Now E can be accessed via smartphone, tablet, PC and the newly introduced Now E Android TV Box. Janice Lee, Managing Director of PCCW Media Group, said, "PCCW Media is very excited to add a new member to our media service family. Now E means 'Easy, Entertainment, Everywhere' which will be a perfect fit for the individual

with Millennial lifestyle. Today, modern viewers consume more online video than other audiences. They prefer watching online for greater flexibility and demand for personalized content. We are confident that Now E will stand out from the rest as the most preferred OTT service as Now E is a single OTT platform which provides exclusive Asian and international movies, dramas and world-class sports events."



Yahsat, a leading satellite operator based in the United Arab Emirates (UAE), has entered into an agreement to acquire a majority stake in the mobile satellite services operator Thuraya, also based in the UAE, subject to final pre-closing conditions being met. The acquisition of the

## Yahsat Buys Majority Stake in Thuraya

UAE's first home grown satellite operator, Thuraya, will significantly expand Yahsat's current satellite solutions portfolio for both commercial and government verticals, as well as its global footprint, said a statement. The acquisition will set Yahsat on a new phase of growth, with Thuraya bringing

20 years of innovation and experience in the mobile satellite services market along with a rich portfolio of products and services, complimented by a renowned brand. Thuraya's two satellites, serving over 140 countries, will join the Yahsat fleet, expanding the group's satellite fleet



to five. The combination of geostationary satellites operating in the C, Ka, Ku and L-bands will jointly cover Europe, Africa, the Middle East, South America, and Asia, providing a broad range of Fixed

and Mobile Satellite Services spanning voice and data communications to both commercial and government sectors. The transaction is expected to close after customary conditions have been met and

regulatory approvals have been obtained. The tender process will start shortly to offer current shareholders the option to participate in this sale, the statement said.

## Yahsat's Services Positively Impact Humanitarian Efforts in the Region

Yahsat, the UAE-based satellite operator, in association with the UAE Ministry of Foreign Affairs and International Cooperation and the UAE Embassy in Amman, Jordan hosted the 'Enabling through Connectivity' Forum in Amman. The special forum was arranged to discuss initiatives to support humanitarian emergency response and sustainable development projects, with the primary focus being to bring reliable broadband connectivity to facilitate the provision of basic services such as healthcare and education in Jordan and its neighboring regions. The forum was officially inaugurated by UAE Ambassador to Jordan, His Excellency Mattar Saif Al Shamsi, who gave an opening note to welcome dignitaries and participants attending the event. His Excellency went on to highlight the importance the UAE government has traditionally placed on humanitarian initiatives and sustainable socioeconomic development projects around the world, and the role satellite telecommunications such as the solutions provided by Yahsat can play in supporting those initiatives. Participants at the forum comprised of representatives from both the public and private sectors including international humanitarian bodies such as UNRWA, UNICEF, WFP, and UNOPS along with Jordanian NGOs such as the Jordan River Foundation, RHAS, Johud, and Hayat Education Fund. Discussions were aimed at identifying new opportunities for collaboration, and to strengthen existing frameworks. Yahsat's Satellite

Broadband can have a positive impact on previously unconnected and under-served communities, extending various economic and social benefits, as well as providing them with basic services such as healthcare and education. The goal of the 'Enabling through Connectivity' forum is to encourage industry players to create opportunities for greater digital inclusion by providing reliable broadband connectivity, and to bring innovative solutions to enhance humanitarian emergency response services. Highlighting Yahsat's capabilities and solutions for the humanitarian sector, Najat Abdulrahman, Executive Vice President of Global Strategic Business Development at Yahsat, said, "Fast, reliable and accessible connectivity is essential for governments and enterprises for ensuring successful implementation of socio-economic development projects. Yahsat is committed to the provision of customizable end-to-end sustainable solutions in addition to reliable and economical connectivity that are designed to facilitate rapid deployment of mission-critical applications particularly when it comes to humanitarian emergency response in this region." Abdulrahman also discussed the impact of sustainable development projects in Asia and Africa, where through collaborations between Yahsat, its local service partners and government agencies, e-learning, e-health, and community internet access have become a reality. These include providing connectivity to remote libraries in South

Africa, e-learning to Maasai community schools in Kenya and adult learning opportunities through the Karakoram Area Development Organization in northern Pakistan. Joining Yahsat at the forum were long serving ISP IEC Telecom Middle East. For his part, Nabil Ben Soussia, Managing Director at IEC Telecom Middle East commented, "At IEC Telecom, we are proud to be a trusted partner of Yahsat to deliver tailored solutions to humanitarian organizations. 'Enabling through connectivity' is the right platform to introduce the concept of a digital refugee camp, which is a great example of how much more can be achieved as a result of high speed and reliable satellite connectivity. Our solutions, like YahClick Wi-Fi that we have recently unveiled together with Yahsat, not only enhance relief and rescue operations, but also provide additional services that are easy to put in place such as e-health, e-learning, centralized logistics, better reporting and more." "Jordan presents tremendous opportunities and we are exploring them with our in-country partner, Skygate. We are looking at extending our solutions to enhance education and healthcare services in the Kingdom, particularly in under-served and rural areas, through partnerships with international organizations and NGOs. We are confident we can improve and increase internet access throughout the region to the benefit of its diverse stakeholders," concluded Abdulrahman. 📍

## ARTICLE

# New Age Telecommunication: The Era of Cloudification

As society and business undergo a digitally-driven transformation, operators will need to evolve in order to execute the future-focused initiatives of tomorrow

In the telecommunications sector, 'Cloudification' is more than a buzzword today– it is a reality. As technology expands and governments, enterprises, and individuals alike grow increasingly dependent on connectivity to operate, Cloudification becomes an essential component in delivering efficiency, scalability, and optimising costs. Today, with digital transformation of enterprises well underway in the Middle East and beyond, telecom operators are perfectly positioned to create new business opportunities for themselves and their customers by taking connectivity a step further and turning it into full-fledged ICT solutions providers with Cloudification as the cornerstone.

**Today, with digital transformation of enterprises well underway in the Middle East and beyond, telecom operators are perfectly positioned to create new business opportunities for themselves and their customers by taking connectivity a step further and turning it into full-fledged ICT solutions providers with Cloudification as the cornerstone.**

Beyond the benefits of offering Cloud-services by telcos, in terms of greater operational efficiency on every front, Cloudification caters to customers' increasing expectations for services on demand. Enterprise customers have come to depend so heavily on connected tools, services, and solutions that operators, in delivering these digital essentials, must take a Cloudification approach in ensuring that connectivity remains within reach for customers in the digital era.

In the era of Cloudification, operators' role will be transformed as telecoms and IT become more integrated than ever before. They will play a key part in supporting industries by providing the services and solutions that will support industrial development



**Farid Faraidooni**

Deputy CEO, ICT Solutions  
Emirates Integrated Telecommunications  
Company (EITC)



**One of the most tangible ways in which Cloudification and edge computing have jointly altered business operations for enterprise customers can be seen in the way we work. Today, businesses can assemble virtually and connect across countries and even continents, working more efficiently and effectively in the absence of time, location, or accessibility constraints.**

in the digital era. In turn, operators will need to establish new business models that will take them beyond connectivity with networks that are more robust and intuitive.

As data traffic increases exponentially and customer demand continues unabated, Cloudification enables this to happen by delivering shared computing resources on demand through public and private networks. Especially with regard to next generation technologies and the large-

scale virtualization propelling them forward, Cloudification is an essential step in operators' evolution.

As services become available at the edge of networks, the progression to Cloud will do more than increase scale and efficiency for telcos; it will also reshape and transform businesses while opening new revenue streams for enterprise customers. As such, telcos have the opportunity to create new business uses by extending their services beyond connectivity to a range of industry verticals with horizontal applications such as AI, real-time automation, remote operations, maintenance sensing, enhanced video services, and much more.

Through edge computing in particular, digital tools and services can operate at greater speeds, with less latency, and with weaker network connections. Information can be processed more easily and faster, as edge computing deployments eliminate the need for all IoT devices to be connected to a central cloud at all times or to pass through a data center for cloud processing. As a result, services are delivered quicker, with less resources used in the process.


One of the most tangible ways in which Cloudification and edge computing have jointly altered business operations for enterprise customers can be seen in the way we work. Today, businesses

can assemble virtually and connect across countries and even continents, working more efficiently and effectively in the absence of time, location, or accessibility constraints. In turn, they are more collaborative, resourceful, and productive than ever before, thanks to the conveniences afforded to them by Cloudification.

Beyond the human advantages of large-scale cloud computing, enterprises are also experiencing a considerable increase in the computing power available to them, and at a much lower cost. This availability of immense, affordable computing capabilities helps level the business playing field by giving enterprises of every size and stature access to the advanced tools and ubiquitous connectivity that enable them to succeed in today's digital business landscape without as many financial limitations standing in the way.

The advantages of Cloudification and edge computing are equally beneficial for enterprises as they are for the operators enabling these vital components of network evolution.

**The advantages of Cloudification and edge computing are equally beneficial for enterprises as they are for the operators enabling these vital components of network evolution.**

Innovations like these are ushering in the age of Smart business and laying the groundwork for a connected Smart future from every angle. They are disrupting entire industries with the tools and services that will help shape the future – and they are deeply rooted in the era of Cloudification. 



## REGIONAL NEWS

### Dubai Unveils New Regulations to Boost e-Commerce Industry

The Dubai Free Zones Council, DFZC, has announced new e-commerce regulations for free zones. The initiative has been developed by an integrated organization that will enable greater foreign direct investment, FDI, in the e-commerce sector to flourish in Dubai. According to WAM, DFZC's initiative will primarily focus on establishing e-commerce conditions and controls by cooperating with Dubai Government authorities. This will come in the form of joint teams and workshops that will support the adaptation to procedures and generate proposals that will make Dubai one of the most attractive cities in the world for free zone companies related to e-commerce. It will also examine mechanisms for adopting blockchain technology in order to enhance transparency and speed up the completion and automation of procedures. The Council believes that the



initiative will have significant economic implications, such as reviving and expanding air cargo traffic in Dubai and addressing the rise in demand and supply of logistics services. Dr. Mohammed Al Zarooni, Secretary-General of the DFZC, said, "Sheikh Mohammed bin Rashid Al Maktoum has placed great confidence in us to implement a quality initiative that will stimulate the national economy through e-commerce. This highlights the vital role played by free zones over the past decades in attracting and sustaining FDI. The latest concept of e-commerce has established itself as the future of trade. Our wise leadership has always seen Dubai as a city that foresees the future and has a clear goal of establishing itself as an ideal destination for investments. At the DFZC, we are all confident of our ability to formulate a strong project for the growth of our national economy through e-commerce." Al Zarooni also highlighted that the initiative will have a significant economic and social impact at the national level by increasing its competitiveness in operational efficiency. He believes that this, in turn, will lead to the design of intelligent and sophisticated solutions that will improve the overall experience of global supply chains in the e-commerce sector. "The initiative will also encourage local talent and human resources to enter the sector, which will certainly enhance local competitiveness and generate plenty

of career opportunities in both the UAE and the region. The initiative will also act as the foundation to establish local companies to compete with international firms in the future, which will drive better opportunities for SMEs both locally and regionally. It will also change the retail ecosystem in Dubai and its neighboring markets to adopting non-traditional approaches in line with e-commerce-led developments," he said. The DFZC anticipates a promising future in e-commerce, which will transform Dubai into a regional hub across the Middle East. E-commerce investments are expected to reach \$69 billion by 2020 in the Middle East, of which the GCC represents about 34 percent of it. These indicators make Dubai an intuitive destination due to its geographical location and its advanced infrastructure. "Supported by our strategic partners, the initiative will contribute to accelerating the sector's growth in Dubai and its neighboring markets. We will focus on offering a bundle of investment and legislative facilities that will increase regional investment opportunities through Dubai. The importance of designing this new system lies in creating a clear guide with specific controls and conditions to ensure the quality and security of products traded electronically in addition to the development of world-class standards that facilitate global e-commerce companies adopting Dubai as a central platform to manage its activities," Dr. Al Zarooni said.

### 3G/4G Users Cross 54.6 Million in April 2018

The number of 3G and 4G users in Pakistan reached 54.66 million by end April 2018, said Pakistan Telecommunication Authority (PTA). Number of mobile phone users in Pakistan reached 149.66 by end April 2018 compared to 149.10 million by end March 2018, an increase of 0.56 million during the period under review. Jazz's total count for 3G users stood at 14.92 million by end April compared to 14.98 million by

end March, registering a decrease of 0.06 million. Jazz 4G user numbers jumped from 3155686 by end March to 3669794 by end April 2018. Zong 3G subscribers increased from 9.187 million to 9.34 million, while the number of 4G users jumped from 6373061 by end March to 6779753 by end April 2018. The number of 3G users of Telenor network increased from 10.928 million by end March 2018 to 10.933 million by end

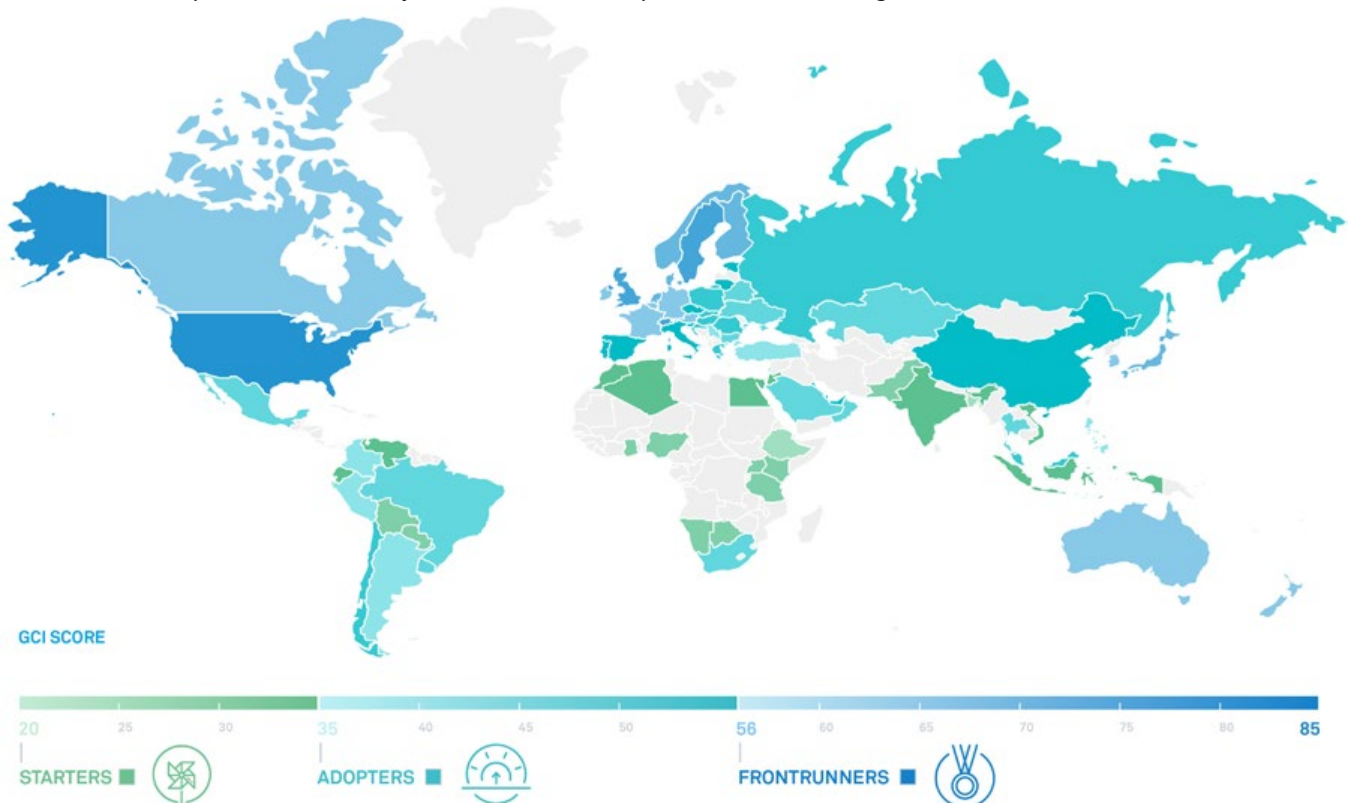
April. The number of 4G users jumped from 2451057 by end March to 2736597 by end April. Ufone added 0.117 million 3G users on its network during the month of April as the total reached to 6.282 by end April compared to 6.165 million by end March. Teledensity for cellular mobile reached 75.25 percent and broadband subscribers reached 56946252 by end April compared to 55558824 by end March 2018.

## UAE Most Connected Country in the Region

The UAE has been rated first in the Middle East and North Africa and 23rd worldwide in the Global Connectivity Index (GCI) 2018 released by Huawei. Despite slipping 1 place in the ranking, the report noted that the broadband market in the UAE is one of the most advanced both regionally and globally. Comparing last year's score, fixed broadband affordability continues to increase by 1 point in the GCI assessment, which is due to the greater market competition brought on by the introduction of the shared fixed network. The rates of smartphone penetration and computer household have hit the maximum score and 4G coverage is showing improvement. Regarding data center and Internet of Things (IoT), there is an improvement in cloud experience and induced potentiality for IoT, the report said in its country profile. "Having broadband and data center outperform its neighbors and most countries in the globe, the UAE should further improve the range of use for cloud services and corresponding user experience. With a good proportion of companies having adopted cloud-based solutions, the UAE should encourage the delivery of cloud services that support the changing needs of their customers, which could drive the public to build savvy

towards Internet use and stimulate related demands," the report added. According to the index, the UAE is ahead in broadband and data centers as against global average but lags in Internet of Things, cloud and big data. The UAE scored 73 points as against 56 global average in broadband; 50 points in data centers as against 42 points in global average; and 45 points for Cloud as against 46 points global average. Similarly, the UAE achieved 40 points as against 42 global average in big data and 28 points in IoT as against 33 in global average. The country saw its rating improving in three pillars supply, demand and experience but declining in potential. Overall, the UAE scored 53 points out of 100 in the 2018 index. Globally, the US topped Huawei's Global Connectivity Index 2018 with 78 points followed by Singapore (75), Sweden (73), Switzerland (71), UK (70), Finland (68), Denmark (68), Netherlands (67), Norway (65) and Japan (65) making up the top 10 list. "High rate of connectivity is 'the' most important aspect when we are talking of a not a so distant future. The UAE rating for connectivity is decent, though it needs to scale new heights to be called a 'city of the future,'" says Atik Munshi, senior partner, Crowe Horwath. "No aspect of human living,"

according to Munshi, "is now aloof from connectivity; mobile smart phones have penetrated everywhere yet new aspects like Cloud and IoT have not been tapped to its full potential in the country as yet. In my view, UAE improved connectivity ratings will not be sufficient; in fact UAE should become a vision leader for rest of the world by providing innovation a free gateway." He noted that the UAE government has impressive plans for 2021. "I think the UAE can take huge strides in innovation. Innovation in connectivity is the future." Bader Samir Tayeb, founder and CEO of YaHalla, the first Emirati-owned firm to design smartphones within the country, said IoT is popular now and UAE is looking to have every device connected to the Internet. "Artificial Intelligence is big now as the UAE created a ministry especially for this segment. In addition, UAE government is also planning to implement blockchain. Besides that, self-driving flying taxis are going to be a reality very soon. Considering all these factors, the UAE has pushed a lot for connectivity and the country emerged first in connectivity index," Tayeb added. In order to improve connectivity, the UAE is ahead of its regional peer in 5G connectivity, he said.



## UAE Residents to Enjoy Greater Internet Privacy

Anyone living in the UAE or across the Middle East will inadvertently gain greater internet privacy come May 25, thanks to the European Union (EU). In four weeks' time, the General Data Privacy Regulation (GDPR) is coming into effect across the 28 EU nations. But because the terms of GDPR are so strict – and the fines it imposes on any company that fails to protect the online data of anyone living the EU are so heavy – most companies that keep online records, are failing into line. GDPR also applies to any company anywhere outside the EU that deals with people inside the bloc – hence the added privacy for most

online users. If companies fail to comply, they face fines of up to €20 million (Dh89.6 million) or 4 per cent of their gross profit. "While legislation protecting privacy and personal data has existed in Europe for some years now, the new GDPR is certainly significant as it introduces strict data privacy rules to be applied in the recent era of big data, social media and the internet of things," Dr Maria Tzanou, a lecturer in law, online data and privacy at Keele University in the United Kingdom, told Gulf News. The GDPR allows people to ask for any data stored on them and even allows them to be erased and includes a 'right to



be forgotten'. It covers names, addresses, IP addresses, telephone numbers, email address, bank details, past transactions, photographs, video recordings, posts on social network sites, biometric information of any kind, medical records, and financial or insurance histories and more.

## Jazz Introduces Digital Policy Framework at NIC Graduation Ceremony



Jazz has introduced a digital policy framework for the Government of Pakistan after analyzing 7 developing countries, which already have a Digital Policy in place. Called 'Accelerate to a Digital State', this policy framework was presented to Minister of State for IT & Telecommunication (MoITT), Ms. Anusha Rahman at the graduation ceremony of National Incubation Center's (NIC) 1st Cohort. 15 technology startups from the 1st cohort graduated from the NIC during the ceremony, where each member was awarded mementos by Ms. Anusha Rahman. The first NIC in Islamabad was set up under a joint public-private partnership between Jazz, Ignite and TeamUp. It is the largest incubation center in Pakistan with 40 startups inducted each year in six months cycle for a twelve month program. The NIC provides world class facilities, a best in class customized curriculum and Jazz's bespoke Jazz xlr8 acceleration program. This acceleration program provides resources and expertise to help young entrepreneurs fulfill their potential by giving them access to Jazz's user base, a global and local network of skilled mentors, and access to digital platforms. Speaking at the graduation ceremony, Ms. Anusha Rahman, stated, "It is a day of celebration not only for the passing out cohort, but for us as well. You should have faith in the learning and expertise developed during your time at the NIC. And I hope you are able to share this success with your communities, peers and friends."

"This NIC is a testament to the growing synergy between the public and private sectors to promote youth-led entrepreneurship and realize the government's dream of a Digital Pakistan. While we embark on the journey of empowering our communities through technology, it is pertinent to look at other countries, which are ahead of us on the digitalization curve. This is where Jazz comes in with its global expertise under its Group, Veon. Their digital policy framework looks to assist the government in achieving its SDGs through digitalization," she added, while talking about 'Accelerate to a Digital State'. Jazz, as the country's leading digital company, has always been pro-active in working hand in hand with the government towards realizing the vision of a Digital Pakistan. Moving ahead with its support for the government and realizing that start-ups and digital initiatives require an enabling ecosystem to grow, Jazz and its parent company, VEON, have worked in developing the framework for National Digitalization with support of MoITT. Talking about Jazz's vision for the country, Aamir Ibrahim, CEO – Jazz, said, "Being a leading digital company with global expertise through VEON, Jazz believes in empowering societies. We are doing so by building a healthy, robust startup ecosystem and bridging the digital divide through our vast data network. The next step is to ensure a digital ecosystem that not only supports our endeavors, but also assists the government in achieving its SDGs." The 'Accelerate to a Digital State' talks about the critical need for having a prioritized National Digital Agenda and Strategy, and deploying the right governance structure and channeling the funds to execute this agenda. The report recommends to accelerate the progress in the following key areas for reaching the Digital State; building digital capabilities and access for all; Digitalizing industries and key sectors; Developing mass level citizen service and smart cities; creating an enabling ecosystem; increasing public private partnerships. In addition, the report details on how to implement digitalization in Pakistan by building on the examples from other countries.

## Google Cloud to Expand to Saudi Arabia

In its latest quarterly earnings report, Google parent Alphabet shared some details about the growth of its cloud division, and confirmed it will be building a cloud region in Saudi Arabia. The American multinational conglomerate saw 23.5 percent revenue growth year-over-year, across all its companies and divisions, bringing in \$24.8 billion in its first quarter of 2018. The company made \$9.4 billion in profit, primarily from its data-driven advertising business. "Last quarter, we shared some exciting metrics about the progress of Google Cloud, including that we passed \$1 billion per quarter in 2017," Google CEO Sundar Pichai said in an earnings call (transcribed by Seeking Alpha). "In Q1, we saw increasing momentum. We are growing across the board and are also signing significantly larger, more strategic deals for cloud. Our security capabilities, the easy-to-use advanced data analytics and machine learning solutions and the secure and industry-leading collaboration platform, G Suite, are winning customers over. Google Cloud is growing well." Pichai then added: "Our global infrastructure continues to expand to support demand. We commissioned three new subsea cables and announced new regions in Canada, Japan, Netherlands and Saudi Arabia, bringing our total of recently launched and upcoming regions to 20." The total of launched and upcoming Google Cloud regions is currently 19 on its website, with Pichai's comments the first confirmation that its Saudi Arabian efforts will result in a cloud region. Rumors of a Saudi Arabian cloud launch spread earlier this year, with Alphabet in talks with Saudi Aramco on a data center and tech hub joint venture. In March, heir apparent Saudi Crown Prince Mohammed bin Salman toured New York as part of the 2018 Saudi-U.S. CEO Forum, and announced several major memorandums of understanding, including an 'Aramco-Google partnership focused on national cloud services and other technology opportunities,' but it was still not clear if the data centers would be part of the larger Google Cloud infrastructure.

That appears to now be the case. Earlier this month, on a tour of Silicon Valley, the prince met with Sundar Pichai, as well as Google co-founder Sergey Brin and Google's VP of technical infrastructure, Urs Hölzle, the head of Google's cloud business, Diane Greene, and Google SVP Hiroshi Lockheimer, who heads Android, Chrome and other platforms. During the earnings call, Pichai was asked about what differentiated the Google Cloud service. He said: "I think the main thing I would say is the fundamental drivers of adoption of Google Cloud based on what we hear back from customers is our advantage in data analytics and machine learning. The fact that we really support open, agile development environment. "Kubernetes has literally become the standard for workloads and the fact that we are open in terms of how we approach this space. Security is becoming a big differentiator for us and something we've been leading for a while, and I think that's driving it. G Suite, as I called out earlier, is a good synergistic driver. G Suite is doing well, and clearly, a very unique offering, and it's gotten very comprehensive. And so I think overall, it comes together well." But to build all the infrastructure required for Google Cloud, G Suite and Google's own services like

Search, YouTube and Google Assistant, requires significant investment. Previously, Google revealed it had spent \$30 billion on infrastructure over three years, while most Google data centers DCD writes about are around \$600 million in their first phase. This quarter, infrastructure Capex rose sharply, tripling to \$7.56bn - with that including Google offices and land acquisitions unrelated to data centers. One of the reasons for the rise was the \$2.4 billion purchase of New York's Chelsea Market to turn the site into Google offices, but there was also an increase in expenditure on digital infrastructure. "That [increase] reflects investments in compute power to support growth that we see across Google, and the largest component is on machines," CFO Ruth Porat said. "It's also on data centers and undersea cables. And on machines, the biggest contributor is the demand that we're seeing. So in particular, it's the expanding application of the machine learning efforts across Alphabet, plus the requirements for cloud and Search and YouTube, and then secondarily, the increased cost of newer technologies, CPUs, memory, network." Google's headcount also grew by 4,940 during the quarter, with the Cloud business its division with the most hires.



## Abu Dhabi Businesses Get Online Boost with New Internet Domain

Abu Dhabi's Smart Solutions and Services Authority, ADSSSA, announced the launch of the Abu Dhabi Internet domain suffixes (.abudhabi) to represent the Emirate's digital identity in the virtual world. According to a report by WAM, the announcement, came during the signing of a tripartite agreement between the ADSSSA, the Telecommunications Regulatory Authority, TRA, and the Emirates Telecommunications Corporation (Etisalat), to launch the new internet domain suffixes for Abu Dhabi. Hamad Obaid Al Mansoori, Director General of the TRA, Dr. Rawda Al Saadi, Director General of Abu Dhabi Smart Solutions and Services Authority, and Saleh Al Abdoli, CEO of Etisalat signed the agreement aimed at providing the new internet domain suffixes for individuals, companies and entities alike within the UAE. Al Mansoori noted that the launch of Abu Dhabi domain name enhances the capital's and the UAE's distinguished position, as well as the economic activity and e-presence of registered entities in the UAE. "We, in TRA would like to thank Abu Dhabi Smart Solutions and Services Authority, as well

as the telecom service providers in the country for their great efforts in preparation of the digital future, which is an important pillar of post-oil sustainability, as digital knowledge is an essential resource in the national economy." The partnership also aims to standardize the suffixes used by the Emirate's government entities and to raise the nation's global innovation index by adopting new technological steps and initiatives by applying leading ideas in the government sector. This agreement will additionally continue to promote Abu Dhabi in touristic, cultural and economic fields. The distinctive domain suffixes are an attractive factor for companies interested in the myriad of local and international commercial opportunities,

events and exhibitions hosted annually by the Emirate. Dr. Rauda Al Saadi, Director General of Abu Dhabi Smart Solutions and Services Authority, said, "This agreement will contribute towards the enrichment of Abu Dhabi's technological system, and towards reinforcing the Emirate's international status by showcasing its full potential in creative, innovative and technological fields. This will attract international companies and organizations and will further serve the establishment of a knowledge-based economy. We are confident that this cooperation will employ sufficient expertise to develop the country's technological infrastructure and improve the efficiency of our government services."



## SCO Is Now Allowed for Trail Run of 3G/4G Services in Gilgit-Baltistan

Special Communications Organization is now allowed to operate 3G, 4G services in Gilgit-Baltistan (GB) but on trial basis. This decision was made by Court and stayed the telecom regulatory body's decision to allow other private operators to launch the service in GB. Justice Haq Nawaz and Justice Muhammad Umar admitted a petition filed by the SCO. The petition challenged the Pakistan Telecommunication Authority's (PTA) decision of issuing licences to cellular networks for launching 3G and 4G spectrum in the mountainous region. It

was filed on April 18 under Article 71 of the GB Empowerment and Self-Governance Order 2009. Adnan Hussain counsel of petitioner made the Gilgit-Baltistan Council, PTA, Frequency Allocation Board and the GB government as respondents. The operation of the letter issued by the PTA on Feb 23, was suspended by court when it issued ad-interim injunction and sought comments from the respondents within a month. The order said that bench will initiate the hearing of case after receiving the comments. The petition

said that the licenses issued to other private operators for launching 3G and 4G service was unlawful authority. 3G and 4G spectrum auction in GB was an attempt by the PTA to prevent the ongoing services on a trial basis. The court ordered the parties to maintain the quality till the final disposal of the petition. Because there were complaints from the users about the SCO's poor quality and speed of mobile service in the region.

## Wataniya Palestine Customer Base Increases to 1.2 Million

Wataniya Palestine's customer numbers increased by 55 percent year-on-year to 1.2 million at the end of March, benefiting from its launch in Gaza in October 2017. Revenue increased to KWD 7.1 million, up

by 15 percent compared to KWD 6.2 million for the same period in 2017. EBITDA was slightly down at KWD 1.1 million, compared to KWD 1.5 million in Q1 2017. The operator said it made good progress in

the first three months of the year, with the launch of the 3G network in the West Bank in January.



## Subisu Teams up with Nokia to Expand Fiber Network



Nepalese telco Subisu Cablenet has teamed up with Finnish vendor Nokia to step up its fiber-to-the-home (FTTH) deployment across the country. In a press release Nokia stated that its GPON solutions will help Subisu expand its network and reach new customers, with these customers able to access 'ultra-broadband' applications and services. The Nepal Telecommunications Authority (NTA) selected Subisu to build a FTTH network for eight districts in Province Two, with the new network offering subscribers access to digital television, IPTV and high-speed broadband services of up to 1Gbps. The deployment of Subisu's fiber-optic network is in line with the government's vision of a digital society, whereby 90% of the population will have access to broadband services by 2020.

## Telehealth Improving Care Access for Women in Rural Nepal

A research project conducted in the Himalayas has shown that implementing telehealth technologies to reach patients in rural areas can improve access to care for women and girls. The findings in rural Nepal are applicable to many other parts of the world where computers and mobile phones are increasingly accessible while patients often live long distances from adequate care. "By shrinking distance to healthcare services, telemedicine reduces travel, making it easier to manage time out from household chores, reduces treatment expenses, and reduces apprehension female patients may have shared their sexual and reproductive health problems," said Rajan Parajuli, lead author of the study from the Asian Institute of Technology in Bangkok, Thailand. Parajuli and study co-author, Philippe Doneys, used a mixed method design, tackling the question in multiple ways in hopes of coming to a more convincing conclusion. First, they obtained telemedicine records from two hospitals in Kathmandu, Nepal and three local telemedicine centers in western Nepal. Those records provided a list of 175 women and girls who had used telemedicine services, either via video conferencing or mobile phone. About 100 women and girls completed surveys comparing their access to healthcare before and after the introduction of telemedicine. The researchers also conducted in-depth interviews and, in addition to the women



and girls, they spoke with a local network provider, health post chiefs, village leaders, school principals, and others about the influence of telemedicine. The results? Telemedicine reduced the frequency of long-distance travel to hospitals as women can receive care in their own communities. Study participants reported increased comfort in seeking consultation through telemedicine for sexual and reproductive health matters. Overall, the study showed that telemedicine tends to reduce barriers

to healthcare for women and girls in rural areas. "This should help us understand the gender dynamics of information and communication technologies in healthcare, but also shows the interrelation between gender, technology and health," Parajuli said. "Thus, I'm hopeful it might be an effective approach to tackle geographic and cultural difficulties in countries facing similar problems like rural Nepal."

## Ooredoo Algeria Permitted to Cover all Provinces With 4G

Mobile operator Ooredoo Algeria has obtained authorization from the Authority for Regulation of Post & Telecoms (Autorite de Regulation de la Poste et des Telecoms, ARPT) to expand its 4G LTE network to all 48 wilayas (provinces) of the country, Agence Ecofin reports. The regulator gave its permission after confirming that Ooredoo had met coverage and quality of service

(QoS) obligations in the 32 wilayas reached by its LTE network so far. TeleGeography's GlobalComms Database notes that all three Algerian cellcos, Ooredoo, Algerie Telecom (Mobilis) and Djezzy, launched commercial LTE 1800MHz services in October 2016, via licenses requiring each of them to cover a different list of specific provinces, under a government scheme to

accelerate the expansion of nationwide coverage. Subsequently each operator has been granted permission to cover additional batches of provinces, and by February 2018 Ooredoo and Mobilis covered 31 wilayas with their commercial 4G networks, whilst Djezzy reached 20 wilayas.

## NTC Expands Cloud Services with VMware; Pakistan's First 'G-Cloud'

VMware Inc. a leading innovator in enterprise software, signed an agreement with the National Telecommunications Corporation (NTC). The agreement will enable the IT and telecommunications service provider to modernize the country's public-sector IT infrastructure. With VMware's digital foundation, NTC will further expand the government's capabilities in cloud adoption, enable greater innovation and easier access to cloud-based services, and deliver better and faster digital services for citizens. The announcement follows the success of the first MoU signed in September 2017, which enabled NTC to test VMware software to accelerate digital transformation within the public sector as part of the government's Digital Pakistan Initiative. This expansion is in tandem with the rapidly growing number of internet users in Pakistan, which increased by 27 percent in 2017 as compared to a 20 percent increase in 2016. The partnership also aligns with the government's Vision 2025, which aims to develop a competitive knowledge-based economy through innovation and technological adoption. As a part of the agreement, VMware will empower NTC to set up a government public cloud that delivers Infrastructure-as-a-Service (IaaS), Disaster-Recovery-as-a-Service (DRaaS) and Enterprise Mobility Management (EMM) solutions. These services are meant to offer flexibility, agility to scale

and mobility, designed to assist with minimal downtime and adequate back-up in the event of man-made or natural disasters. "We are dedicated to setting up a technology-enabled public sector that can constantly meet the needs of citizens and keep up with the pace of change and disruption. With digital transformation being a top priority for many businesses in Pakistan, we are confident that the G-Cloud will facilitate greater innovation, improve citizen engagement, and create opportunities for digital growth in individuals and organizations across all sectors in the country," said Mr. Viqar Rashid Khan, MD NTC "VMware software

connects, manages, automates and secures digital infrastructure to reliably deliver the apps, services and experiences transforming business and society. With a dynamic and consistent digital foundation, NTC is now at the forefront of delivering a G-cloud that is able to provide world-class digital services for the Government of Pakistan. We are committed to supporting NTC's digital journey to enable efficient and scalable public-sector services that are responsive to citizens' needs," said Daniel Choo, Country Manager, Nascent Markets and Vietnam, VMware. EZY Infotech, the aggregator for NTC by VMware, also participated in the signing ceremony.



## Microsoft Pakistan and P@SHA Sign Partnership for Cloud Based Trainings

Microsoft and P@SHA (Pakistan Software Houses Association) has signed a partnership that will introduce cloud computing with specialized courses and certificates. As part of Microsoft's worldwide efforts to empower people along with organizations, across a variety of industries and verticals, it is driving 'digital transformation' as a means for achieving economic prosperity. By boosting a company's productivity through cloud computing, Microsoft believes that organizations that are enabled with cloud computing will be more innovative and capture new business worldwide. Digital transformation is a digital eco-system that can present untapped opportunities for a variety of organizations such as governments, community and business leaders who want to increase their export capabilities along with attracting foreign investment. Microsoft has a long history of partnering with governments, businesses and individuals to make technology accessible to the younger generation. Further to these goals, Microsoft's vision to use Azure as a way to democratize artificial



intelligence (AI) will help companies to build cloud fueled AI based solutions across the globe. Throughout Pakistan, Microsoft has led initiatives to support digital transformation. Microsoft Pakistan is steadfastly pursuing a cloud readiness strategy for the future within Pakistan. Amongst these initiatives Microsoft Pakistan has signed a partnership with P@SHA (Pakistan Software Houses Association) that will introduce a new universe of cloud computing with specialized courses and certificates. The participants can connect with experts and meet like-minded cloud enthusiasts with the help of these courses specifically designed for them. They can get acquainted with insights on Artificial Intelligence, Data Science and opportunities for start-ups plus come to know about the success stories. Microsoft's cloud platform can help the participants acquire the tools to achieve Digital transformation.

The courses that will be offered by Microsoft Pakistan for this partnership are: – Microsoft Azure Virtual Machines, Migrating Workloads to Azure, Data Science Essentials, DevOps for developers –Getting started and Artificial Intelligence. Microsoft's vision is to enable and empower individuals and organizations through technology. We create robust platforms that our partners and customers use to solve business challenges. We are focusing on building a strong ISV and startups ecosystem and ensuring that they are ready on new digital skills including cloud computing, Artificial Intelligence, big data and IOT. Abid Zaidi, Microsoft Pakistan Country Manager said that partnership with P@SHA is in line with our mutual goal of enabling the ISV ecosystem". He then added: "In order to scale and have the required impact, we are keen to further collaborate and forge similar partnerships. I see these technology-driven alliances will go a long way in nurturing fresh efforts for nation-building." P@SHA Secretary General Shehryar Hydri said, "Microsoft Pakistan is very active and committed to the local market and this partnership around their cloud solutions will not only upskill our local workforce but also enable tech companies to expand outside Pakistan and scale aggressively." Microsoft Pakistan is on its way to nurture a highly evolved academic culture in the country, by integrating global advancements and cutting-edge tools thus, empowering our students and businesses to contribute and compete in the global workforce. Microsoft Pakistan has worked with all the business sectors and industries in Pakistan and is helping them to attain growth in all dimensions. Cloud technology is popular throughout the regions and in Pakistan by way of contributing to national development, enhancing socio-economic growth, enabling innovation and improving service delivery. Regardless of these efforts there is still a significant shortage of skilled job candidates to fulfill the demands of cloud related jobs. To full realize the full potential of the cloud Microsoft has launched the 'Microsoft Cloud Society' program to offer people working in the technology sector to be trained, certified and work face to face with Microsoft cloud experts. Microsoft Cloud Society is aimed at equipping IT workers at all levels with Azure based cloud ready skills. The program enables learning at one's own pace. Allowing one to select a learning program online, or choose from a variety of cloud topics including cloud administration, big data, security, deployment and data science. Each topic provides online courses that allows individual enrollment. As knowledge grows, the individual can also complete exams both through Microsoft or its training partners, to receive official Azure certifications recognized throughout the industry. 📍

An aerial night photograph of a city. The central focus is a large, circular plaza with a complex, illuminated design, possibly a fountain or a public square, surrounded by a ring of lights. The plaza is surrounded by a multi-lane highway with heavy traffic, creating long, colorful light trails from the cars. The surrounding city buildings are lit up, and the overall scene is a vibrant, high-angle view of a modern urban environment at night.

# Nokia 5G Future X

Unleashing the  
potential of 5G

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## ARTICLE

# Capitalizing on IoT



## Dr. Brahim GHRIBI

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**NOKIA**

### From M2M to IoT

The past few years have witnessed a shift in focus from connecting places and people to connecting things. The Internet of Things (IoT) is promising to bring new business opportunities and novel ways to simplify people's lives and make industries more efficient. Examples of IoT uses include smart cities that are more sustainable, smart healthcare applications that will save lives, public safety that will keep people safe and secure, and automated industries that will make them more productive.

**To enable IoT mass adoption, it is indispensable to steer away from the traditional duplicated and verticalized solutions and fragmented implementations, and adopt a horizontal layered approach covering connectivity, platforms, and applications.**

IoT has however been confused sometimes with machine to machine (M2M) communications which has been in use for a considerable period. Although IoT and M2M have remote devices in common, there is a difference in how the data is generated and is used to create value.

M2M is about devices connecting to a network for a bespoke application. Most often related to isolated systems within industries and companies, characterized by process-specific sensors and devices. IoT on the other hand is a broader concept defined by the combination of:

- M2M communications, but not limited to cellular or SIM card compatible devices
- An exploding number of communication enabled smart objects (sensors and actuators) generating huge amounts of real-time data
- The capability to analyze these big data, and to translate them into actionable insights

To enable IoT mass adoption, it is indispensable to steer away from the traditional duplicated and verticalized solutions and fragmented implementations, and adopt a horizontal layered approach covering connectivity, platforms, and applications.

### Horizontal approach for IoT

There are three building blocks in the value chain that need to be in place for IoT implementations to flourish. They represent the three layers in the horizontal approach: IoT radio connectivity, platforms, and applications and ecosystem (Figure 1).

Horizontalization drives down cost by sharing infrastructure and investments, adopting best practices, streamlining operations, and mixing and matching devices and applications for optimal economies of scale.

#### IoT radio connectivity

IoT connectivity is essentially about 3 optimization targets:

1. cost of connectivity (including device cost);
2. coverage (also in deep indoor or deep rural locations);
3. autonomy (device battery life for remote sensors/meters).

Connected devices need robust and scalable connectivity. High availability and low latency are required for many critical IoT solutions, like industrial sensor networks, autonomous cars and public

safety applications. Extended coverage will be essential to penetrate deep into buildings, for example to reach indoor devices such as smart meters. Today there are many different access technologies, but not all are addressing the critical needs for IoT connectivity. Only standardization of the connectivity between the massive variety of devices and the networks can ensure a sustainable IoT growth.

The global cellular network ecosystem (operators, network and device vendors) has a great basis for addressing these needs with a unique existing network coverage and global economies of scale. However, some enhancements were needed and addressed by 3GPP standards to further reduce device complexity, cost, and further enhance coverage from existing cell sites. These enhancements included complementing technologies: EC-GSM (Extended Coverage GSM), NB-IoT (Narrow Band IoT) and eMTC (enhanced Machine Type Communications). Furthermore, the introduction of 5G in the market is expected to be a key enabler for massive IoT adoption.

#### IoT Platform

The IoT platform is a mediation layer that is central for the support of best of breed devices, independently of the applications in an open architecture. With the explosion of connected IoT devices, and applications, it is unconceivable to have different dedicated device management solutions per type of device and application use.

The Nokia IMPACT IoT platform for instance, comes with connection management capabilities from sensors and devices (millions of IoT device connections), and related support functions such as billing, mediation, and CRM. The IMPACT platform brings also device management capabilities for rapid, remote deployment of any device, sensor, meter, or module through support of IoT device management standards.

Finally, application enablement is another key function of the IMPACT platform, allowing to tap into new revenue opportunities by creating customized IoT applications and innovation use cases quickly and cost-effectively.

#### IoT applications and ecosystem

The success of IoT will depend on the quantity and quality of relevant applications and uses developed to leverage on the billions of connected things and the massive amounts of data collected. Deep domain-specific analytics will be critical to generate actionable insights and create tangible value.

In addition to the many connectivity technologies, there are also many different protocols through which devices, platforms and applications communicate with each other. This space is too fragmented. Interoperability, or at least a way to support multiple protocols, is essential for enabling IoT roll-out, and device and application onboarding.

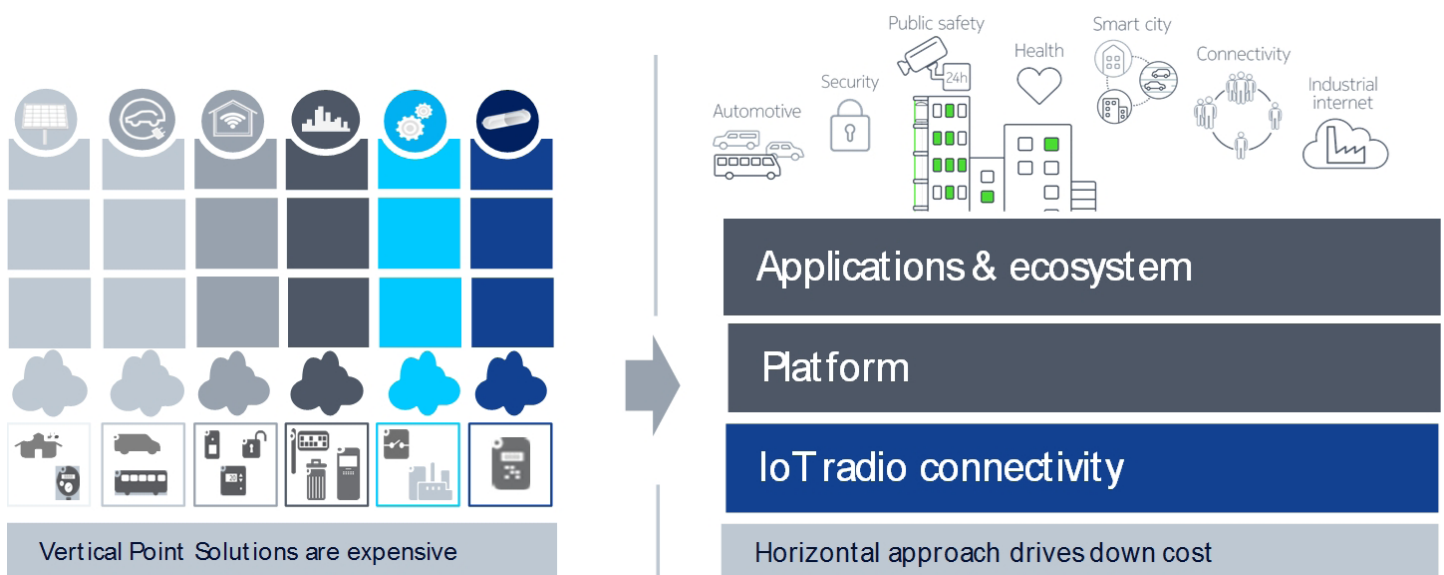


Figure 1. From vertical to layered horizontal approach for IoT

**The success of IoT will depend on the quantity and quality of relevant applications and uses developed to leverage on the billions of connected things and the massive amounts of data collected. Deep domain-specific analytics will be critical to generate actionable insights and create tangible value.**

With the boundaries between the different vertical sectors and industries becoming thinner, traditional industry specific solutions and uses are a thing of the past. Cross-sector collaborative effort will be essential to unleash the business potential of IoT.

The IoT Community of the Nokia ng Connect Program brings innovative companies together to work on solution concepts that require multi-industry collaboration. As an ecosystem, we define solution concepts, develop prototypes and viable business models; then we validate them by showcasing them and conducting market trials to test business model assumptions.

The IoT Community and ng Connect Program members span a wide range of industries and markets, and include innovators in infrastructure, devices, applications, content, and vertical markets.

- Member organizations include customers, partners, government agencies, and universities.
- We have 250+ ng Connect members and over 100 IoT Community members

## Policy and regulatory overarching questions

The development of IoT will not be specific to ICT, and will raise many challenges and overarching questions. Some of those regulatory and policy related topics are briefly described in this section.

**The question of governance.** It is not obvious how the overlap between the different industries will impact the

traditional siloed model where each sector had dedicated authority and specific regulations. It is clear however that cross-sector coordination and governance will be crucial. Clarity will be needed on what is regulated or unregulated, and the framework for licensing of IoT service providers.

**Privacy and security.** There are great concerns to both consumers and industries alike. IoT usually implies possibly the processing of data that relate to identified or identifiable persons, and therefore qualifies as personal data. IoT devices and platforms are expected to exchange data and store them on service providers' infrastructures. Therefore, the security of the IoT should not be envisioned by considering only the security of the devices but also the communication links, storage infrastructure and other inputs of this ecosystem. The growing risks for data misuse and cyberthreat need to be addressed by appropriate technology and policies.

**Consumer protection.** There are several requirements for consumer protection specific to the Telecom and Internet sectors which apply in the IoT domain such as improving confidence and building trust, transparency on offers, enforcement, consumer switching and retention, roaming, data portability and liability. These requirements will need to be carefully examined for IoT services.

**Spectrum.** IoT infrastructure and devices are expected to be inter-connected wirelessly; while the number of existing air interface technologies may satisfy some requirements today (e.g WiFi, Bluetooth, GPRS, etc.), these may not be suited to all applications as specific requirement such as longer reach, higher reliability, lower latency, better building penetration, etc. The heterogeneous nature of IoT and its multiple applications with various business and operational requirements makes it difficult to identify a single solution for access to spectrum to fit all the possible use cases. The quantity and type of spectrum access required will depend therefore on the operational requirements and use cases. As the IoT market is expected to grow significantly in the 5G context, governments need to facilitate the growth of the IoT market in a coherent and

harmonized way. The use of technically harmonized spectrum for the development of IoT technologies and equipment should be a priority.

**Liability and certification.** The proliferation of IoT devices will inevitably require certification and type approval attention. For instance, devices that will be used for a medical use will need to be certified before being introduced on the market. On the other hand, in a non-medical context (e.g. wellness or fitness purposes), certification is less relevant. There are further liability issues than just product safety as in the medical or in the context of smart autonomous systems (e.g. autonomous cars) and advanced robots/IoT. Regulators will need to further analyze the potential challenges to existing liability regimes arising from these technological developments.

## Conclusion

IoT has a transformative impact on the economy and promises to be a game changer for many industries. The IoT ecosystem growing fast, and as new business models and uses emerge, policy makers and regulators will need to think beyond traditional telecom frontiers.

At Nokia, we have a long history of innovation in the IoT domain. We won several prestigious awards including the 2017 Leading Lights Award for most Innovative IoT/M2M Strategy (Vendor), and the 2017 GLOMO Award in the "Best IoT innovation for Mobile Networks" category with our end-to-end IoT solution. Nokia provides a comprehensive end to end IoT solution of network components, services, analytics and partner solutions enabling customized IoT applications to tap into new revenue opportunities and trigger new IoT use cases in different vertical industries.

Nokia is also pioneering with its worldwide IoT network grid (WING), a unique managed service that helps operators go-to-market quickly. It has been created with communication service providers and enterprise customers in mind, as a service that can help them enter the world of IoT, or further grow their existing IoT offerings with a worldwide network grid designed by Nokia for IoT devices. 

## SATELLITE NEWS

### Satellite Industry to Enter Operational Phase of Crisis Connectivity Charter for Support of Global Disaster Relief

Members of the satellite community, including Eutelsat, signed contribution agreements with the United Nations World Food Program (WFP), on behalf of the Emergency Telecommunications Cluster (ETC), stepping up their commitment to support global disaster relief. These contribution agreements are the final steps in operationalizing the Crisis Connectivity Charter signed in late 2015 between the EMEA Satellite Operators Association (ESOA), the Global VSAT Forum (GVF), the UN Office for Coordination of Humanitarian Aid (OCHA) and the ETC. The Crisis Connectivity Charter signed by Eutelsat, Arabsat, Global Eagle, Hispasat, Inmarsat, Intelsat, SES, Thuraya and Yahsat, will help the humanitarian community by greatly enhancing their access to vital satellite-based communications when local networks are affected, destroyed or overloaded following disasters. Under the contribution agreements, the Charter Signatories are now committing satellite equipment and capacity that will be dedicated for humanitarian purposes during emergency responses. The ETC, under the global leadership of WFP, will be able to activate the Charter when disaster strikes and identify which pre-planned solutions are immediately available for any given region and need in order to meet a 24-hour deployment timeline after a crisis. Eutelsat's contribution agreement consists principally of pre-allocated bandwidth on four of its satellites across the globe, complemented on the ground by ready-to-deploy satellite kits. Simon Gray, Eutelsat's Vice President of Humanitarian

Affairs and Coordinator for the Crisis Connectivity Charter, commented on this milestone: "The satellite industry is the first sector where such a unified effort has been undertaken to standardize disaster response on a global scale. Today, the UN has the unprecedented ability to immediately access the right equipment and capacity in order to re-establish communication where it is needed." Eutelsat has been actively involved with the humanitarian community for 25 years, sharing industry's belief that satellite services play an important role in disaster relief. With the increasing number of protracted, complex emergencies and high demand for bandwidth, the commitments from the global satellite industry are timely and will be critical assets for the

humanitarian community. The satellite industry's contributions will enable Internet access during emergencies to support humanitarian operations including logistics, urgent medical care, food delivery and the coordination of relief efforts. The Charter Signatories have also provided training and capacity building for WFP and ETC partners' field-staff on the installation and use of the satellite equipment to be deployed. Since signing the Charter, satellite operators have been active on all continents supporting WFP, governments and NGOs during Hurricanes Irma and Maria, and in Haiti, Nepal and Vanuatu to name just a few. Via satellite they have enabled VOIP, WiFi and Internet Access to support supply logistics, urgent medical care and coordination of relief efforts.



### Angola Loses First Telecoms Satellite, Starts Building Replacement

Angola's government has confirmed that contact has been permanently lost with the country's first telecoms satellite, the Russian-built Angosat-1, which was launched from Kazakhstan in December

2017. Angolan telecoms minister Jose Carvalho da Rocha announced that work on building the satellite's successor, Angosat-2, under a new agreement with Russia, is beginning 'immediately' and

at no cost to Angola, adding it would be finished in 18 months, Africanews.com reports.



## UN Broadband Commission Commits to Global Broadband Roll-Out

The Broadband Commission for Sustainable Development at its 2018 spring meeting in Kigali, Rwanda, committed to concrete actions that will advance the roll-out of broadband around the world – and with it, much-needed digital connectivity, which is necessary for the achievement of the United Nations Sustainable Development Goals (SDG). During the two-day event, 34 commissioners, representing the broadband industry, governments and United Nations agencies, convened to discuss key issues related to the role of broadband in advancing the SDGs. The meeting was held at the invitation of Paul Kagame, President of Rwanda, and Mats Granryd, director general of GSMA, the association representing the interests of mobile operators worldwide. During the meeting, a synthesis report on broadband for national development in four Least Developed Countries (LDCs) – Cambodia, Rwanda, Senegal and Vanuatu – was issued. The report highlights that, despite different market environments, broadband coverage has increased notably and become more affordable for users in all four countries over the last few years.

However, it also raises concerns that the demand for broadband and its productive use in LDCs has not matched the growing supply. The full report is scheduled for release on July 12 during the United Nations High Level Political Forum in New York. "Africa's economic transformation requires broadband infrastructure with an emphasis on both access and affordability. The reality is that all other digital services, whether in commerce,

education or healthcare, run on top of broadband. Africa's size, geography and settlement patterns mean that we must rely on a variety of different technologies to deliver broadband including satellite, fiber optic and mobile. It is up to us to lead the way in driving innovation both in policy and business models in order to speed up the provision of broadband where it has been slowest to reach," said President Paul Kagame.



## Kenya Heads into Space with Launch of its First Home-Designed Cube Satellite

The cube satellite will be launched from the Japanese module of the International Space Station. It was brought there by a SpaceX rocket during an April re-supply mission. The cube satellite will be utilized in various sectors including weather forecasting, food security mapping, livestock and wildlife monitoring, besides disaster management. The nanosatellite, designed by Kenyan scientists at the University of Nairobi, was developed as part of a joint program between the United Nations and Japanese space agency to support research institutions from developing countries to manufacture and improve their own space technology. The satellite reportedly has a life-span of between one year to 18 months, after which it will "de-orbit and burn up." This is not in fact Kenya's first satellite. In 1970 it launched Uhuru from Malindi, southeastern Kenya, which was the world's first earth-orbiting mission dedicated to

celestial X-ray astronomy. But, according to a Vice article, the program did not benefit many Kenyans. Innovations around satellite technologies have increasingly made it viable for low-income nations to manufacture small satellites and use them to achieve their own development goals. Across Africa, the opportunities surrounding outer space exploration has never been greater, with nations looking at space programs as a vital step to kickstart and empower innovation. The enthusiasm around space technology also comes from the recognition that information gleaned from satellites has the potential to improve agriculture, guard against deforestation, improve disaster planning, and provide internet to rural communities. The current investments can also offset the long-term costs of purchasing and maintaining satellites from foreign governments. As such, several African nations have manufactured, launched, and operated

their own programs to power their own scientific, technological and military ambitions. These include countries like South Africa, Egypt, Nigeria, Algeria, and Morocco. The African Union also passed an African space policy in 2017, calling for the development of a continental outer-space program and the adoption of a framework to use satellite communication for economic progress. For Kenya, the deployment of the satellite heralds a historic moment especially as it competes with neighboring nations like Ethiopia which aim to become a scientific hub and have already funded a multimillion-dollar space observatory and research center. But that competitive gap could only be closed with the government allocating more money for research and development activities and stopping advanced expertise from leaving the country—a step Kenyan officials are now promising to undertake in the coming years.

## China Preparing to Launch Chang'e-4 Relay Satellite

China is set to launch a relay satellite to the second Earth-moon Lagrange point May 21, in a necessary precursor to the planned Chang'e-4 soft-landing on the lunar far side late in the year. Chang'e-4 is the backup to the Chang'e-3 mission which put a lander and rover on Mare Imbrium in late 2013. Following that success, the lunar craft have been repurposed for a pioneering landing on the moon's far side. The lunar far side does not face the Earth as the moon's orbital period matches its rotational period, thus requiring a relay satellite to facilitate communications. Launch of the satellite will take place at the Xichang Satellite Launch Center in the southwest of the country via a Long March 4C rocket, with the three-day launch window opening on May 21. The relay satellite, recently named Queqiao – or Magpie Bridge, taken from a Chinese folklore tale that sees two lovers reunited once a year when a flock of magpies form a bridge across the Milky Way – will orbit around the Lagrange point around 65,000 kilometers beyond the moon, so as to be visible to both ground stations on the Earth and the lander and rover on the lunar far side at all times. Its main function will be to relay telecommands from the ground to the Chang'e-4 lunar spacecraft and transmit data and telemetry back to Earth via S-band, while using x-band to communicate with the lander and rover. Should launch and commissioning of the relay satellite proceed as planned, the lander and rover will be launched by a Long March 3B from Xichang around six months later, in November or December. Ian Crawford, professor of planetary science

and astrobiology at Birkbeck, University of London, told SpaceNews the mission would be a "tremendous undertaking, as it would be the first time any spacecraft has successfully landed on the far side of the moon." The landing is currently expected to target the Von Kármán crater within the South Pole-Aitken Basin, though a decision on the final site has not been announced by Chinese scientists. The South Pole-Aitken Basin is, Crawford notes, a high priority scientific objective for exploration, potentially offering unique insights into the formation of the moon and history of the solar system. The relay satellite, developed by the China Academy of Space Technology, will also carry the Netherlands-China Low-Frequency Explorer (NCLE), a low-frequency, space-based astronomy pathfinder experiment that will attempt to detect radio signals from the cosmic dark ages, before emission of light by the first stars in the universe. Radio astronomy below around 30 MHz can only be carried out effectively outside of the Earth's ionosphere, and the satellite's position beyond the moon will allow it to take a unique look at this largely unexplored region of the electromagnetic spectrum, with minimal interference from Earth. Professor Heino Falck of Radboud University in the Netherlands and part of the NCLE team told SpaceNews he doesn't want to set the bar too high for this attempt at picking up a cosmic dark ages signal. It could put an upper limit on the signal and is expected to be instructive for future low frequency astronomy space missions. Along with its main objective, NCLE will also aim to

characterize the galactic background and measure emissions from the Sun and Jupiter, as well as measure the wake of the solar wind behind the moon. Falcke says getting the instrument ready in time and integrated on the spacecraft was a "ride on the edge," with the call for international participation in Chang'e-4 only coming in 2015, and the Dutch team needing to develop their own antenna from scratch, due to ITAR regulations limiting exports to China. The antenna is only expected to be deployed for use sometime in 2019, after the main Chang'e-4 mission, with the rover having a designed operation time of three months on the lunar surface. The May launch will also carry two microsatellites, named Longjiang-1 and 2 and meaning 'Dragon River', which were developed by the Harbin Institute of Technology (HIT) in north-eastern province of Heilongjiang. The pair will carry synchronized receivers for low frequency astronomy and very long baseline interferometry experiments and operate in a highly elliptical lunar orbit. They will also be available for amateur radio tests, with one of the two 45-kilogram, 50x50x40-centimeter satellites also set to carry a micro optical camera developed by the King Abdulaziz City for Science and Technology (KACST) of Saudi Arabia. The launch this month will be China's fifth lunar mission, following two orbiters, Chang'e-1 and Chang'e-2 in 2007 and 2010 respectively, Chang'e-3 in 2013, and the 2014 Chang'e-5 T1 probe which flew a capsule around the moon and back to test re-entry for a planned lunar sample return. The full sample mission, Chang'e-5, is expected to take place in 2019.

## RBC Signals Expands Coverage with C-Core Partnership

RBC Signals, global communication services provider for Low Earth Orbit (LEO) satellite operators, has announced a partnership with C-Core, a Canadian research and development company. As part of the agreement, C-Core, which has developed a novel ground station optimized for Arctic deployment, will provide RBC Signals with the use of its ground station in Inuvik, Canada. The addition of the antenna will expand RBC Signals' coverage,

specifically in the key Arctic region. The RBC Signals global ground station network includes more than 45 antennas in over 30 locations worldwide. The network provides commercial satellite operators with mission-critical Telemetry Tracking and Control (TT&C), payload data delivery and data processing services. At the cornerstone of RBC Signals' services are real-time, high bandwidth and flexible pay-as-you-go options designed specifically

to address the specific needs of today's commercial operators. The company combines the excess capacity of existing ground stations with RBC-owned stations located strategically across the globe. This "sharing economy" model is unique in the industry and aims to benefit ground station owners with additional revenue in exchange for use of under leveraged antenna assets.

## UAE's Space Settlement Challenge Gets 260 Proposals

The Dubai Future Foundation's new think-tank, the Mohammed Bin Rashid Center for Accelerated Research has received an exceptional response from universities across the world for its first funding program, the Space Settlement Challenge. The center, dedicated to speeding up the process of scientific research and supporting disruptive thinking on the world's most important topics, received over 260 research proposals from more than 200 leading universities in 55 countries. Proposal topics ranged from advanced bio-engineering for life support on Mars to the social and economic business models required to make the space industry a success. Khalfan Belhouli, CEO of Dubai Future Foundation, emphasized the goal of the center, which is dedicated to supporting research for the advancement of humanity. "At Dubai Future Foundation our mandate is to identify the challenges of tomorrow and turn them into opportunities today for our nation and for humanity at large. The Center for Accelerated Research will be tackling complex issues such as space settlement, digital economics, artificial intelligence and more. The Space Settlement Challenge was launched at the 6th World Government Summit in February 2018 with the objective of accelerating space exploration activities by funding trailblazing research. It is the first of the Center's major research activities and uses a novel, accelerated funding and review platform called Guaana, which emerged from the Dubai Future Accelerators. The challenge called for research proposals from any discipline, in pursuit of concepts, solutions and business models that facilitate space habitation. Researchers competed for Dh2 million (500,000 euros) in seed funding, which will be divided among 20 - 30 proposals selected from the submissions. Massachusetts Institute of Technology (MIT) and Stanford University in the United States as well as Cambridge University and Oxford University in the United Kingdom have submitted proposals for the challenge. Applicants are currently evaluating each other's proposals and will decide the winners anonymously using an advanced system of collective intelligence. Funding decisions will be awarded on May 17, 2018, at which point the winning researchers will receive their funds automatically and begin their research. Dubai Future Foundation CEO Belhouli added: "The Mohammed Bin Rashid Centre for Accelerated Research embodies the vision of His Highness Sheikh Mohammed bin

**MOHAMMED BIN RASHID SPACE SETTLEMENT CHALLENGE**

J. A. T. bin Rashid Al Maktoum  
DUBAI FUTURE FOUNDATION

"Mohammed Bin Rashid Space Settlement Challenge"

**attracts global entries from renowned institutes**

In its commitment to accelerating global space exploration activities, the Mohammed Bin Rashid Space Settlement Challenge is a global platform that aims to attract and fund unconventional solutions and novel proposals from all around the world regardless of discipline, background, or origin.

**260** Proposals

**55** Countries

**200** Universities

**Top Universities**

- University of California Berkeley
- Cambridge University
- MIT
- The University of Tokyo
- Johns Hopkins University
- Ludwig Maximilian University, Munich

[www.mbrspacechallenge.ae](http://www.mbrspacechallenge.ae)

Rashid Al Maktoum, Vice President and Prime Minister of the UAE, and Ruler of Dubai when it comes to the strategic value of foresight and long term thinking, with collaborative scientific research playing a central role in advancing human progress." The center also announced several new upcoming research initiatives, including work focusing on the use of personal data by major technology companies, the development of regional technology sectors, the social consequences of autonomous vehicles, and more.

## DataPath Targets Unmanned Aircraft with New Satellite Solutions

DataPath, a provider of remote communications and information technology solutions to the aerospace, broadcast, government and critical infrastructure markets, has announced a new line of certified satellite solutions for the Unmanned Aircraft Systems (UAS) market. The specialized solutions span large ground stations, portable terminals, expert field support services, and end-to-end network management software. Over the past year, the company has

been providing ground data link terminals for UAS manufacturers. DataPath has satellite systems live around the world in support of UAS operations, with more on order from UAS developers. To support the high bandwidth needs of large UAS platforms, known as Groups 4 and 5, DataPath provides certified variants of its Deployable Ku/Ka/X-band Earth Terminal (DKET) transportable network hub and Satellite Transportable Terminal (STT) trailer-based antenna. The DKET supports

high throughput and deployment from a single skid, eliminating the need for any civil engineering installation work. For smaller Group 3 UAS platforms, DataPath provides certified portable terminals paired with a tactical data collection and distribution system. Additionally, DataPath offers customers end-to-end control over every device in their network through its MaxView Enterprise software.

## Iridium to Complete Next-Generation Satellite Deployment by this Fall

Iridium expects to have its next-generation satellite constellation deployed and in service by this fall as it looks to win approvals for new maritime and aviation applications. In a conference call with reporters May 14, Iridium Chief Executive Matt Desch said the remaining three launches of Iridium Next satellites should be completed by the third quarter of this year, with the satellites in the final positions shortly thereafter. "All of the satellites are going to be in place within probably about 30 days of our final launch," he said. The Iridium operations team has become more efficient in maneuvering new satellites into their planned orbital slots and putting them into service. "It will be very shortly after our final launch that we will have 100 percent Iridium Next satellites." Iridium has launched 50 Iridium Next satellites to date on five SpaceX Falcon 9 launches dating back to January 2017. Of those satellites, Desch said 47 are in service while the other three are drifting to their planned orbital planes. The next launch of Iridium satellites is now scheduled for May 21, two days later than previously announced, again on a Falcon 9 from California's Vandenberg Air Force Base. Desch said that "pretty minor processing issues and preparation of one of the components of the rocket" caused the slip, and that he didn't expect

further delays. Unlike the previous Iridium launches, which were dedicated flights of 10 satellites each, this mission will carry five Iridium Next satellites. The launch will be shared with GRACE-FO, an Earth science mission jointly developed by NASA and the German Research Centre for Geosciences. On that launch, the Falcon 9 upper stage will deploy the two GRACE-FO satellites into one orbit, then relight to maneuver to a different orbit for the Iridium satellite deployment. Those satellites will be deployed into orbits not quite the same as those from earlier launches, but won't pose a major issue, Desch said. "It might take just a few more maneuvers of our satellites to get to where they have to get to than they're typically used to," he said. "But it's going to be very close to the orbit we want to be in. With that launch, three of the six orbital planes will consist entirely of next-generation satellites. The others will be filled out by the final two launches, with the company returning to dedicated launches of 10 satellites each. One launch is scheduled for July, Desch said, with the other before the end of the third quarter. Those final two launches will use new Block 5 versions of the Falcon 9, which made its debut with a successful launch of a Bangladeshi communications satellite May 11. Next week's launch will

use a Falcon 9 with a previously-flown first stage, as was the case with the prior two Iridium launches. Desch said he had no problems using previously-flown Falcon 9 rockets, and that the switch to the Block 5 for the final two launches is due to a lack of availability of older reused boosters. "We were an early adopter and believe that launching on flight-proven rockets is as safe, if not safer, than launching on new rockets," he said. In a May 10 call with reporters, SpaceX Chief Executive Elon Musk revealed that that SpaceX was offering a discounted price for Falcon 9 launches with previously-flown boosters: \$50 million, versus a list price of \$62 million. Desch confirmed that Iridium received a "modest discount" for using reused boosters, but that was not a major factor for the company. "It's been more about the schedule certainty of being able to use flight-proven [boosters], knowing that we could keep our 18-month to 24-month launch schedule," he said. "That was the biggest reason." "SpaceX is by far the lowest-cost launch provider today," he added. "I am not demanding much more of a reduction than what we have today, because I believe I'm getting a product — I'm getting a service, really — of high value, higher than I can get from any other supplier."

## SatADSL, Global Telesat, RascomStar to Connect Africa

Professional Very Small Aperture Terminal (VSAT) services provider SatADSL, Global Telesat, a provider of telecommunication services in rural and challenging locations, and satellite operator RascomStar have announced a new partnership to offer affordable satellite broadband connectivity across Africa. Under the agreement, Global Telesat will manage the services from its teleport facilities in Alicante, Spain. From there, the company can connect its iDirect Evolution hub to SatADSL's Cloud-based Service Delivery Platform (C-SDP), enabling it to offer a range of services for communities, businesses, administrations and Non-Governmental Organizations (NGOs) — all without investment in a physical infrastructure. RascomStar will supply the capacity over its satellite RQ1R located at 2.9 degrees east, covering the whole of Africa in C- and Ku-band connectivity. Global Telesat is the latest service provider to connect to SatADSL's C-SDP, which is now being used by 76 Africa-based partners.



## Inmarsat, Tillman, CivicConnect sign MOU with Smart Africa

Inmarsat has announced that it has signed a Memorandum of Understanding (MOU), in conjunction with Tillman Digital Cities and CivicConnect, to accelerate the development and implementation of Public-Private Partnerships (PPP) with the Smart Africa Alliance. The Smart Africa Alliance is a partnership bringing together 22 African countries committed to the Smart Africa Manifesto and is supported by regional and global bodies including the African Union, the International Telecommunication Union (ITU), World Bank and The African Development Bank. Inmarsat was the first commercial company to join the alliance, becoming a platinum member in 2016. The MOU provides a framework of cooperation for all future negotiations for smart cities projects in the continent, and the consortium members bring a significant amount of experience to the PPP to drive the initiative forward. Inmarsat has taken a leading role in supporting the objectives of Smart Africa and in May kicked off a

12-month smart city proof of concept in the Rwandan capital of Kigali. The initiative supports a range of Internet of Things (IOT) solutions linked by a LoRaWAN network. The flagship project provides a blueprint for smart city projects that can be deployed throughout Africa. Tillman has experience in the financing, development and operation of national-scale infrastructure programs, and has

led the buildout of much of the current mobile telecommunications infrastructure across Africa. CivicConnect specializes in platforms for the aggregation, management and dissemination of data, serving as the connectivity tissue for smart city infrastructure. Leveraging real-time data, the company enables citizens, governments and businesses to better engage with their city assets and the environment.



## Uganda to Boost 3G Infrastructure Deployment via Satellite

Intelsat has announced that Uganda's Communications Commission (UCC) will use its satellite services and Gilat Satellite Network's ground infrastructure to advance the deployment of 3G wireless communications infrastructure, and expand broadband access for businesses

and communities in rural areas of Uganda. Under a pilot program, the UCC will use IntelsatOne Mobile Reach Solar 3G satellite services delivered via the Intelsat 37e satellite and Gilat's SkyEdge II-c multi-application platform to provide broadband connectivity to two communities: Bufundi

in Rubanda and Kibuku in Ntoroko. For the pilot project, MTN Uganda will integrate the sites into the core network. The objective of the remote connectivity project is to demonstrate the ease of deploying the satellite solution, and study its commercial viability and sustainability. This effort intends to be instrumental in helping to accelerate the Uganda government's broadband strategy, particularly its goal of achieving minimum broadband speeds of 3 Mbps and coverage of 100 percent of Uganda's rural areas by 2020. Committed to working with member states to achieve the United Nation's Sustainable Development Goals by 2030, the International Telecommunications Satellite Organization (ITSO) played a critical role in coordinating efforts and bringing the private and public entities together to benefit the two communities in Uganda.



## UK Developing Options for Satellite System to Rival EU's Galileo

Prime Minister Theresa May has asked experts to look into options for a British satellite navigation system to rival the European Union's Galileo project amid a row over attempts to restrict Britain's access to sensitive information after Brexit. Galileo, a 10 billion euro (8.8 billion pound) satellite program being developed by the EU as a rival to the U.S. Global

Positioning System, has emerged as a flashpoint in talks ahead of Britain's exit from the bloc. "The Prime Minister has tasked engineering and aerospace experts in the UK to develop options for a British global navigation satellite system," May's spokesman said on Wednesday. "This could see Britain develop and launch its own satellite navigation system by the

mid 2020s. This is a response to the EU indicating that it would not allow the UK to participate fully in Galileo." The European Commission has started to exclude Britain and its companies from sensitive future work on Galileo ahead of the country's exit from the EU in a year's time, a move which Britain has said threatens security collaboration.

## Pakistan Space Centre to be Set Up for Satellite Development and Production

Pakistan has added the establishment of Country's first-ever satellite development and production facility in its development plan for 2018-19. The facility will be called Pakistan Space Centre (PSC), according to the Associated Press of Pakistan, and it will have the capability to manufacture, test, integrate, launch and carry out various satellite related operations. PSC will also

have the capacity to perform system level assembly of the satellites. The feasibility studies for the two new projects will be done in the upcoming days as well. These projects include;

Pakistan Remote Sensing Satellite 02 (PRSS-02) and, Pakistan Navigation Satellite System (PakNav).

The PakNav will be aimed at providing an independent navigation system to Pakistan – for both civilian and strategic uses. The remote sensing satellite was to be launched in March, however, it got delayed due to some reasons. Pakistan still hopes to launch the satellite in 2018 so we will have to wait until the actual launch to say anything for sure. The initiative, if it becomes a reality, would be a big step forward to the space development programs in Pakistan.

### The Other Programs

Pakistan and China recently signed an agreement for the development and launch of PakSat Multi-Mission Satellite (PakSat-MM1) as well. PakSat-MM1 will primarily function as a communications satellite with the capability to provide Direct-to-Home (DTH) services. The agreement was signed between China Great Wall Industry Corporation (CGWIC) and Pakistan. As per the MoU, CGWIC and Pakistan will share the cost of the production, launch, and operations of the satellites equally. [\[1\]](#)



## WHOLESALE NEWS

### Osiptel Imposes New Rules on Tariffs and Charges

Peruvian telecoms watchdog the Supervisory Agency for Private Investment in Telecommunications (Organismo Supervisor de Inversión Privada en Telecomunicaciones, Osiptel) has made several changes to the rules for offering telecoms services with a view to strengthening consumer rights. Under the changes, from 1 June 2018 operators will no longer be allowed to charge a fee for imposing a cap on a post-paid subscriber's data consumption. In a linked development, the regulator has established the KB as the standard measurement for data use to prevent operators from rounding up consumption for higher charges. Measurements vary between operators, but Osiptel explained that, for example,

if a provider tracks data consumption in blocks of 200KB, the subscribers would be charged for 400KB of data after using just 210KB. Meanwhile, the regulator will also give subscribers up to 40 days to cancel a tariff change. Subscribers of mobile telephony, fixed telephony, CATV and broadband services can cancel a move to a different plan if they consider that provider has not fulfilled the advertised offer, or omitted relevant information in offering the service. Further, Osiptel chairman Rafael Muenta Schwarz added that: 'This provision will be applicable even in cases in which the operating company has ceased marketing the original tariff plan.'

### South Korean Cellcos Raise Concerns Over Plans for 'Universal Fare' Proposal

South Korea's mobile network operators are protesting against plans by the government to introduce a 'universal fare plan', according to The Korea Times. It is understood that the state is looking to revise the Telecommunications Business Act with a view to obliging the country's mobile market leader – currently SK Telecom – to market a tariff offering 200 voice call minutes and 1GB of data per month for approximately KRW20,000 (USD18.5). In response to the proposal, SK Telecom has argued the move represents excessive government intervention in its business and could ultimately harm

competition. While neither KT nor LG Uplus would be legally required to offer a similar plan, it has been suggested they would feel compelled to do so, to remain competitive, hence them also raising concerns over the government's plans. While the state has argued the introduction of the new plan is necessary to help households lessen mobile costs, an unnamed official at SK Telecom was cited as saying of the matter: 'The three telecom companies' operating profits could be reduced by about 60% once a universal fare plan is introduced.' The Regulatory Reform Committee is expected to hold its next meeting on May 11, with the

matter set to be discussed further at that date, and should it approve the proposal it would then go for deliberation at the Ministry of Government Legislation and a Cabinet meeting, after which it would be submitted to the National Assembly for a vote. Indeed, despite the protests from the nation's operators, the Ministry of Science and ICT (MSIT) has said it will continue to push for introducing the universal fare plan, citing it as one of the Moon Jae-in government's core projects and arguing that there has been a growing demand from the public for a reduction in the cost of mobile services.

### Austrian Government against Capping International Call Rates in EU

The Austrian Ministry of Transport led by Norbert Hofer fears "substantial losses" for operators if a European Parliament proposal to cap charges for international


calls in the EU goes ahead, reported Der Standard. Without coverage of the termination fees the Austrian operators pay to their international partners for

calls, the losses could mean the Austrian operators will lack money for network construction.

### ANCOM Lowers Wholesale Mobile and Fixed Number Portability Tariffs

Romania's National Authority for Management and Regulations (ANCOM) will lower the price of wholesale tariffs for the porting of mobile and fixed telephone numbers. The wholesale fee for porting a fixed number will be reduced to EUR4.64 (USD5.70) from EUR7.80, with the new figure determined by an assessment made

by benchmarking other European countries and their fixed number portability tariffs. The new tariff set by ANCOM for porting mobile numbers has been set at EUR2.13, dropped from a rate of EUR5.60 per number. This figure was once more reached after ANCOM undertook benchmarking of other European countries' mobile number

portability tariff prices. The updates in wholesale portability charges comes after a public consultation was held, with the regulator adding that the current fees were brought into force in 2010. ANCOM adds that the new prices will come into effect 15 days after ANCOM's decision has been published in the Romanian Official Journal. 

## TECHNOLOGY NEWS

### Shaw Completes its First 5G Trials

Canada's Shaw Communications announced the completion of its first 5G technical trials, conducted in Calgary in collaboration with Nokia, CableLabs and Rohde & Schwarz. Cable operator Shaw (owner of Freedom Mobile) reported that the trials used 28GHz mmWave and 3.5GHz spectrum, and CTO/COO Zoran Stakic added: '5G is set to completely transform the industry with faster wireless speeds that will help usher in the next industrial revolution and enable future technologies that we can only dream of today. We are pleased that our first trials have been a resounding success, and through our partnerships with best-in-class industry leaders we will work to better understand 5G's strengths and capabilities while continuing to invest in our network to offer Canadians a new era of strong and sustainable competition for the next generation of wireless technologies.' The 5G trials were conducted using pre-commercial equipment at Shaw's Barlow Campus Technology Centre, and leveraged developmental 28GHz licenses provided by Innovation, Science & Economic Development Canada (ISED). As part of this trial, Shaw also conducted comparative testing between 28GHz and 3.5GHz spectrum to better understand the



interoperability between two of the bands considered vital to the growth and proliferation of 5G.

### Two-Thirds of Fixed Internet Connections in Romania are Over 100 Mbps

Two-thirds of the total fixed internet connections in Romania provide download speeds of over 100 Mbps, according to telecom regulator ANCOM. The number of fiber-optics internet connections almost doubled last year to 1.1 million, ANCOM announced on Friday, May 18. The total number of fixed internet connections

reached 4.8 million at the end of 2017, up 7% compared to 2016. The growth was higher in rural areas, where the number of connections went up 13%, to 1.4 million. The total data traffic through fixed internet lines was 5.1 million TB, namely an average monthly traffic of 92 GB for each connection. The penetration ratio for fixed

internet connections was 58% at the end of 2017, up 4 percentage points over 2016. The leading operator on this segment had a market share of 49%, while its main competitors had 21% and 13% of the market. Digi Communications (RCS&RDS), Telekom Romania and UPC Romania are the main internet providers in Romania.

### JCI Receives Regulatory Certifications for u-LTE Base Station

Japan Communications Inc (JCI) has received Japan's first regulatory certification under The Radio Law and Telecommunications Business Law to establish an unlicensed LTE (u-LTE) base station in the country, pursuant with the Ministry of Internal Affairs and Communications (MIC's) amendment to the law on the designation of u-LTE

spectrum, which came into effect on October 1, 2017. Now, with all the required certifications having been received, JCI will look to develop u-LTE as part of a plan to 'level the playing field and enable many more operators to deploy LTE base stations and provide LTE services'. The company, which was established in May 1996 and later developed an MVNO business model,

says that u-LTE fits perfectly with JCI's founding principle 'to provide secure and reliable communications' and says that it is the optimal technology to deliver services such as secure and reliable office networks, or IoT networks. It is understood that the u-LTE base station it will use has been supplied by domestic wireless infrastructure provider Baicells.



## MTN to Deploy 4G Services in 900MHz Band

MTN South Africa has commercially deployed Huawei's CloudAIR 2.0 solution to share spectrum between 2G, 3G, 4G and NB-IoT technologies in the 900MHz band, claiming the deployment is a 'global first'. Huawei's CloudAIR 2.0 solution enables MTN SA to make more efficient use of its limited 900MHz spectrum allocation in order to achieve a 45% increase in LTE throughput within the band. Giovanni

Chiarelli, Chief Technology and Information Officer for MTN SA, said: 'Spectrum is an extremely precious asset. This new network optimization technique improves spectral efficiency and gives MTN the ability to deploy LTE within the same 900MHz band, alongside GSM, UMTS and NB-IoT, while significantly improving LTE coverage and user experience.'



## Cosmol to Trial 5G With Verizon and Samsung

South African telecoms company Cosmol is planning to deploy a trial 5G network, in partnership with New York-headquartered Verizon Communications and South Korea's Samsung Electronics. The network is scheduled to be operational by the third quarter of 2018, Cosmol CEO Iain Stevenson said. The trial, which will take place in Johannesburg, will consist of

two 'multi-sector' base stations to start, connected to fiber-optic backhaul. Multiple demonstration points will be established where members of the public will be able to experience 5G, which will deliver gigabit-class Internet access. Though the trial network will be non-commercial, customers will be connected to it and will use it in real-world environments,

Stevenson said. The 'point-to-multipoint' network will utilize Cosmol's spectrum assignment in the 28GHz band and pre-5G proprietary standard from Verizon's 5G Technical Forum, which will ultimately be converted into the 5G New Radio (NR) standards once they have been confirmed.

## BT and EE Aim for 5G in 2019

BT has said that it will aim to launch 5G before the end of 2019, through its mobile subsidiary EE. "We will look to have a commercial 5G product launched in the next 18 months," BT's CEO, Gavin Patterson, told members of the press. A 5G launch in 2019 would be slightly ahead of analysts' expectations who had predicted that 5G would arrive in the UK

in the second or third quarter of 2020. BT recently increased its annual capex budget for 5G to £3.7 billion. BT recently spent £302 million at the UK's 5G spectrum auction, with Patterson saying that he remained committed to investing in the UK's mobile network architecture. "We continue to invest for growth... securing 40MHz of 3.4GHz spectrum suitable for

5G mobile services. We are improving our customer experience across the Group, with our key metrics of Group NPS and Right First Time both strongly up. Our integration and restructuring activities remain on track. The integration of EE into BT is delivering run rate cost synergies of £290m," he said.

## NTT DOCOMO, NEC Strike 5G Base Station Equipment Supply Deal

NEC Corporation announced the signing of an agreement with Japan's largest mobile network operator (MNO) by subscribers, NTT DOCOMO, for the supply of 5G equipment to support the latter's planned commercial launch of the next generation of cellular services in 2020. Under the agreement, the vendor is slated 'to carry out development that enables existing communication equipment, such as high-density base station equipment, to

be fully compatible with 5G,' it said. NEC began deploying high-density base station equipment for the cellco in February 2015, which it notes is already compatible with the advanced Centralized Radio Access Network (C-RAN) architecture advocated by the MNO, and that is now being utilized as a base station control unit, NEC confirmed. 'Moreover, following a software upgrade, an advance in communications from LTE to LTE-Advanced has been achieved,' it

added in a statement. 'DOCOMO aims to deploy and expand our commercial 5G services efficiently by maximizing the use of existing communications equipment,' said Hiroshi Nakamura, CTO at DOCOMO, adding: 'This agreement with NEC is in line with that policy and we expect it to make a significant contribution to our 5G services. Going forward, DOCOMO accelerates co-creation of new services and businesses with vertical industry partners.'

## DOCOMO Carries Out 5G Field Trial at 28GHz to Demo High Speed Mobility

Japan's NTT DOCOMO is claiming a world first, with the successful completion of a 5G field trial at 28GHz, involving a 5G base station and a car travelling at around 293km/h (189mph). The mobile operator says the speeds used in the trials were designed to replicate those found on

Japan's high speed trains, whilst network handoffs were also tested. Working with NEC and parent company Nippon Telegraph and Telephone Corporation (NTT Corp), the carrier said the trials achieved 1.1Gbps ultra-high speed data transmission via downlink to the 5G mobile station. The

trials took place in April 2018 at the Japan Automobile Research Institute (JARI) using 700 megahertz of spectrum, and also included a live wireless relay of 4K high-frame rate video via uplink from a 5G mobile station moving at 200 km/h, according to DOCOMO.

## FCC Approves Samsung 5G Home Router; Verizon to Use Kit in Sacramento

A 5G home router developed by Samsung Electronics has been granted approval from the Federal Communications Commission (FCC), boosting Verizon's prospects of launching a commercial 5G fixed-wireless service before the end of 2018. A Samsung spokesperson informed Telecompetitor that the FCC authorization means that Samsung presides over the first 5G mmWave end-to-end solution to secure US government regulatory approval. The MIMO device will utilize millimeter wave (mmWave) spectrum in the 27.5GHz-28.35GHz band, the FCC filing clarifies. While the development has not formally been confirmed by Verizon itself, the Samsung spokesperson asserted that the newly approved equipment will be used in Sacramento – Verizon's previously announced fixed 5G launch market. In early 2017, Samsung and Verizon began 5G customer trials across seven US cities, and successfully tested FWA pre-commercial services using mmWave

frequencies. These trials were conducted in California, Georgia, New Jersey, Massachusetts, Michigan, Texas, and Washington DC.



## Proximus Activates NB-IoT Network

Belgium's operator Proximus beefed up its low power wide area (LPWA) offering with the launch of NB-IoT to support digital meter connectivity, adding to its existing LoRaWan platform. In a statement, the company said NB-IoT would be used to support the connection of 1.3 million digital meters, rolled out by gas and electricity power companies Eandis and Infrax by the end of 2022. Proximus said other applications were also possible in the future. The operator highlighted that the launch of NB-IoT on its network would supplement its mobile network, as well as its non-standardized LoRaWan network which it rolled out in 2015. LoRaWan, said the operator, was suitable for small data packets, "with the advantage that it works

with sensors with a very long battery life". By also supporting NB-IoT, a 3GPP standardized LPWA technology along with LTE-M and EC-GSM-IoT, Proximus said it can access "greater bandwidth" compared to LoRaWan, which is necessary for certain applications. "Energy consumption (on NB-IoT), too, is very low, which means that batteries can last for several years," said the company. For digital electricity meters, Proximus added that NB-IoT, with high bandwidth capability, was the right technology to pass on detailed user data to the distributed system operator. It said the customer can choose which data is shared and used, and the process was aligned with new European privacy laws. Proximus was clearly keen to

outline its continued commitment to LoRaWan, despite activating NB-IoT. It said the cellular rival would be used in applications which require "longer battery life or mobility", adding that the technology had been met with increasing success. LoRaWan is supported by the LoRa Alliance, a lobbying group which promotes the technology. Mobile operators including Orange, Bouygues, KPN and Swisscom also participate. For standardized LPWA technology, NB-IoT has proved popular in Europe, with large operators Vodafone and Deutsche Telekom deploying the technology, while LTE-M has become the technology of choice in the US with market leaders Verizon and AT&T completing nationwide launches last year.

## Unitymedia Launches Gigabit Speeds in Bochum



German cable operator Unitymedia has launched broadband speeds of 1Gbps in the city of Bochum in North Rhine-Westphalia, as part of its 'Gigabit-City Bochum' project. Around 90% (170,000) of households and businesses in the city are now able to access the high speeds thanks to the rollout of the DOCSIS 3.1 standard. In March 2017 Unitymedia revealed that it would deploy DOCSIS 3.1 in cooperation with the city of Bochum and local utility supplier Stadtwerke Bochum under the Gigabit-City Bochum partnership. The initiative will enable more than 95% of households and businesses in Bochum to access the high-speed service by the end of 2018.

## T-Mobile Eyes Spectrum above 95 GHz for 5G Backhaul

It appears that the spectrum that some refer to as "way out there" will be well-suited to support T-Mobile's 5G backhaul. Citing the FCC's Spectrum Horizons rulemaking, the "uncarrier" says the spectrum bands above 95 GHz can support wide bandwidths—up to 5 GHz—which means they can carry high-bandwidth wireless traffic where installation of a fiber optic line is difficult. In total, it notes that the commission could make 36 gigahertz of spectrum in the 95-275 GHz range available for backhaul applications. These bands have the ability to carry data over short ranges, and that makes them an ideal candidate for backhaul. In addition, these bands feature narrow beamwidths, so many links can coexist in the same geographical area because tighter beams are less likely to cause interference, the filing notes. T-Mobile points out that the commission is proposing service rules covering fixed use of the spectrum above 95 GHz available for licensing; most of that spectrum is also

allocated for mobile operations. However, the commission proposes no mobile service rules for the spectrum, an approach that T-Mobile generally supports. But a lot can change in a few short years. The 24, 28 and 39 GHz bands were initially designated by the FCC for fixed operations, and now they're seeing mobile use permitted and executed in those bands. "In authorizing fixed use of the spectrum above 95 GHz, the Commission should therefore be mindful of the potential to use the spectrum for mobile service in the future," the operator said. T-Mobile also noted that converting spectrum for mobile use does not appear feasible at 70 and 80 GHz in part because of the proliferation of individual links throughout those bands. But T-Mobile generally supports the commission's approach to using the 70/80/90 GHz band rules as a model for spectrum use above 95 GHz, although it wants the commission to modify antenna standards. Interestingly, T-Mobile is

also urging the commission to impose a performance reporting requirement at the end of the time permitted for construction of individual links. Citing a Fixed Wireless Communications Coalition proposal (PDF), the operator said it supports rules that would require licensees to certify that facilities associated with their site registrations and frequencies are actually in use. T-Mobile's suggestions are among many others the commission will consider as it contemplates rules for the spectrum above 95 GHz. In launching the proceeding, FCC Chairman Ajit Pai acknowledged that some people are skeptical that this spectrum can be used productively, but the skeptics have been proven wrong before. Some said the spectrum above 3 GHz wasn't really useful for mobile communications, yet midband spectrum is very popular today—and millimeter wave licenses above 24 GHz have already drawn multibillion-dollar attention from the private sector on the secondary market.

## TDC Achieves 1.9Gbps Speeds in 5G Trial

Danish telecoms group TDC has trialed what it claims is 'the final 5G technological standard' using 100MHz of spectrum in the 3.5GHz band awarded by the Danish Energy Agency (DEA, or Energistyrelsen). The company said it achieved transmission speeds of 1.9Gbps in the trial, in partnership with Huawei. Group

Strategy Director Lasse Pilgaard said: 'TDC accounts for the majority of all network investments in Denmark and will be crucial for rolling out 5G in Denmark. For three consecutive years, we have had Denmark's best mobile network, we have the capacity and customers to make 5G real and we are already in the process of increasing and

working with large amounts of data with the rollout of our NB-IoT network directly on the mobile network.' The executive added that TDC Group now aims to deploy the first 5G antennas in the mobile network during 2019.

## Samsung Applies New RF Planning Tools to mmWave

Millimeter wave spectrum has not been well understood, especially as it relates to 5G, so whatever network planning tools an operator can tap are likely going to be appreciated. That's why Samsung Electronics America made a point of developing RF network planning tools that could evaluate propagation characteristics before an installer even goes out into the field. Because of beam forming and the way millimeter wave propagates, "the existing RF planning tools really aren't well-suited to the needs of operators," Alok Shah, vice president of Networks Strategy, Business Development and Marketing at Samsung Electronics America, told FierceWirelessTech. "Those will continue to get better, I'm sure, but we wanted to make sure that was not an impediment to successful deployments, so we built some

RF siting tools that our partners are using in early network planning and deployments." Verizon selected Samsung to supply fixed wireless access (FWA) solutions for its 5G commercial launch in Sacramento later this year. Last week, Samsung said its end-to-end 5G portfolio is now FCC certified. Verizon plans to launch three to five fixed 5G markets this year but hasn't named the other markets. Samsung's portfolio includes the access unit and indoor and outdoor home routers. In most cases, the indoor router will be sufficient, but it depends on the characteristics of the physical structure and surroundings. "We believe in the majority of cases, an in-home router will get the job done, but there are going to be some number of homes where, for whatever reason, we need to get a little boost, so then the outdoor home

router is an option," Shah explained. Each router has the same basic functionality, but for some homes where there's a lot of foliage in the yard, the elevations are tricky or the building materials are made of thick concrete, an outdoor router might be the answer. That's where the RF network planning tools come in handy. Millimeter wave spectrum really has not been well understood, especially for 5G, "so we've done a lot of work" around RF planning to understand what the propagation looks like before the installer gets there, he said. Samsung's network planning tool is a cloud-based solution that uses cloud processing to get the proper amount of computational resources where they're required to basically map where the beams are going and where the router should sit to get the best-possible signal strength. It's worth noting the differences in RF planning for a mobile world versus fixed. Because the mobile units are always moving around, the RF modeling involves estimates about where the units and users will be at a given time and place. Mobile users are constantly moving around, so engineers need to create a bubble of coverage that covers a set of locations. In fixed wireless, the end user isn't around so much, so it's a matter of figuring out where the router is going to be and what provides the ability to do more accurate network planning. Samsung has done research in millimeter wave propagation since about 2010 with universities and operator partners around the world and at its own campus in South Korea. Of course, it's also learned a lot through its trials with Verizon in the U.S.; Samsung was involved in seven of Verizon's 11 trial markets.



## DT Activates 5G Antennas in Berlin

Germany's Deutsche Telekom (DT) has announced that the first 5G antennas in Europe to fully support the new communications standard are now operating, in real-world conditions, in downtown Berlin. The antennas, in three cells located in Leipziger Strasse and three in Winterfeldtstrasse, are based on 5G New Radio (5G NR) and are using

frequencies in the 3.7GHz band under a testing license. The implementation is using commercial 5G equipment from Huawei. An additional 70 cells are to be installed by the summer, across more than 20 sites. 'We're continuing on our strong preparation course for the rollout of 5G in 2020,' noted Claudia Nemat, DT Board member for Technology and Innovation.

'Today, right in the heart of Berlin, we're taking the next decisive step – with the successful integration of commercial 5G technology into our network. We want to ensure that 5G is going to deliver on its promise of enhanced mobility, high speed and low latency.'

## Digi, Ericsson Unveil 5G at Event in Bucharest

RCS&RDS (Digi), Romania's fourth largest cellco by subscribers, has partnered with Swedish vendor Ericsson to demonstrate 5G at an event in Bucharest. At the conference the two companies demonstrated the use of 5G technology by testing 5G connection speeds of up to 10Gbps through a prototype platform, as well as signal latency reduced to one tenth of current 4G technology. Digi and Ericsson also demonstrated how the new 5G technology can be used for independent vehicles interacting with traffic lights and

can improve road safety. Mircea Rebegea, Ericsson Country Manager Romania said: 'The Digi Mobil network is ready for the 5G evolution and it will allow Digi Mobil users, companies, state institutions and residential users to connect to the objects that surround us ... The new equipment in our network is already at the level of 5G future technology, allowing us in the future to offer Digi Mobil users an improved experience with 5G features – increased access speed, low latency and IoT.'



## Tele2 Netherlands Launches VoWiFi

4G mobile operator Tele2 Netherlands has launched VoWiFi (a.k.a. Wi-Fi calling), it announced on its website, noting that the solution solves the problem of poor signal

in deep indoor locations and/or blocking by thick concrete walls in offices or homes. VoWiFi calls for Tele2 subscribers do not attract any data usage charges, and the

service is now available for consumers and business customers with compatible devices, activated via a downloadable app.

## Qualcomm Eases Patent Rules for 5G

Qualcomm implemented changes to its patent licensing model to make the unit more flexible, a move which could help mend soured relations with regulators and major customers Apple and Huawei. Speaking to Reuters, the company's patent licensing head Alex Rogers said it had broadened use of its licensing model for 5G and Qualcomm could receive a lower rate for deals struck in the future. The move could also make the business more dependable if regulators believe the terms are favorable – as long as Apple as well as a number of other major customers resolve their ongoing disputes with Qualcomm. Qualcomm's patent business has generated a large bulk of the company's profit for years alongside its chip business, but the unit has courted controversy with handset makers as well as been

subject to a number of global regulatory fines. Currently, handset makers have the option of licensing two sets of Qualcomm patents. It offers a "full suite" which costs companies around 5 per cent of the cost of the handset, or "standard essential patents" which only includes patents for equipment on mobile data networks for a rate of 3.25 per cent of a handset cost. Reuters reported that customers tended to license both sets to avoid legal action, but Qualcomm has now moved to make it easier for customers to only license the "standard essential patents", while adding additional patents for future 5G networks to the suite at no extra cost. Qualcomm's Rogers, however, clarified it had "not lowered the rate. What we're doing is including more technology, more intellectual property in the offering without

increasing the price. What we're doing here is creating a foundation for stability going forward", he added. Last week, the company did state it would review its patent licensing fees against the first \$400 of a handset. Previously the cap was set at \$500. Rogers did not reveal the status of its ongoing license disputes with its two major customers, Apple and Huawei. Last month, The Wall Street Journal reported Qualcomm had entered into advanced talks with Huawei about settling an ongoing patent dispute. Apple in 2017 also accused Qualcomm of overcharging customers which has led to a war of words between the two. Qualcomm also recently faced accusations by regulators in South Korea and China for abusing its dominant market position due to its licensing regime. 

## REGULATORY NEWS

## European Commission Vows to Spend €1.5 Billion on Artificial Intelligence by 2020

EU Commission Vice-President Andrus Ansip said ethics guidelines on artificial intelligence will encourage investors to spend money on the technology. The Commission will publish a document outlining ethical issues relating to AI by the end of 2018. The Commission announced that it will invest €1.5 billion into artificial intelligence research over the next three years, and was promptly hit with criticism for drafting its strategy years after the United States and China started their own massive funding plans. The new commitment marks a drastic increase of EU funding into AI, an emerging technology that is used for robotics and other digital services like climate prediction tools or health applications that analyze large amounts of data. On top of the €1.5 billion pledge by 2020, the Commission plans to leverage funding from EU member states and private companies worth a total of €20 billion during the same time. After 2020, Brussels wants EU-wide funding levels to rise to €20 billion per year. The funding plan is a significant change and would mean



a 70% increase compared to current EU investments in AI. But for some tech policy observers, the Commission's plan came too late. The US and Chinese governments started pumping public money into AI research two years ago, and private investments in both countries are much higher than in Europe. "I hope the Commission will speed up, but it's late. They could have done it

two years ago," said Mady Delvaux, a Centre-left Luxembourgish MEP who drafted a European Parliament report on robotics in 2017. Delvaux's opinion paper called for an EU response to issues relating to the legal responsibility of robots and autonomous vehicles. The Commission plans to publish guidelines by the end of this year on liability, the transparency of companies' algorithms and other ethical complexities relating to artificial intelligence. First, it will bring together a group of experts on AI by July who will spend the next few months drafting that document. The EU strategy emphasizes its "human-centric" approach to AI, and bills the bloc's focus on ethics as a selling point for Europe that will give companies a competitive advantage over tech giants in the US and Asia. "For investors, this ethical code will be needed. In case we don't have this ethical code about human-centric artificial intelligence, somebody could invest huge amounts of money and then, later on, say, 'You've created a Frankenstein,'" Commission Vice-President Andrus Ansip told reporters this week. With EU guidelines, and later on, potentially legislation on AI ethics in place, companies could market their products—whether those are internet-connected home entertainment systems, autonomous cars or smart hospital devices—as safer and subject to human oversight, according to the Commission's thinking. Since the Commission's current term ends next year, it will be up to the next administration to decide whether to propose new EU legislation regulating the technology. But Delvaux warned that member states might start drafting their own national rules before then. She said the Commission should propose legislation applying to all member states now "to show its ownership of the European approach to the single market." Some member states are already ahead of the EU plans. French President Emmanuel Macron announced a plan last month to invest €1.5 billion in AI by 2021. In its coalition agreement from February, the new German government promised to set up a research Centre and to work together with France to advance the technology. The Commission wants to encourage other member states to come up with similar national programmes.

## Viva Offers USD30M for Unsold AWS Frequencies

Trilogy Dominicana (trading as Viva) has reportedly submitted an offer to the Dominican Telecommunications Institute (Instituto Dominicano de las Telecomunicaciones, Indotel) for unsold AWS spectrum in the 1710MHz-1720MHz/2110MHz-2120MHz and

1730MHz-1735MHz/2130MHz-2135MHz bands. The locally-owned cellco has offered to pay USD30 million for the frequencies, and has submitted 10% of the final offer as a guarantee. According to TeleGeography's GlobalComms Database, in May 2014 Claro Dominicana and Orange

Dominicana (now Altice Dominicana) agreed to pay a total of DOP3 billion (USD60 million) for spectrum holdings in the AWS and 900MHz bands, although Viva opted not to participate in the process.

## 3GPP Polishes Final Mobile 5G Standard



The 3GPP kicked off the final meeting to complete its mobile 5G standard, aiming to nail down a handful of key specifications ahead of the standard's expected approval

in June. Around 1,500 vendor and operator contributors, from companies including Samsung, Qualcomm, Verizon, AT&T, NTT DoCoMo, KT and SK Telecom gathered in Busan, South Korea to put the finishing touches on the standard at a meeting running from May 21 to May 25. Among other things, Samsung (which is hosting the meeting) said in a statement the working groups will decide the radio performance requirements for 5G terminals and base stations, including for the 3.5GHz and 28GHz bands. Completion of the standalone 5G standard at this meeting follows 3GPP's approval of a non-standalone 5G New Radio (NR)

specification in December 2017, which allows operators to add a 5G layer to their existing 4G LTE networks. The standalone standard will specify full user and control plane capabilities for 5G NR, allowing operators to launch pure 5G networks. Samsung noted the finalized requirements will help inform radio regulations for 5G launches in countries including Korea, the US and Japan. Regulators in the US and Korea have scheduled auctions of 5G spectrum for later this year, ahead of expected mobile 5G launches from operators in both countries in late 2018 and 2019.

## AKEP Rejects Neofone Appeal

Albania's Electronic and Postal Communications Authority (Autoritetit Te Komunikimeve Elektronike Dhe Postare, AKEP) has dismissed an appeal from VoIP provider Neofone regarding termination of international voice calls on mobile networks. Neofone claimed that AKEP's decision to handle the termination of national and international calls on mobile networks as two different markets 'violated the principle of non-discrimination according to EU directives' which state that the origin of traffic is to be disregarded, adding that the EC has defined only a market for call termination on public mobile networks. The provider

went on to state there was no competition in the market, as each cellco had a monopoly on the termination of calls on their respective networks, and requested that the regulator designate the providers as having significant market power (SMP) and to impose the same measures on calls of an international origin as those that originate within Albania. AKEP refused the request, saying that it had covered the matter in the mobile market analysis and other documents. AKEP's position is that international call termination in a mobile network is not part of the relevant call termination market in mobile networks and, as such, the SMP obligations are

only applicable to national calls. The regulator went on to note that subject is also under consideration, pointing out that the document 'Mobile market analysis: wholesale access and origin market: wholesale international call termination and retail market of mobile service' had been approved for public consultation in February 2018 and was due to close on 28 April 2018. The consultation is taking opinions from operators, the competition authority and the Body of European Regulators for Electronic Communications (BEREC).

## Cogeco Dominates Bidding in Canadian 'Residual Spectrum Auction'

Cogeco Communications – bidding through its Cogeco Connexion subsidiary – has successfully bid on 23 licenses comprising 2300MHz and 2500MHz spectrum, primarily covering its Ontario and Quebec fixed line footprint, in the auction for 'residual spectrum licenses' held by Innovation, Science & Economic

Development (ISED) Canada. The cableco paid CAD24.3 million (USD18.8 million) for the frequencies, which cover a total of 5.415 million people. Other bidders include: Freedom Mobile, which paid CAD8.642 million for eleven 2500MHz licenses; Xplornet, which paid CAD8.235 million for 16 2500MHz permits; Ecotel, which paid

CAD1.245 million for a combination of 700MHz and 2500MHz concessions; Telus Communications, which paid CAD907,000 for a pair of PCS-G licenses; and Iris Technologies, which acquired a solitary 700MHz license for CAD100,607.

## Portuguese Regulator ANACOM Says Universal Service No Longer Needed

Portugal's National Communications Authority (Anacom) has recommended ending the universal telephony service. Over the past five years, the universal service has cost EUR 23.8 million, a cost indirectly borne by all consumers that cannot be justified given the low usage of the universal services, the regulator said. According to Anacom, this amount could be applied in a different way, namely to satisfy

in an effective and at lower cost essential needs, to invest in the development of telecommunications, for example in the provision of the internet to the whole population, and to reduce the prices of communications. The regulator noted further that fixed and mobile networks and retail services are already widely available, and several other European countries have also abandoned universal service

contracts. The announcement confirms Anacom's earlier recommendation that the universal service be ended. It will be up to the government to decide whether to introduce the necessary legislation. Nos is the current provider of the universal service and has rejected any renegotiation of its current contract.

## FCC Details Moves to Ease 5G Path

Federal Communications Commission (FCC) Chairman Ajit Pai used a newspaper article to state there is much the regulator "can and should do to help American consumers seize the opportunities of 5G". "There's a global race to become the first country to deploy 5G networks, with China, South Korea and Japan offering strong competition. But we want the United States to lead in 5G," Pai wrote. Alongside a recent visit to Florida, Pai used an editorial in Tampa Bay Times to state: "we need to remove regulatory barriers that can slow network buildout". 5G networks, the chairman continued, will require "thousands of small cells, densely packed together, relatively less conspicuous and operating at lower power", leading the regulator to update its rules to "make clear that this smaller infrastructure shouldn't trigger...reviews designed for 200-foot-tall towers". Unsurprisingly, spectrum was also high on the agenda. The watchdog recently voted to seek public input on procedures for a spectrum auction scheduled to start on 14 November, with another one "to follow immediately thereafter". The aim is to repurpose under-used high-band frequencies for 5G.



And security was another hot topic, with Pai reiterating that FCC subsidies would not be available for networks "from companies that raise national security concerns". "Unfortunately, companies can use hidden backdoors in their network equipment to allow hostile foreign governments to spy on Americans, inject viruses, steal data and more," he wrote.

## DRC Adopts new Telecommunications Act; Cellcos Handed LTE Licenses

The Democratic Republic of Congo's (DRC's) National Assembly has adopted a new Telecommunications Act to update the nation's aging legal framework for the sector, bring the rules in line with the country's needs and to align with other relevant legislation. In a statement, the government explained that the Telecommunications Act features 'more than ten major innovations,' including an overhaul of the licensing regime, the withdrawal of the state from the commercial sector and the revision of technological/legal definitions with a view to adapting

the rules to reflect the convergence of networks and services. Also covered by the legal overhaul are general principles on interconnection, sharing of infrastructure and the management of scarce resources such as spectrum and numbering. Competition has also been put under the spotlight, with the Act implementing specific obligations for operators deemed to have significant market power (SMP), whilst the jurisdictions of the ICT Minister and the regulatory authority have been clarified. In a related development, the government awarded 4G licenses to each

of the nation's cellcos last week, though only Vodacom and Orange have confirmed the allocation. For its part, Vodacom has announced the 'official' launch of LTE services, with a notice on its website inviting customers to obtain a 4G SIM card from its retail outlets, although further information is initially scarce. Similarly, details regarding the license award – including price, frequencies, rollout obligations and other terms – have not yet been made available to the public.



## Senate Votes to Overturn FCC Net Neutrality Repeal

The US Senate has voted to overturn the Federal Communications Commission (FCC's) rollback of Obama-era Net Neutrality regulations. Three Republicans – Lisa Murkowski of Alaska, John Kennedy of Louisiana and Susan Collins of Maine – joined the Democratic minority in voting to turn back the FCC's decision. Despite the positive outcome of the Senate vote, however, the measure faces little chance of passing in the Republican-controlled House of Representatives, observers have noted. As previously reported by CommsUpdate, last week the FCC announced that its controversial 'Restoring Internet Freedom Order' would take effect on June 11, 2018, effectively abolishing existing Net Neutrality principles. Net Neutrality is the principle that ISPs must treat all online data equally, and not discriminate or charge differently depending on user, content, website or application.



## DoT Approves Telenor Acquisition by Airtel

The Department of Telecommunications (DoT) has greenlit the long-delayed acquisition of Telenor India by Bharti Airtel, after the Supreme Court rejected the regulator's attempt to force Airtel to supply a bank guarantee of INR14.99 billion (USD222 million) as a prerequisite for its approval. The duo had initially agreed the deal back in February 2017, and passed the majority of its regulatory hurdles by June that year, although approval from the National Company Law Tribunal (NCLT) took until January 2018. The DoT, however, had refused to approve the pact until the

operators had submitted deposits relating to contentious spectrum charges, which are the subject of an ongoing, decade-long legal dispute. In its announcement, the DoT explained that it has now transferred all of Telenor's concessions, licenses and resources to Bharti Airtel, along with all of the Norwegian-owned cellco's liabilities – including those of the quashed licenses and spectrum previously granted to Unitech Group. As previously reported by TeleGeography's CommsUpdate, the terms of the cash-free merger will see Airtel take over Telenor's spectrum, infrastructure

and subscribers, along with its outstanding spectrum payments and other operational contracts.



## Bahrain: More Than a Quarter Million Telecoms Devices Imported In Q1 2018

The Telecommunications Regulatory Authority (TRA) issued statistics on telecommunications equipment imported into the Kingdom of Bahrain within the 1st quarter of 2018. The total number of imported units through the first three months of the year reached 268,898 units. These units are subject to a set of technical and safety requirements as part of TRA's regulatory process to ensure end users and consumer protection. The imported units are telecommunications devices that are part of or connected to a public telecommunications network. It is also worth noting that in 2017, the TRA has processed more than 1.5

million units. TRA's electronic approval system, adopted in early 2016, has made processing telecoms equipment imports more efficient with overall requests taking less than 2 days. Data showed that the volume of importing terminal equipment (cell phones, smartphones, fax machines, printers, scanners, tablets) in 2017 reached 1,286,476 units (85%). Passive Equipment (wires, fiber optics) reached 87,021 units (6%). The number of phone spare parts imported amounted to 139,257 units (9%). "TRA's regulatory process on importing telecommunications equipment into the Kingdom of Bahrain is aimed at controlling the importation of telecommunications

equipment into the Kingdom through the necessity of acquiring prior approval on importing telecommunications equipment from TRA and the concerned entities. This will lead to ensuring safer public networks in the Kingdom, as some equipment may not meet emission safety standards, and may not be compatible with Bahrain's telecoms networks, which may harm existing telecommunications networks and consumers if it is imported and used in the Kingdom of Bahrain." Says TRA's Technical & Operations Director, Eng. Mohammed Alnoaimi.

## Apple Presses For More Unlicensed Allocations in Superhigh Spectrum Bands

While the FCC is taking comments about how it should treat the superhigh spectrum bands, Apple is urging regulators to include more unlicensed spectrum bands in their plans. It's not asking for parity between licensed and unlicensed bands, but it says what's currently been proposed far too heavily favors licensed technologies. One thing the commission could consider is permitting unlicensed technologies to share these superhigh bands with licensed services, according to Apple's filing. The commission already has proposed innovative sharing opportunities between fixed service, fixed satellite service (FSS) and unlicensed services in its Mid-Band Spectrum Notice of Inquiry, and such sharing mechanisms should be explored and implemented at the outset in the bands above 95 GHz, according to Apple. The tech giant is also recommending that the commission establish larger unlicensed bandwidths. Thus far, the proposed unlicensed bands range from 1 gigahertz to 7.2 gigahertz wide—too narrow to enable

optimal use of the type of technologies that are being developed today. ETSI and the Electronic Communications Committee of the European Conference of Post and Telecommunications Administrations are working to advance new short-range radiodetermination applications that would operate between 120 GHz and 260 GHz and would require bandwidths of 20 gigahertz or more to function optimally. Existing forms of this kind of technology are central to various industries, including environmental protection, human safety and manufacturing, Apple said. Providing room to develop these technologies at higher frequencies with larger bandwidths has the potential to significantly improve the fidelity of these technologies, supporting applications that are feasible today, the company said. Likewise, the ITU has started studying the use of spectrum between 275 GHz and 450 GHz for high-speed, short-range communications technologies, which would also depend on sufficient spectrum for very wide

bandwidth operations. "Therefore, while it is true that this spectrum is largely a 'blank slate' today, there are already concrete examples of likely uses for these bands that should be considered in the commission's decision-making," Apple stated. Some commenters in the proceeding are advising the FCC not to move too fast on rules for the bands above 95 GHz because so much could change technology-wise and they don't want to get stuck with rules based on old knowledge. Apple said the FCC should avoid restrictive rules that would preclude the technologies that have begun to emerge and instead use known examples to inform its expectations about unknown future uses. "Prematurely restricting operations above 95 GHz—by, for example, creating only a few narrow unlicensed bands—without reliable information about the technical characteristics of future systems may also threaten future U.S. competitiveness in emerging wireless technologies," the company said.

## GSMA Warns Against Inconsistent EU Privacy Rules

Three days before the EU's vaunted General Data Protection Regulation (GDPR) comes into force, mobile trade association the GSMA called for a similar approach to be adopted in an update to privacy rules applicable to operators. GDPR imposes new rules on companies' storage, and use, of consumer data within the EU. The association said while this legislation struck the right balance between being pro-industry and pro-privacy, proposed separate rules applicable to mobile operators placed an unfair burden. The GSMA added operators were already subject to a greater number of regulations than other companies operating in the digital space, an inconsistency which should be addressed in new e-privacy regulation (ePR) currently working its way through the European Council. ePR is a proposal put forward by the European Commission to replace the existing e-privacy directive. The new legislation covers the provision of digital services,

but is also designed to take into account new technologies – such as the IoT – which have emerged since the adoption of the e-privacy directive in 2002. Plans to update the directive in 2016 placed operators and internet companies at loggerheads. GSMA chief regulatory officer John Giusti (pictured) said: "The specific obligations imposed by the European Commission's current proposal for the ePR would be detrimental to the mobile industry's ability to innovate and invest in future technologies, such as 5G, the IoT, [artificial intelligence] AI and big data." "Data privacy regulation is essential, but fair competition and consumer protection require the consistent application of privacy regulations," he added. The association argues ePR proposals impose too many restrictions on the way operators can use metadata, which could prevent legitimate, unobtrusive use of information and – as a result – hold back innovation, negatively impacting society and the



wider economy. "Europe needs greater alignment between the ePR and the GDPR to support individuals' fundamental rights, while permitting technological developments and spurring investment. Otherwise, this lack of consistency in European privacy regulation could harm consumers' interests in the long term by denying them the potential benefits of new communications services in the future," Giusti concluded.

## Korea Reveals Cost of 5G Spectrum

South Korea announced the reserve prices for 5G spectrum in two bands which will be sold to the country's three mobile operators in an auction in June, Yonhap



News Agency reported. SK Telecom, KT and LG Uplus will bid for 28 blocks in the 3.5GHz band and 24 blocks in the 28GHz band. The Ministry of Science and ICT set the reserve price for the 3.5GHz blocks at KRW2.65 trillion (\$2.49 billion) and for the 28GHz blocks at KRW621.6 billion, the news agency said. The reserve price for 4G spectrum sold in 2016 was set at KRW2.6 trillion. Operators can begin using the spectrum in December, with the 3.5GHz band covering a ten-year period and the 28GHz band a five-year term. The government last week mandated operators

share 5G infrastructure in a bid to reduce the cost of rolling out the technology and so enable operators to pass on the savings to customers. The plan covers operators' core fiber resources rather than RANs, so demand for 5G spectrum in the upcoming auction is expected to be intense. KT, the second largest mobile operator in South Korea, announced in late March it plans to start commercial 5G service in March 2019, which will make it one of the first operators in the world to launch the next-generation mobile technology.

## Panama's National Assembly Paves the Way for Mobile Merger

Panama's Plenary of the National Assembly (El Pleno de la Asamblea Nacional) has approved the previously proposed Law No. 479, which repeals certain articles included within Law No. 5 from February 1995, as well as additional legislation from 1996, thus paving the way for consolidation between local mobile operators. First tabled in April 2017, the new bill was designed to help reduce the Panamanian mobile sector from four operators to three,

in an effort to make better use of the country's spectrum resources. According to the National Assembly website, Law No. 479 was finally approved late last month, following a third debate on the subject. According to TeleGeography's GlobalComms Database, Panama is currently home to four mobile operators, namely: Telefonica-backed Movistar Panama; Cable & Wireless Panama (CWP), which is now owned by Liberty Latin

America (LLA); Digicel Panama, a unit of Irish-owned pan-Caribbean operator Digicel Group; and Claro Panama, a subsidiary of Latin American mobile giant America Movil (AM). Law No. 479 has been strongly contested by the incumbent operators, and it remains to be seen which operator will be squeezed out of the market.

## Court Moves Airtel to Brink of Closing Telenor India Buy

India's Supreme Court dismissed an effort by the Department of Telecommunications (DoT) to require Bharti Airtel to provide a bank guarantee of INR15 billion (\$222 million) as a condition for approving the market leader's bid to acquire Telenor India, The Economic Times (ET) reported. The decision paves the way for the long-awaited deal to be finalized, the newspaper said. The court rejected DoT's bid to halt a directive by the Telecom Disputes Settlement and Appellate Tribunal for DoT to clear the acquisition of Telenor's unit without requiring Airtel to have a guarantee.

A lawyer attending the proceedings told ET: "The consequence is that the deal will go through immediately." To approve the buyout, DoT asked Airtel to provide a bank guarantee equal to one-time charges for spectrum allocated without an auction and pay more than INR2 billion for deferred payment for spectrum owed by Telenor India, ET reported. The Telecom Disputes Settlement and Appellate Tribunal turned down the guarantee request, but Airtel paid the INR2 billion for Telenor's spectrum. Airtel agreed the deal to acquire Telenor India in February 2017. The acquisition

received approvals from the Competition Commission of India, the Securities & Exchange Board of India, the National Company Law Tribunal and the country's stock exchanges. Media reports last month, however, suggested the deal could be derailed as lengthy delays in the approval process and mounting losses could force the Norway-based group's business to begin bankruptcy proceedings, Telenor said in its Q1 2018 earnings call it still expects the deal to go through, citing the current quarter as a likely completion date.

## True Move May Have to Skip 1800MHz Auction

True Move, Thailand's second largest wireless operator by subscribers, may be unable to participate in the planned 1800MHz spectrum auction scheduled for August, unless the bidding is postponed by at least three months, The Bangkok Post writes. According to an unnamed industry source, the operator would not have enough time to raise the THB37.45 billion (USD1.16 billion) minimum reserve price to bid for the frequencies if the current auction schedule is followed. As previously reported by TeleGeography's CommsUpdate, the National Broadcasting

and Telecommunications Commission (NBTC) launched the 1800MHz spectrum pre-auction process on 26 April. The NBTC will auction three blocks (2x15MHz each) with a reserve price of THB37.45 billion (USD1.2 billion), valid for 15 years. All interested bidders are invited to submit their applications on 15 June, with the NBTC scheduled to announce the qualified bidders by 2 August; the tender itself will be held on 4 August. All bidders must deposit THB1.87 billion as a bid guarantee to participate in the tender. If only one bid is received, the regulator will postpone the

auction for 30 days and if no applications are received during the grace period, one concession will be auctioned to the bidder at a 'one-time increment of THB75 million on the THB37.45 billion reserve price'.



## CTIA, CCA Urge FCC to Add 37, 39 and 47 GHz Bands to 24 GHz Auction

CTIA and the Competitive Carriers Association (CCA) don't always see eye to eye, but both organizations are urging the FCC to add the 37, 39 and 47 GHz bands to the auction of the 24 GHz band. Specifically, CTIA recommends these bands be combined "to the extent that doing so would not cause substantial delay." The organization points out that not only have these bands been the focus of standards and technology development, but the commission already has adopted technical and licensing rules for these bands, making them ripe for auction as soon as possible, according to a May 9 filing (PDF) with the commission. The CCA continues to urge the FCC to auction all millimeter wave spectrum simultaneously, and at a minimum it would like to see the 37, 39 and 47 GHz bands combined with the 24 GHz in one auction, saying that delaying auction of these other bands could stymie the development of millimeter wave equipment. And, if the commission decides not to auction all of these bands simultaneously, it should at least auction the 47 GHz band with the 24 GHz band, according to CCA's filing (PDF). T-Mobile, a CCA member, has repeatedly urged the commission to auction all millimeter

wave spectrum at once. But in its May 9 filing (PDF), it said if the government intends to hold the 28 GHz and 24 GHz auctions, it should provide sufficient time between the two quiet periods to allow carriers to assess the results of the first auction and prepare for the second. CTIA also is concerned about the implications if the commission adopts a proposal to apply the anti-collusion rules across two auctions and include applicants in both. "Given the ambiguity of the Commission's anti-collusion rules, longer application of the rules could have a chilling effect on the wireless industry's ability to conduct non-auction related business negotiations, as providers traditionally have shied away from any such discussions to avoid the appearance of impropriety," the association said. CCA says the FCC should not apply its anti-collusion rules from the 600 MHz incentive auction to millimeter wave auctions and it should clarify that each individual millimeter wave auction will have a separate and distinct quiet period. As currently drafted, the commission's anti-collusion rules for the 28 and 24 GHz auctions are "overly restrictive for carriers, including those other than the nationwide carriers, in both application and breadth,"

the association said. It's worth noting that CTIA also is urging the FCC to develop and release a calendar that outlines the commission's plans for auctioning additional high- and mid-band spectrum for 5G. At least a couple of the FCC's own commissioners have said a calendar of upcoming spectrum auctions would help the industry. During last month's open FCC meeting, Democratic Commissioner Jessica Rosenworcel said the commission needs to publish a calendar that states clearly to the entire wireless ecosystem just when and how the FCC will auction new airwaves to support 5G services. Republican Commissioner Michael O'Rielly also has called on the agency to let wireless providers know when other auctions will be held so they can formulate their business plans, create auction strategies and obtain the financial resources they need to participate. CTIA continues to argue that it is imperative that the U.S. retain its wireless leadership in the transition to 5G. South Korea will be auctioning spectrum in the 28 GHz band in June. China has launched a consultation regarding the planning and use of millimeter wave spectrum for 5G and expects to conduct trials in more than 100 cities in 20 provinces.

## T-Mobile, Sprint Say \$26 Billion Deal Would Give U.S. Tech Lead Over China

T-Mobile US Inc and Sprint Corp said on Sunday they had agreed to a \$26 billion all-stock deal and believed they could win over skeptical regulators because the merger would create thousands of jobs and help the United States beat China to creating the next generation mobile network. The agreement capped four years of on-and-off talks between the third and fourth largest U.S. wireless carriers, setting the stage for the creation of a company with 127 million customers that will be a more formidable competitor to the top two wireless players, Verizon Communications Inc and AT&T Inc. U.S. regulators, who

have challenged in court AT&T's \$85 billion deal to buy U.S. media company Time Warner Inc (TWX.N), are expected to grill Sprint and T-Mobile on how they will price their combined wireless offerings. Verizon has 116 million U.S. wireless customers, according to a spokesman, while AT&T has 93 million branded customers, as of the first quarter. Their first round of merger talks ended unsuccessfully in 2014 after the administration of then-U.S. President Barack Obama expressed antitrust concerns. The new deal will create the highest-capacity U.S. network, lower prices, create jobs and improve service



in rural areas, said John Legere, the chief executive of T-Mobile and the new head of the proposed combined company.

## Sri Lanka's Telco Merger to Relieve Competitive Pressure: Fitch

The merger between Hutchison Telecommunications Lanka (Private) Ltd and Etisalat Lanka (Private) Ltd is likely to relieve some competitive pressures that have undermined Sri Lankan telecom companies' revenue and EBITDA growth in recent years, Fitch Ratings said. However, the merger is unlikely to affect the ratings on market leaders Sri Lanka Telecom PLC (SLT) and Dialog Axiata PLC. This is because SLT's 'B+' Long-Term Issuer Default Rating will continue to remain constrained by the Sri Lanka sovereign rating, while the 'AAA(Ika)' National Long-Term Ratings on SLT and Dialog are at the highest level of the scale. The long-overdue industry consolidation, announced on 26 April 2018, is likely to provide some relief from pricing pressure, especially in the



data segment, where telcos have not been able to fully capture the strong growth in data traffic. However, Dialog and SLT's free cash flows will continue to be negative, despite potential of larger cash generation, because they need to invest to expand their fiber networks and infrastructure to address fast-growing data demand. We expect the merged Hutchison-Etisalat entity to also accelerate its 4G capex investment to strengthen its network position to catch up with Dialog and SLT. The Hutch-Etisalat merger will create the third-largest telco and reduce the number of participants in the mobile market to four from five. The merged entity will rank behind Dialog and SLT in the mobile market and ahead of Bharti Airtel Limited's (BBB-/Stable) Sri Lankan subsidiary, Airtel Lanka. The combined entity will benefit from greater revenue share of around 10%-12% in the mobile market, below the 24% of second-ranking SLT. It will boost its spectrum portfolio to 50MHz, higher than Dialog's mobile spectrum portfolio of 47.5MHz but the same as SLT. Importantly, it will have 15MHz of spectrum in the cost-efficient 900MHz band, compared with 7.5MHz each for SLT and Dialog, which it

will likely use to roll out 4G networks. We do not foresee the Hutchison-Etisalat merged entity threatening more price competition or taking significant market share from Dialog and SLT in the short to medium term as they each have struggled to make meaningful EBITDA profits and have high capex requirements. Both Dialog and SLT benefit from entrenched market positions, backed by solid network positions and established customer bases. Hutchison-Etisalat may lose some market share in the process of integrating their operations, as it is natural in when such large telcos combine. The merger requires regulatory approval and is expected to complete in 2H18. Sri Lanka's telco industry is characterized by intense competition, with mobile operators fighting for a share of the relatively small addressable population of 21 million people. Smaller telcos have struggled to gain meaningful market share as a regulatory-mandated tariff floor on voice at LKR1.5 per minute provides them with little flexibility to compete in the voice segment. Further, telcos have faced frequent bouts of tax increases, which have hastened the industry consolidation.

## Myanmar to Begin Collecting for USF in June

The Myanmar government is planning to begin collecting a 2% tax on telecom operators' income to finance a Universal Service Fund (USF) from June this year, the Myanmar Times writes, citing Deputy Director General U Myo Swe of the Post and Telecommunication Department

(PTD) of the Ministry of Transport and Communications (MOTC). The USF will be used to ensure that basic telecoms services are available nationwide, with the government targeting 94% population coverage by Q1 2019, later increasing to 99%. 'The current network covers over 90%

of Myanmar's population, but for those areas that cannot get access to the network, network towers will be built with the USF from the operator,' the official explained, adding: 'Other telecommunications services will be available once the basic infrastructure is built.'

## Airtel Awarded Niger's First 4G Mobile License

Airtel Niger, the local mobile unit of Indian telecoms firm Bharti Airtel, has been awarded a license to provide 4G LTE services. Agence Nigérienne de Presse cites a government statement as saying that a competitive procedure was launched to allocate a 4G concession to

one of the country's four existing mobile operators, with Airtel emerging as the successful bidder. The award is aimed at promoting the development of the mobile broadband sector and improving the quality of internet services. With a market share of 46.9% at the end of 2017, Airtel

is Niger's largest wireless operator by subscribers, according to TeleGeography's GlobalComms Database. It competes with Maroc Telecom-owned Moov Niger, France's Orange Niger and state-owned Niger Telecoms.

## Minister Claims Merger of State-Owned Operators is the Only Way to Save Telikom PNG

Papua New Guinea's government has claimed that its decision to merge Telikom PNG with cellular operator bmobile and wholesale operator PNG DataCo is the only way to save the fixed line incumbent. The National cites Minister for Public Enterprise and State Investment William Duma as saying that Telikom is 'broke' and that a restructuring is the only forward. As noted in TeleGeography's GlobalComms Database, plans for a merger of Telikom,

bmobile and PNG DataCo – all of which are state-owned telecoms entities – were confirmed in February 2017, at which date the National Executive Committee approved Decision No. 360 of 2016. Under this, a three-way merger is to be undertaken with a view to improving coordination and efficiencies across management and infrastructure, while creating a stronger, vertically-integrated company. Response to proposed tie-up has been less than

favorable, however, notably from the firms' employees who are protesting the move over fears of layoffs. Duma has sought to quell such concerns though, noting: 'Considering the tough economic times, we will not have any more termination of workers on the streets. Their jobs are secure'. He added: 'As it is now, Telikom is broke and it is not making any money and to save the company from the banks, restructure is the only way.'

## PTA Approves Investment in Telecom Tower-Sharing Services Company

The edotco Pakistan Private Limited (edotco PK), obtained the required approval of Pakistan Telecommunication Authority (PTA) on the change of shareholding in edotco PK by way of subscription by Dawood Hercules Corporation Limited (DH Corp) of 45% of the share capital of edotco PK, an end-to-end telecom infrastructure

services company. This positive decision of the Government and the Regulator is a welcome promotion of the digital agenda making Pakistan an attractive destination for foreign investment. This development marks one of the approvals related to the transaction steps on the acquisition by edotco PK of Jazz's portfolio of

13,000 tower assets currently under Deodar Private Limited (Deodar). Further regulatory approvals are in process of being granted by PTA on the change of shareholding structure in Deodar, and by State Bank of Pakistan on the funding of the acquisition.

## Taiwan Regulator Warns Price War Could Slow 5G

A 4G price war in Taiwan could impair mobile operators' ability to invest in and develop new services, including 5G networks and applications, needed to sustain the long-term development of the telecoms industry. The National Communications Commission (NCC) issued the warning after market leader Chunghwa Telecom introduced low-cost, unlimited 4G data and voice plans, Taipei Times reported. Rivals Taiwan Mobile, Far EasTone Telecommunications and Asia Pacific Telecom quickly followed.

Taipei Times cited NCC representative Wong Po-tsung as saying while the commission respects the free market system, "if telcos simply want to boost their market shares and revenue by luring subscribers from competitors, rather than with innovative business models, it would not be positive for the development of 5G in the nation. That would hamper sustainable development of the nation's telecommunications industry." Wong went on to say that what they are doing does not help to make the pie bigger as they are

not benefiting from new models that could sustain them through the maintenance and operation of 4G services, the auctioning of 5G spectrum and finally commercial operation of 5G. NCC data showed mobile operators' revenue declined from TWD53.2 billion (\$1.8 billion) in Q2 2016 to TWD49.4 billion in Q4 2017. A number of operators in the US and Asia are gearing up to launch 5G services in late 2018 or early 2019, including US-based AT&T and Verizon as well as KT, the second largest mobile operator in South Korea.

## Regulators seem to be Forgetting Telcos are Commercial Organizations

Another letter to the European Commission from the major telcos has emerged, raising the questions whether regulators believe telcos should be philanthropic organizations not money-making machines. The letter, seen by the FT, is a complaint from the bosses of some of Europe's most powerful communications organizations, bemoaning the direction of new rules governing the digital economy. According to the telcos and major kit vendors, changes to the Electronic Communications Code could disincentive organizations to invest in infrastructure to power the connected era. This is not the first letter or complaint from the telco space over the direction of new rules. Changes do need to be made, but it is critical these changes are justifiable and create an appropriate environment for the industry. While it is easy to forget about the telcos when companies like Google and Amazon are tearing up trees all over the place, the telco sector will be the foundation of any and all success in the digital economy; we can live without Facebook or Spotify, but without the telcos the whole pyramid collapses. The emergence of these letters and complaints suggests regulators are not appreciating what telcos are. The attitude of governments, regulators and bureaucratic bodies like

the European Commission, seems to be the communications companies and their assets are servants of the nation. It appears the view is these organizations should serve the economy, the citizens and the organizations who build services on top. It looks like it has been forgotten the telcos are no longer nationalized bodies and the infrastructure is not a government owned asset. There are of course examples where governments have notable stakes, but the objective here is to make money for shareholders. It is a difficult situation to manage. The importance of the digital economy to countries on the whole cannot be underappreciated. Emergency services are becoming increasingly reliant on the infrastructure, so are children's education, as well as the majority of businesses. There is a need to make the telcos accountable, but the decision to privatize the industry was made and it was the right one. Rules and regulations need to reflect this, unfortunately it looks like public servants are taking the attitude the primary objective should be to bend to the will of the government and the people, not shareholders. Profit margins are being squeezed and new rules are focusing on everything which sits on top of communications infrastructure. General feedback from the telco space

is the status quo is looking preferable to the new rules, which many have described as a disincentive to investment in the sector, scaring away new investors. For years, the technology industry has been biting the hand that feeds it, with the OTTs collecting the lion's share of profits and only allowing crumbs to fall to the bottom; new rules cannot fuel this trend. The more rule makers look at telcos as the servants of the economy, the worse the problem will become. Building communications infrastructure is a very expensive business. Billions are spent every single year to improve mobile signal, download speeds and broadband connections, but this is viewed as something which the telcos should do because they have to, not because they are searching for new ways to make money. No other industry, or section of an ecosystem, is held in such disregard by the government. This indifference makes it even more dangerous that the telcos will define the next era. The telcos love to complain, but there has to be some sympathy here. It seems some have just forgotten their mission is to make money not to act as a philanthropic provider of connectivity. Rules need to reflect this, otherwise we could be heading down a very worrying path. 🚩

## A SNAPSHOT OF REGULATORY ACTIVITIES IN SAMENA REGION



### Afghanistan

The Afghan President ordered the sale of state-owned lands to telecommunications firms at reasonable prices and in line with pertinent laws. He passed the orders at a pre-noon meeting with officials of the Afghanistan Telecommunication Regulatory Authority (ATRA) and telecom sector at his office. Relations between ATRA and telecom companies, more investment in fiber optic and other issues like revenue, frequency and bank loans came up for discussion. The president asked the authorities concerned to take following measure to boost investment in the telecom sector: Telecom firms be provided lands at appropriate prices and in compliance with the law to develop their infrastructure and gain better access to government installations; The Afghanistan Breshna Shirkat was directed to ensure power supply to the telecom companies without any bias

in electrified areas; Security and civilian organs were instructed to cooperate with telecom-sector investors on removing hurdles and problems. The central bank, Ministry of Finance and ATRA were given three months to prepare a policy for loans to telecom sector investors and place it before the High Economic Council for approval. He commended the telecom sector's readiness for investments, saying that his administration fully supported the relevant companies. He wanted all government institutions, mosques, schools, universities and academic centers to be linked through the fiber optic. Facilities for investment in the sector had been provided, he said. All possible measures were being taken to extend all possible cooperation to the telecom firms in areas of energy and security. (MAY 17, 2018) PAJHWOK.COM



### Algeria

Algeria had more than 34.6 million fixed and mobile Internet subscribers in 2017, up by 21 percent from 2016, the official APS news agency reported. Of the total, 31.46 million are mobile Internet users, APS quoted Mohamed Ahmed Nacer, Chief of the Regulatory Authority of the Post and Telecommunications, as saying. Nacer said that 90.85 percent of the Internet expenditure are on mobile networks. The turnover of fixed and mobile operators in 2017 amounted to 429.4 billion dinars (3.75 billion U.S. dollars), he said. Algeria, with a population of about 40 million, is building a national high-speed fiber network to provide better Internet services. (April 24, 2018) APS News Agency

The Minister of Post, Telecommunications, Technology and Digital, Houada Imane Faraoun, has stated in an interview that the country will be connected to two new submarine cables

'before the end of the year'. The delayed Oran-Valencia (Orval) cable linking Algeria to Spain is backed by Algerie Telecom (AT), partnering IslaLink, and after missing a previously mooted launch date of June 2017 the telecoms minister insists a live switch-on is now imminent. Furthermore, in December 2017 the upcoming prospect of a new cable route linking 'Annaba to the US' was revealed, and the minister this month confirmed that the ambitious plan remained on the government's agenda, although details remain scant. State-owned AT currently relies heavily on its link to the consortium SeaMeWe-4 submarine cable (linking Annaba to Marseille in France), whilst Algerian cellco Djezzy's managing shareholder Global Telecom Holding owns the Med Cable submarine system (connecting Algiers to Marseille). AT also part-owns the aged ALPAL-2 undersea cable.

(April 23, 2018) Agence Ecofin



### Bahrain

As part of The Telecommunications Regulatory Authority's (TRA) commitment to the implementation of the Fourth National Telecommunications Plan, the Authority held its second industry

working session with mobile network operators ("MNOs") to discuss key milestones achieved in the development of the New Economic Regulatory Framework and the functional separation



project. The constructive engagement of MNOs in this session has set out clear expectations about the delivery of the National Broadband Network ("NBN"), which is supported through a single fixed fiber network. The Authority's initiative to hold regular working sessions with MNOs aims to ensure that the process of delivering this critical national project is transparent and safeguards the interests of all industry stakeholders. TRA's Acting General Director, Sh. Nasser bin Mohamed Al Khalifa stated "The Authority is committed to its culture of transparency and will continue to engage industry stakeholders with the expectation of full collaborative commitment of all parties to meet the Government's vision as outlined in the Fourth National Telecommunications Plan". (May 13, 2018) tra.org.bh

The Cabinet meeting chaired by His Royal Highness Prime Minister Prince Khalifa bin Salman Al Khalifa at the Gudaibiya Palace gave instructions to put tight regulations on telecommunications masts, and to rectify violations as soon as possible, stressing the need to rely on international companies to assess the levels of emissions by these towers, evaluate their health and environmental impact and verify whether they are established in accordance with international standards. HRH Premier also requested the authorities to continue conducting periodic analysis through specialized inspection teams to ensure that the masts do not

violate international standards. HRH Prime Minister requested the Urban Planning Authority to locate sites for telecommunications towers, and both the Transportation and Telecommunications Minister and the Telecommunications Regulatory Authority (TRA) to submit a plan on the implementation of his directives.

(May 8, 2018) newsofbahrain.com

The Telecommunications Regulatory Authority (TRA) hold a "VAT for Telecoms Workshop" in collaboration with KPMG from April 24 to 26. The workshop was conducted with the purpose to discuss VAT which will be introduced soon in Bahrain and which will have an effect on several functions within the telecoms sector. The workshop gave an overview of VAT in GCC and discussed several fundamental VAT aspects, such as the impact of VAT on the business sector in Bahrain, application of VAT on the telecoms industry, as well as VAT reporting requirements, legal aspects, and HR and employee benefits in addition to pricing strategy. Sheikh Mohamed bin Salman Al Khalifa, Director of Finance, Information Technology, & Human Resources, said: "Our Kingdom is very dynamic, and it is our duty to keep up with what is surrounding us. We are holding the VAT for Telecom workshop that has a very significant effect on the sector as it is the Authority's role to create awareness to those individuals."

(April 26, 2018) TradeArabia News Service



## Bangladesh

Finding out whether a mobile handset is original or not is a challenge for a buyer in Bangladesh, as there is no valid database of mobile devices in the country. But the wait could soon be over, as Bangladesh Mobile Phone Importers Association has got go-ahead to establish an IMEI database, which would help cut the use of illegal handsets, combat crimes and boost government revenues. The association will set up the international mobile equipment identity (IMEI) database of all imported handsets in three months. The IMEI is a 15-digit unique identification or serial number that all mobile phones have. It is used to identify valid devices and stop a stolen phone from accessing the network it uses. People have to dial \*#06# to instantly see the IMEI on the screen of a handset. Once the database is ready, the trade body will begin the registration of the handsets being imported. The system will be located on the premises of Bangladesh Telecommunication Regulatory Commission with the technical and financial assistance of the association although the system will be run jointly. It will help create a database of legally imported or locally manufactured handsets and cut the use of illegal devices, top importers said. It will also help the government earn several hundreds of crores of taka from handset imports, they said. Prospective buyers will be able to check the legality of a set through the system before making any buying decision. Ruhul Alam Al Mahub, president of the association, praised the BTRC and the government for recognizing the importance of the system and for extending help to initiate the project. Mahub, who is set to

establish a mobile handset plant with the assistance of Samsung in Bangladesh, said illegally imported mobile sets are creating threats to the national security. "Along with other benefits, this system will also help combat security threats." Last year, importers brought in 3.34 crore handsets, which accounted for 70 percent of all the devices imported. The sets contributed about Tk 2,000 crore in import duties. The rest 30 percent handsets are brought in by dodging import tax. "It is a timely and essential system. The system will help boost the government revenue and combat many crimes carried out using mobile phones," said Shahjahan Mahmood, chairman of the telecom regulator. Md Nasim Parvez, director-general of the spectrum management division of the BTRC, described the initiative as a good example of a joint collaboration between the government and the private sector that will benefit businessmen, the government and the mobile phone users. (May 7, 2018) thedailystar.net

The telecom regulator plans to set up a separate monitoring center for about Tk 15 crore as part of its efforts to improve the quality of services in Bangladesh. All telecom service providers, including mobile operators, WiMAX and internet service providers will have to be connected with the center, said Shahjahan Mahmood, chairman of the Bangladesh Telecommunication Regulatory Commission. The main part of the center will be called the monitoring and data management system and through it the BTRC will ensure the quality of data, network and services of the

operators. The other part will deal with the customer complaints and ensure compliance, according to Mahmood. Currently, there is no digital system for the BTRC to monitor the service quality of operators, said a top official of the regulator. The center will also help in bringing transparency in the earnings of the operators, said an official of the engineering and operations division of the BTRC that will implement the project. At present, the BTRC struggles to complete its regular task of auditing the operators on time as it has to depend on service-related papers, for which a lot of time and effort is required. The center will help to monitor the different telecom services round-the-clock, he said. The monitoring team will then prepare a report, based on which punitive measures will be recommended. The telecom watchdog has also decided to allocate Tk 10 crore for the center in its next budget. Moreover, the BTRC is finalizing a new set of regulations under which the telecom and internet service providers will have to pay the penalty for non-compliance with the service standards set by the regulator. (April 29, 2018) [thedailystar.net](http://thedailystar.net)

The introduction of mobile number portability (MNP) in Bangladesh has been delayed by three months to July 31, The Daily Star reported. Infozillion BD Teletech Consortium – which was awarded a license to implement and operate an MNP system in November 2017 – has started installing the necessary equipment, with the installation set to be finalized within a few weeks. Going forward, the company revealed it needs to run trials in cooperation with cellcos, though mobile operators had requested earlier this year 'a couple of months for preparation'. ICT Affairs Adviser Sajeeb Wazed Joy was quoted as saying: 'For the last time we are extending time and no further time extension application will be allowed', adding that the new deadline for the service launch is set as July 31. The MNP service will enable mobile users to switch from one mobile operator to another (once every three months) without changing their eleven-digit mobile numbers for a fee of BDT30 (USD0.36).

(April 24, 2018) [The Daily Star](http://TheDailyStar.com)



## Egypt

The Ministry of Communications and Information Technology (MCIT) participated in the Eleventh Round of the Joint Egyptian-Russian Committee Meetings, headed by the Minister of Trade and Industry Tarek Qabil, and held on May 21-23, in Mosco, Russia. During the committee meetings, a number of agreements and protocols will be discussed, aiming to boost joint cooperation between both countries, mainly in the industry, agriculture, customs and ICT fields. MCIT delegation is to discuss a number of ICT cooperation areas, the most important of which is the possibility of activating the Memorandum of Understanding (MoU), signed between MCIT and the Ministry of Telecom and Mass Communications of Russia, during the visit of the Russian Minister of Telecom and Mass Communications to Egypt, in March 2016. The delegation will also discuss the opportunities of cooperation between the two countries in the electronics industry areas, through attracting relevant Russian investments to the Russian industrial zone in East Port Said. In addition, the Russian companies will be encouraged to establish call centers in Egypt to serve their customers in the Arab and African regions, in accordance with the investment incentives provided by MCIT. This is in addition to discussing the opportunities of cooperation between the educational institutions in the two countries in the fields related to ICTs within the framework of the Next Technology Leaders (NTL), the Egyptian Presidential Initiative.

(May 23, 2018) [mcit.gov.eg](http://mcit.gov.eg)

Information and Communication Technology Minister Yasser el Qadi discussed with a delegation from Visa International, led by the company's general manager for the Middle East and North Africa Marcello Baricordi means to activate a memorandum of understanding that was previously inked between both sides. The MoU aims to enhance the infrastructure connected with boosting the digital economy and implementing a new system of visa cards to ease offering services to citizens. During the meeting, Qadi asserted the government's keenness on establishing partnerships with the world companies to achieve the goal of financial inclusion and build a digital economy via upgrading the system of the financial services to cope with the latest global techniques, said a statement by the Ministry. Both sides discussed plans of action to implement what was included in the MoU and Qadi reviewed the Egyptian ministry's vision on the importance of transferring know how and experiences to the Egyptian cadres as part of a strategy that aims to turn Egypt into a regional hub for digital payment technologies. For his part, Baricordi stressed that his company regards Cairo as a strategic partner and places the Egyptian market on its list of priorities, commending the Egyptian government's positive efforts to spread the culture of e-payments and achieve financial inclusion. He asserted Visa's readiness to fully contribute to boosting technological infrastructure needed to activate the digital economy and upgrade services offered to citizens. (May 22, 2018) [egypttoday.com](http://egypttoday.com)



## Iran

The South Asian Telecommunication Regulators' Council (SATRC) workshop on recent trends and technologies (5G and IoT) was held on May 7-9, 2018 in Tehran with presence of Ms. Areewan Haorangi, Secretary General of Asia- Pacific Telecommunity and Mr. Hossein Fallah Joshaghani, Deputy Minister of ICT and President of Communications Regulatory Authority (CRA), MICT Iran. Hosted by CRA, the workshop was attended by representatives from the nine SATRC member countries (Nepal, Bhutan, Bangladesh, Pakistan, Maldives, Sri Lanka, Afghanistan, India and Iran) on different technical/ regulatory topics including:

5G technical technology perspective, spectrum strategy in the 5G, future of mobile broadband, 5G application and service aspects, General Data Protection Regulation (GDPR) on 5G, IoT technology perspective, prediction of the future roadmap for these technologies, 5G and IoT policies and regulations as well as other related issues. During the workshop, 10 Session were organized and 28 documents were presented, based on the workshop program. A small exhibition were hold on the sidelines of the workshop by Iranian operators and companies.

(MAY 13, 2018) [cra.ir](http://cra.ir)



## Kuwait

The RIPE Network Coordination Centre (NCC) and the Kuwait Communication Information Telecommunications Regulatory Authority (CITRA) recently held a training program for telecommunications and Internet service providers (ISPs) to educate them on how to work with Internet Protocol version 6 (IPv6) and deploy it on their networks. The training, held in Kuwait, forms part of a CITRA initiative aimed at encouraging the development of a roadmap for the deployment of IPv6 in Kuwait. Network operators now find themselves running extremely low on unused IP addresses, thanks to a rapid growth in the number of devices connected to the Internet. As IP addresses are essential for identification and location purposes, this has the potential to restrict the ongoing growth of the Internet and associated services in myriad ways. To address this challenge, the shift from IPv4 (with a total of 4.3 billion addresses) to IPv6 (with 340 trillion, trillion, trillion addresses), which will ensure the future growth of the Internet, is being facilitated through efforts by industry stakeholders from around the world. Paul Rendek, director, External Relations at the RIPE NCC, said, "We are working with our members and various governmental and non-governmental authorities to simplify the latest technological developments involving the Internet. The RIPE NCC is keen to further strengthen collaboration with all related entities, including governments and Law Enforcement Agencies (LEAs), to jointly develop solutions to effectively tackle cybercrime and other challenges. One of these objectives is to support the transition to IPv6 through efforts such as workshops, seminars, conferences and dedicated meetings that bring stakeholders together". As

Internet services continue to develop rapidly and make a growing contribution to social and economic development, the RIPE NCC works to help network operators future-proof their networks by sharing its expertise, thereby playing a significant role in driving sustainable development and economic growth across the Middle East. Organizing the recent workshop in partnership with CITRA once again reflects the non-profit organization's commitment to engaging with governmental authorities to support their understanding of technical fundamentals that ensure the growth and safety of the Internet. (May 21, 2018) [tahawultech.com](http://tahawultech.com)

The Ministry of Communications (MoC) has launched the second phase of a project to expand GPON-based fiber-to-the-home (FTTH) broadband services, involving ministry and partner companies' staff carrying out in-premises installation work. Residents receiving a GPON connection gain access to internet access speeds of up to 100Mbps, with no additional charge or hike in annual subscription for upgrading from ADSL, according to the Ministry. The MoC operates broadband services via two ISP divisions, Zajil Telecom (corporate) and KEMS (consumer), with its GPON network rollout initially reaching 'over 16 areas', and having previously disclosed plans to extend GPON coverage to 50% of Kuwaiti households in 2018, ahead of a third phase deployment project to achieve a 100% fiber broadband footprint. The third ('and final') phase of the project will 'encompass all residential areas' and will include the provision of IPTV over fiber connections as an alternative or replacement for satellite pay-TV. (April 24, 2018) [The Kuwait Times](http://TheKuwaitTimes)



## Nepal

Nepal Telecommunications Authority (NTA) has prepared a draft of Mobile Virtual Network Operator (MVNO) Directive and will soon send it to the Cabinet for approval, thereby opening the door for virtual network service providers in the country's telecommunication sector. A MVNO is a retailer or reseller of wireless communication services. Popularly known as Virtual Network Operator (VNO) or Mobile Other Licensed Operator (MOLO), MVNO is a communication services provider that does not have its own communication network infrastructure but purchases infrastructure, including spectrum and core network, from existing Mobile Network Operator (MNO) at wholesale rate and resells it to consumers at competitive prices under its own brand. This means that any domestic or foreign firm that obtains MVNO license in Nepal will be allowed to purchase spectrum and core network from existing domestic telecom service providers like Nepal Telecom and Ncell and deliver mobile communication services under its own brand name in the country. MVNOs will basically provide services related to voice, data and SMS after framing 'network bonding' with existing telecom operators in Nepal. Min Prasad Aryal, spokesperson for NTA, said that welcoming virtual network operators in Nepal will be crucial for the growth of mobile communication services in the country. "Mobile communication services are yet to reach many remote areas of the country. Presence of MVNO will intensify competition

in the telecommunication sector and increase people's access to telecommunication services," he added. Aryal informed that NTA will call interested firms for MVNO license as soon as the government approves the MVNO directive. Moreover, providing space to MVNOs in the telecommunication industry also ensures that available network frequencies are fully utilized in the backdrop of a few telecom operators in the country holding frequencies but not delivering telecom services as pledged. Currently, there are six telecom service providers in Nepal – Nepal Telecom (NT), Ncell, UTL, Smart Telecom, Nepal Satellite Telecom and STM Telecom. NT and Ncell dominate the country's telecommunication sector with more than 95 per cent market share. However, other four telecom operators have not been able to expand communication services as expected. In such a context, issuing licenses to virtual network providers is expected to be highly beneficial to smaller telecom operators in Nepal. In recent years, NTA has been trying to diversify the country's telecommunication sector through various means. In November last year, NTA had opened licenses for interested firms to provide telecommunications infrastructure service in Nepal to promote telecommunications infrastructure sharing in the country and reduce the cost of telecom services. Though five foreign firms have applied for the telecommunication infrastructure service license, NTA is yet to award such license to any of them. (April 14, 2018) [thehimalayantimes.com](http://thehimalayantimes.com)



## Oman

Oman is ready for the fourth industrial revolution the Secretary General of The Research Council (TRC) Hilal Al Hanaei said. The fourth industrial revolution refers to this era wherein new technological breakthroughs will cause disruptions in a number of industries, and will be marked by robotics, artificial intelligence (AI), block chain, among others technologies. Moreover, it will lead to largescale automation and loss of many jobs. He said that Oman had the ability to cope with the rapid automation and loss of jobs, adding that innovation, diversification and adaption on part of educational institutions would be key in doing so. Hanaei remarked that Oman's well established tradition of research in which TRC plays a key role would ensure Oman was ready for the change. He praised His Majesty Sultan Qaboos bin Said for his role in developing the country, adding that the same would continue when the fourth industrial revolution arrived. "Before His Majesty, Oman had three elementary schools and no higher educational institutions, but all of that changed. Now, there is no shortage of schools and universities. Establishment of Sultan Qaboos University (SQU) was a huge step." "Not only schools, but the importance of research was emphasized with the setting up

of the TRC. The role of the TRC was to initially engage in capacity building and focus on key research areas relevant to Oman," he added. "I have to say that we have come very far since the early days of the establishment of the TRC. Oman is now among the top 70 innovators in the world. By 2020, we want to break into the top 40 and the top 20 by 2040. The key is Oman's position relative to the world. We have to keep moving faster than, or as fast as the rest of the world" Hanaei remarked. The TRC Secretary General said that the key was to extract workable solutions from research. "In the past, we have spoken about moving to a knowledge based economy. For this, one needs to take the innovations and research and make them into solutions that can be applied in industries," he added. Hanaei also emphasized the importance of economic expansion and diversification (Tanfeedh) in generating jobs for the new economy. "The people who lose jobs to automation can very well be employed by new jobs created by diversification. This is why expanding our economy towards a non-oil and gas future is really important." "Other needs such as infrastructure are also important. Fast broadband connections, for instance, are essential," he said. (May 15, 2018) [world.einnews.com](http://world.einnews.com)



## Pakistan

Pakistan Telecommunication Authority (PTA) launched Device Identification, Registration and Blocking System (DIRBS) to automatically identify sub-standard, fake, and illegally imported mobile phones; register and block non-compliant devices on mobile phone networks. In line with the Telecom Policy 2015, PTA launched DIRBS in collaboration with 3G Technologies at PTA Headquarters Islamabad. Chairman PTA Mohammad Naveed was the Chief Guest while Abdul Samad, Member Compliance and Enforcement PTA, Executive Director, 3G Technologies, IT and telecom industry experts, CEOs of telecom companies, and media community attended the event. Member Compliance & Enforcement gave a presentation on DIRBS during the event. Chairman PTA said that the Authority is cognizant of telecom consumers' needs and is taking a number of steps to facilitate them in resolving their issues. The launch of this new service is yet another evidence of PTA's sincerity towards its vision of protection of telecom consumers and their rights. He said that this system will be implemented to automatically identify sub-standard, fake, and illegally imported mobile phones, and block non-compliant devices on mobile phone networks. This unique system will curb illegal imports, facilitate legitimate device importers, and mobile device users, and improve the overall security situation. The Chairman said that PTA has always been engaged in facilitating telecom consumers with best telecom services along with due protection of their rights. Chairman further added that the statistics of telecom growth in Pakistan are evident of the satisfaction level of telecom consumers with the quality of telecom services provided to them. He said that today the mobile operators have increased this coverage to over 65% of the population. Broadband subscribers that stood at 1.3 million till 2014 with limited speed offerings have now crossed a milestone of 50 million (2018) with mobile broadband speed crossing 20 Mbs (download) and fixed broadband speed crossing 100 Mbps (download). It is pertinent to mention here that, through Device Verification System (DVS) telecom consumers can verify the authenticity of their mobile devices in line with PTA regulations via SMS to 8484 and to check the status of IMEI log on dirbs.pta.gov.pk or download DIRBS android mobile app from Google Play and Apple app stores. (May 10, 2018) propakistani.pk

Telecom sector has shown positive growth during the first two quarters of the fiscal year 2017-18, revealed the released Economic Survey 2017-18. The sector has not only witnessed steady growth but has also contributed huge sums to the national exchequer. Revenues from the telecom sector reached an estimated Rs. 235.5 billion during the first two quarters of FY 2017-18. The commercial launch of 3G and 4G Long Term Evolution (LTE) services has opened new opportunities for revenue generation for the mobile operators. The availability of 3G and 4G services has enabled development of new applications and database services, and people of the country are quickly adapting to these new technologies and services. In terms of overall investment in the telecom sector, the momentum that started in FY 2012-13

for the up-gradation of telecom networks for 3G and 4G services has continued. Telecom operators have invested millions during the first two quarters of the fiscal year 2017-18. The main driver behind this investment is the cellular mobile sector which has invested US \$267.94 million during the first two quarters of 2017-18. Telecom sector is a significant source of revenue generation for the national exchequer. During the first two quarters of the fiscal year 2017-18, the telecom sector contributed an estimated Rs 78.62 billion to the national exchequer in terms of taxes, regulatory fees, initial and annual license fees, activation tax, and other charges. By the end of December 2017, the total number of mobile subscriptions in Pakistan reached 144.53 million with the net addition of 4.77 million subscribers during July 2017 to December 2017. Biometric re-verification of SIMs in 2014-15 had an adverse impact on the cellular subscriber base. However, the industry has survived through the tough period and continues to regain subscribers at a fast pace and the mobile subscriptions have risen to 147.5 million by the end of February 2018. 3G and 4G LTE subscribers have reached 48.19 million at the end of December 2017 as compared to 42 million as of June 2017 which shows that on average there have been more than one million new subscriptions to 3G & 4G LTE services per month. More coverage and reduced tariffs have further increased the pace of 3G and 4G LTE subscriptions which stood at 51.2 million by the end of February 2018. Broadband subscriber base showed strong growth during July 2017 to December 2017. At the end of December 2017, broadband subscribers stood at 50.51 million as compared to 44.59 million at the end of last fiscal year. The number of net subscriber additions in the period stood at 6 million. By the end of February 2018, total mobile broadband subscribers were 53.5 million. Total teledensity reached 72.7 percent at the end of 2nd quarter of FY 2017-18, compared to 72.5 percent at the end of last fiscal year. The prime driver of teledensity rise is the growth in cellular mobile subscribers and the teledensity as of February 2018 is 74.2 percent. (April 30, 2018) propakistani.pk

Pakistan-based cellular mobile operators (CMOs) have added 50 million mobile broadband subscribers to their networks in four years since April 23, 2014, when the country embraced next-generation mobile technologies 3G and 4G. According to statistics released by Pakistan Telecommunication Authority (PTA), the country's mobile broadband user base surpassed 53 million at the end of March 2018, up more than 1600 percent compared to little over 3 million before the launch of 3G and 4G services in April 2014. On overall basis (including GSM or 2G users), the number of subscribers peaked to 149 million at the end of last month, an addition of 1.5 million to the previous month's tally of 147.5 million, taking cellular penetration to almost 74 percent. In terms of the new addition in the mobile broadband category, Zong sold about 800,000 new (3G and 4G) connections followed by Jazz's 700,000 (approx.) and Telenor's 350,000. Ufone was able to add 150,000 new 3G users to its network – meanwhile, Ufone does not have a 4G license. In terms of overall market share, Jazz remained

the leader with 55 million subscriptions last month followed by Telenor Pakistan that had 42.9 million users. Zong and Ufone had 31 million and 19.8 million subscribers respectively. Jazz also dominated the mobile broadband segment with 18.1 million

users followed by Zong's 15.5 million and Telenor's 13.3 million broadband users. Ufone's subscriber base was 6 million at the end of March 2018.

(April 23, 2018) profit.pakistantoday.com.pk



Several initiatives are to be implemented to ensure that Saudi Arabia is one of the first countries to provide fifth-generation (5G) technology, the governor of the Communications and Information Technology Commission (CITC), Abdulaziz bin Salem Al-Ruwais, said. At a meeting in Rwanda of the UN Broadband Commission for Sustainable Development, he said the information and communication technology (ICT) sector has the unlimited support of the Saudi government. "Through its Vision 2030 (reform program), the Kingdom has embarked on implementing a funded national broadband plan, which led to a rise in Internet user penetration in the country to 82 percent by the end of 2017," he added. The meeting, chaired by Rwandan President Paul Kagame, discussed the challenges facing the adoption of 5G technology, investing in infrastructure development and protecting user rights, including privacy and information security. Participants reviewed the targets set by the commission, including that by 2025 all countries should have a funded national broadband plan. Al-Ruwais held meetings on the sidelines, and participated in meetings of the commission's previously established teams. The meetings discussed digital entrepreneurship, digital health, pandemic preparedness and vulnerable states. The Kingdom is an active member of the commission, which comprises influential decision-makers in ICT research. (May 8, 2018) arabnews.com

As part of its responsibility for the development of national cadres in the future technologies, the Ministry of Communications and Information Technology (MCIT) conducted a blockchain bootcamp in collaboration with ConsenSys, the global blockchain specialist firm. The 3-day bootcamp that concluded on Thursday aimed at introducing participants to how blockchain technology works from both a business and strategy perspective, its numerous applications, and the features that make this technology positively disruptive, unique and powerful. It also included a training course, where technologists from several entities received in-depth training on how to startup a development environment, build decentralized applications (dApp) with Ethereum smart contracts and integrate these with web applications. H.E. Dr. Ahmed Al-Thenayyan, Deputy Minister for Technology Industry and Digital Capacities, affirmed that the bootcamp came within the MCIT's 2020 action plan and objectives aimed at building a digital environment that attracts, incubates and develops minds and skills in ICTs in order to achieve digital transformation with a view to boost the development process in the Kingdom. He stated the importance of investment in national capacities and cadres as key pillars and enablers of success that ensure the continued development and entrepreneurship in the Kingdom. Furthermore, Al-Thenayyan stated that Modern technologies such as Artificial

Intelligence, Internet of Things, Blockchain, etc., are key pillars of the development and progress of countries and serve as major contributor to the Industry 4.0 and the development of GDP. He also indicated that the Industry 4.0 witnessed today is a basic enabler to achieving Saudi Arabia's Vision 2030. In addition, he noted that it would require a different business model and a new execution mechanism under the new rules of global competitiveness and the transition from focusing on assets and expertise to relying on the new oil (big data) and modern technologies such as artificial intelligence, rather than developing the new engine (youth and entrepreneurship). The first day of the course targeted C-level executives and managers across various departments including IT, Strategy, Operations and Legal. Participants learned how blockchain technology works from both a business and strategy perspective, its numerous applications, and the features that make this technology positively disruptive, unique and powerful. "From guided exercises to coded examples, this bootcamp comes in response to the Ministry's desire to enable the Saudi technical youth to learn about the key advantages of blockchain technology and its mechanism, as well as to adopt it in a responsible manner to make businesses more profitable," said Lina Hediah, Executive Director, ConsenSys MENA. "The aim of this workshop is to leverage Saudi Arabia's untapped human resource potential, equip them with knowledge and insight, so they understand the power of blockchain and the current and future potential of its application. In this way we are facilitating a perfect testbed for incubating, maturing and trialing blockchain projects, taking the Kingdom one step further to realizing its 2030 Vision," she added. (April 29, 2018) zawya.com

The Ministry of Communications and Information Technology (MCIT) and Huawei, a leading global ICT solutions provider, have signed a Memorandum of Understanding (MoU) to enable the national cadre in ICT and promote innovation and entrepreneurship in the sector to push the growth and development of the kingdom, and achieve the goals of Saudi Vision 2030 and the National Transformation Plan 2020. The MoU also establishes an agreement between Huawei and MCIT to further develop its innovation Centre in the Kingdom to include Artificial Intelligence and Internet of Things (IoT) technologies designed to support Saudi entrepreneurship. H.E. Eng. Abdullah Amer Al-Swaha, Minister of Communications and Information Technology, attended the signing ceremony. He was accompanied by Deputy Minister for Technology and Digital Capacities, Dr. Ahmed bin Hamdan Al-Theneyan, Mr. Mark Xue, Vice President of Huawei, Paul Scanlan, CTO, Huawei Technologies and Dennis Zhang, CEO, Huawei Tech Investment Saudi Arabia. From 2018

## Saudi Arabia

to 2020, 1,500 Saudis will undergo training from Huawei in skills related to ICT across the board. Two of the programs, the Future Leaders Program and the National Industrial Training Institute Program, will end with full-time employment for every trainee. Huawei will also provide awareness programs to be delivered through VSIC visits as well as its innovative and effective ICT Skill Competition, which should reach an additional 5,000 students and trainees. In particular, the further joint developments to Huawei's existing Customer Solution Integration and Innovation Experience Centre (CSIC) facility will focus on the development and utilization of AI and IoT technologies in enabling the Kingdom's entrepreneurs. These investments will allow entrepreneurs to use these platforms to further pursue innovation, as well as to train themselves and their organizations for success as the digital transformation becomes more comprehensive. H.E. Eng. Abdullah Amer Al-Swaha commented: "We have successfully signed and carried out significant MoUs with partners in both public and private sectors and non-profit organizations in pursuit of economic diversification, technological advancement and the construction of a knowledge economy. Huawei continues to be an ideal partner in our journey. We are proud of the accomplishments our past MoUs with Huawei have resulted in. We will now strive to accomplish the activities mentioned in this agreement, as it enables us to further empower the Saudi people, and assist them to build a Kingdom that is leading, regionally and globally, when it comes to the frontiers of the digital transformation." Mr. Mark Xue, Vice President of Huawei, stated, "We are in a crucial and exciting moment in the Kingdom of Saudi Arabia's journey

towards digital transformation. We have long maintained an approach that is designed to assist and enable the Kingdom's capabilities and enhance their collective knowledge and expertise in all areas of ICT in order to help them achieve their NTP 2020 and Vision 2030 goals. With robust and comprehensive training programs and expanded facilities that will offer world-class AI and IoT technologies, we are confident that our partnership with the MCIT will be a great service to the Saudi people and the Kingdom as a whole." The MoU follows a number of CSR initiatives launched by Huawei in the Kingdom. Huawei brought its global Seeds for the Future training program to Saudi Arabia three years ago in collaboration with the Communications and Information Technology Commission (CITC) in order to develop the next generation of ICT talent. Huawei's training center in Riyadh has graduated over 4,000 engineers since it was established in 2006, and more have taken part in educational initiatives at the Huawei Academy with the support of the Saudi Technical and Vocational Training Corporation (TVTC) and Yanbu Royal Commission. In addition, in 2017 Huawei again collaborated TVTC and CITC to launch the ICT Skill Competition in Saudi Arabia. The Competition brought together more than 10,285 students from 121 educational institutions across the Middle East, 13 of whom earned a once in a lifetime trip to Huawei's headquarters in Shenzhen, China, for the final. Six students from Saudi Arabia walked away with Excellence Prizes at the event, and several Saudi institutions were also recognized with awards.

(April 19, 2018) [albawaba.com](http://albawaba.com)



## Turkey

The information and communication technology (ICT) sector in Turkey was worth 116.9 billion Turkish liras (\$32 billion) in 2017, up 18.2 percent compared to 2016, a new report revealed. The ICT in Turkey 2017 report was co-authored by the financial advisory firm Deloitte Turkey and the Informatics Industry Association (TUBISAD). It said the sector is forecast to grow 10-15 percent on a yearly basis in 2018. The electronic communication sector contributed a significant 25 percent to growth, according to the report. Almost 20 percent of the growth stemmed from a change in exchange rates, it said. The size of the sector on average rose 15 percent annually and almost doubled since 2013. Information technology constituted 35 percent of the ICT market in Turkey. It rose to 41.3 billion liras (\$11.3 billion) in 2017, up from 29.6 billion

liras (\$9.8 billion) in the previous year. The report also revealed that the ICT market narrowed by 1.5 percent year-a-year on dollar basis. Total employment in the sector reached 128,000 people in 2017, up 5 percent from 2016. The information technology sector employed 69 percent of the total employees in the sector. The sector's export also rose 20.8 percent year-on-year to hit 2.9 billion liras (\$796 million) in 2017. The report highlighted that lack of qualified labor and price-oriented outsourcing and public procurement policies were prominent factors effecting growth negatively. Cloud technology, digital transformation, analytics, big data, artificial intelligence and machine learning were technological areas that will have the most impact on businesses in the sector. (May 22, 2018) [yenisafak.com](http://yenisafak.com)



## United Arab Emirates

The number of cyber-attacks against websites in the UAE during the first four months of the current year reached 155, compared to 297 attacks during the same period of 2017, a decline of 48 percent. The decrease from January to April reflects the significant success of the "National IT Emergency Response Team" of the Telecommunications Regulatory Authority, TRA, in deterring hacking attempts. According to the TRA's statistics, cyber-attacks during the first four months of the current year mainly targeted government and private sector websites. Forty-five cyber-attacks involving fraud and phishing were recorded during that period, and a further 26 cyber-attacks aimed to leak information. The other attacks involved defamation and other purposes. The authority's statistics also showed that 85 attacks had a medium impact, 35 had a low impact, and 35 attacks had a major impact. The TRA's list of major cyber-attack risks includes the vulnerability of Internet Explorer, the smart installer of Cisco, hidden programmes included in Microsoft updates, the Ziklon program, and the ransom program for the known e-cloud. The TRA is working to raise awareness on how to counter malicious programmes, by holding seminars and awareness programmes for the entire community. The TRA requires all authorities to follow its information security policies and back up their data on devices that are not connected to the internet. It also recently launched a campaign, titled, "They Do Not Deceive You," as part of its duty to raise community awareness. (May 22, 2018) [zawya.com](#)

The Executive Team of the Online Services Indicator, one of the indicators of the UAE Vision 2021 National Agenda, held its 16th meeting at The Telecommunications Regulatory Authority (TRA) office in Dubai. The meeting was headed by Salem Al Housani, TRA Acting Deputy Director General for Information and e-Government Sector in and the Chairman of the team. The Executive Team members discussed a number of issues, mainly the plans of the sub-teams, and the focus areas of the next stage in order to enhance the coordinated government efforts to raise the indicator. They also conducted a self-assessment of the previous stages, and discussed the lessons learned for future benefit. The meeting started with a comprehensive presentation by the Chairman of the Executive Team, during which he reviewed several topics such as the UAE Model of Smart Government Maturity, a project that is part of future shaping in the digital transformation process. Al Housani said: 'This model is part of our efforts for strategic alignment with the directives of the high leadership, towards the era of the Artificial Intelligence and the Fourth Industrial Revolution. We agreed on the importance of preparedness and readiness for the next stage, where artificial intelligence and open data will play a key role in digital transformation. As the Executive Team of the Online Services Indicator, and based on our mandate decided by the wise leadership, we are updating our process to become a national model that reflects the leading position of the UAE. The UAE Model of Digital Government Maturity is divided into two main areas: The first is the framework of digital government maturity

in the UAE, and the second is a survey on the preparedness of digital government in the country." Al Housani also addressed the central platform of managing the inputs and outputs of the national indicators, which was launched recently under the Name "Deira". He addressed all the sub-teams to adopt the platform as a collective central mechanism for monitoring the progress of the indicator process, after the platform has successfully passed all the usage tests, approved by the Prime Minister's Office, and circulated to several government entities to be used for other indicators. Each of the sub-teams had the opportunity to present its achieved progress in the various projects saved on "Deira" Platform. Al Housani also reviewed the experience of the UAE Hackathon and its results, calling upon all concerned government entities to adopt the outstanding ideas resulted from the Hackathon, as well as inviting them to make proper proposals for UAE Hackathon 2019. The meeting concluded by setting up plans to enhance the results of the teams' work. These plans will be uploaded on "Deira" platform and monitored over the next few weeks to observe the progress in the Executive Team processes, namely the e-participation, data, service portal, capacity building, and support portal. The Cabinet has launched the Online Services Executive Team in 2016, among other executive teams as well as the Government Accelerators, for the purpose of realizing the National Agenda. Al Housani also reviewed the experience of the UAE Hackathon and its results, calling upon all concerned government entities to adopt the outstanding ideas resulted from the Hackathon, as well as inviting them to make proper proposals for UAE Hackathon 2019. The meeting concluded by setting up plans to enhance the results of the teams' work. These plans will be uploaded on "Deira" platform and monitored over the next few weeks to observe the progress in the Executive Team processes, namely the e-participation, data, service portal, capacity building, and support portal. The Cabinet has launched the Online Services Executive Team in 2016, among other executive teams as well as the Government Accelerators, for the purpose of realizing the National Agenda. (April 24, 2018) [tra.gov.ae](#)

The Telecommunications Regulatory Authority (TRA) has completed a high level cooperation and coordination between concerned government entities as part of its mandate to manage the National Economic Register. The TRA also oversaw the signing of memorandums of understanding (MoUs) between the Ministry of Economy and the local licensing authorities in Abu Dhabi, Dubai, Sharjah, Ajman, Umm Al Quwain, Ras Al Khaimah, Fujairah, and Dibba Al Fujairah. The MoUs were signed during a meeting held at the Government Accelerators in the Emirates Towers in Dubai. The MoU was signed by Ahmed Al Hosani, director of Economic Registration Department in the Ministry of Economy, as well as officials and executive directors from the concerned licensing departments. This MoU is in line with the directives of the Prime Minister's Office within the third batch of government accelerators, and falls within the path of smart services, one of



the tracks of action emanating from the government meetings of September 2017. The government's efforts in the context of the National Economic Registry aim to enhance the UAE's efforts in shaping the future as well as enhancing the economic competitiveness of the UAE and ensuring its leadership in the economic field, thus, attracting more investments. Sultan bin Saeed Al Mansoori, Minister of Economy, said that the challenge of the National Economy Register is one of the pioneering projects that the Ministry of Economy is working to accomplish within the challenges of the third batch of the government accelerators in cooperation with TRA and a number of federal and local entities. Al Mansoori added that the project contributes to enhancing the capabilities and enablers of the knowledge economy in the country by providing easy access to economic data, through a federal electronic platform that includes comprehensive and accurate information on economic licenses and entities, as well as the data of economic activities approved globally and unified in the country. Moreover, it provides a variety of statistical reports useful to scholars and researchers in their studies, in order to serve the interests of all involved parties at the government level, as well as entrepreneurs, investors, and customers. Al Mansoori indicated that the availability of accurate and updated economic data and information is one of the high priorities, which most of government entities are working to develop at this stage. The National Economic Register is a key step in this process. It provides a convenient mechanism for sharing accurate and instant information between local and national registers, as well as providing a database on licensed economic sectors in the country, the size and capital invested, and then provides accurate statistics and reports to support decision-makers. Al Mansoori added that the Ministry of Economy is keen to coordinate with various entities at federal and local levels to apply best practices according to the latest international economic standards. The project aims to improve the needed time to exchange accurate and instant data between the local and national registers, and increasing the number of users' inquiries in the National Economic Register by 55 per cent within 100 days of the challenge. Hamad Obaid Al Mansoori, TRA director general, said: "Signing of memorandums of cooperation on the National Economic Register reflects the teamwork spirit among the participating entities, as well as the dedication to realizing the vision of our wise leadership to make a bright future for our generations." "It is an important step in the process of integration and flawless share of data between government entities, leading to the realization of the principle of a comprehensive government to serve customers

of various segments. I want to seize the occasion to salute the brothers in the Ministry of Economy and the local economic departments for setting an example of consolidating the concept of joint national work. We are all partners in the challenge of the National Economic Register, and we are aware of its importance and impact on future projects in the process of a comprehensive digital transformation," he added. This MoU aims to develop the investment environment through the establishment of a system that includes data of licensed economic establishments in the country, in order to simplify and facilitate access to data for new investors, researchers, government and private entities, and institutions concerned with national and international economic statistics. The MoU also aims to enhance the business environment, research, and data science by providing economic data, improving the time taken to obtain accurate and instant data in the National Economic Register, as well as sharing and synchronizing data between the systems of concerned authorities, the ministry and other stakeholders. It also allows access to accurate statistics to serve decision-making, provide information and reports on economic activities and their development, and activate the unified guide for economic activities, according to the latest international classification of economic activities. Under the MoU, all parties will work on the data integration of economic establishments in the systems of the concerned entities with the data of the National Economic Register, with the support and coordination of the TRA, in accordance with the applicable policies and legislation, and maintain its accuracy at all times. Moreover, the Ministry of Economy will supervise the process of linking the systems of the concerned authorities, and the entities contributing in the National Economic Registry, in addition to providing registry services to the concerned authorities, participating entities, federal and local governments, as well as the public. The National Economic Register serves as a national electronic platform for the exchange of accurate and instant data on the licenses of economic establishments among licensing entities, under the supervision of the Ministry of Economy. The platform aims to adopt the tools of knowledge economy, by providing accurate comprehensive and instant data on economic licenses issued in the UAE. The National Economic Register serves various groups of stakeholders from different categories such as government entities, entrepreneurs, investors, and customers inside and outside the UAE. The National Economic Register is expected to become the first online destination to access data and economic information in the UAE. 📍

(April 22, 2018) TradeArabia News Service

## REGULATORY ACTIVITIES BEYOND THE SAMENA REGION



### Australia

Australia's telecoms regulator opened a consultation on details of 5G licenses to be offered in the 3.6GHz band, the draft auction rules and the technical framework which will underpin the new licenses. The Australian Communications and Media Authority (ACMA), which plans to auction spectrum in the 3.6GHz band later this year, released its draft spectrum licensing rules for the band. ACMA Chair Nerida O'Loughlin said consultation will ensure the rules are fit-for-purpose for the auction process. "We are making spectrum available as early as possible so that all Australians can benefit from these new technologies. But we recognize the 3.6GHz auction will require incumbent operators in the band to make some changes," she said. The ACMA is seeking comment on the introduction of planning arrangements to support frequency coordination and licensing of point-to-multipoint systems in the 5.6GHz band. This is one of several previously announced strategies to support the transition of existing services in the 3.6GHz band. The regulator is also seeking comment on proposed measures to protect existing Bureau of Meteorology radar services and make provision for additional radar services in future. "We will be working closely with wireless internet service providers, satellite operators and the Bureau of Meteorology up to and well beyond the auction process to address their concerns," O'Loughlin said. As part of its 5G spectrum plan outlined in a five-year spectrum outlook covering 2018 to 2022, ACMA called for a "a range of mitigation measures" for incumbent users in the 3.6GHz band, including "a commitment to developing arrangements for site-based wireless broadband services in the 5.6GHz" band. After consultations with the industry, ACMA announced in October 2017 it would start to reallocate spectrum in the 3.6GHz band and move to more efficient arrangements in the 900MHz band to prepare for 5G broadband services. The government said in February it plans to introduce legislation this year to modernize its spectrum management and move towards a government goal of implementing a single licensing framework. (May 21, 2018) [mobileworldlive.com](#)

More of Australia's broadband subscribers are receiving higher-speed National Broadband Network (NBN) services, according to the most recent data published by the Australian Competition and Consumer Commission (ACCC). In the latest 'Wholesale Market Indicators Report', the regulator confirmed that more than a quarter of customers connecting via the NBN were signed up to a plan offering downlink speeds

of 50Mbps at end-March 2018, up from less than 5% just three months earlier. Commenting on this marked improvement, ACCC chairman Rod Sims noted: 'Nearly one million customers are now using a plan with 50Mbps speeds. This is a remarkable shift in just three months.' The increased uptake for the faster speeds has been attributed to NBN Co's 'Focus on 50' promotion, launched in December 2017, which offers a temporary credit to retailers for acquiring 50% more Connectivity Virtual Circuit (CVC) per user and reducing the price of the Access Virtual Circuit (AVC) for 50Mbps services. Meanwhile, according to the latest data, by the end of March 2018 all 121 points of interconnection (POIs) had at least five access seeker groups acquiring services directly from NBN Co, while at least six groups were connected at 120 of the POIs, and 95 POIs had at least seven groups acquiring services. In terms of the most-used access technologies, at end-March 2018 fiber-to-the-node (FTTN) connections numbered 1.742 million, with fiber-to-the-premises (FTTP) and HFC services being provided to 1.240 million and 417,193 users, respectively. In total, NBN Co was supplying a total of 3.814 million wholesale broadband access services at the end of the reporting period, up from 3.467 million at end-2017. (May 10, 2018) [telegeography.com](#)

Australia's Department of Communications and the Arts (DCA) has announced that an independent committee has been appointed to undertake a review of regional telecommunication services. This review is undertaken every three years as a legislated requirement to examine regional telecommunication issues, including the level of access to services in regional, rural and remote parts of the country. In confirming that the review was getting underway the government body said that views will be sought from regional communities on how they use telecommunication services and the issues that affect them. Further, the state has released the terms of reference for the review, which include asking the committee to: consider how rural Australians can maximize the economic and social benefits that modern telecommunication services can provide; and undertake an analysis of the coverage achieved under the Government's Mobile Black Spot Program. The committee will shortly call for submissions and is expected to undertake public consultations in regional areas later this year, with it expected to deliver a report to government in September 2018.

(May 3, 2018) [telegeography.com](#)



## Austria

Austria has approved its 5G Strategy document, which aims to ensure nationwide coverage of 5G mobile services by the end of 2025. Under the first phase, the first pre-commercial 5G tests are scheduled to take place during 2018, while the second envisages nationwide coverage of 100Mbps broadband and 5G coverage of provincial capitals by the end of 2023. Finally, 5G should be made accessible across the main traffic routes by the end of 2023, followed by nationwide coverage two years later. The country plans

to auction off 5G-suitable frequencies in autumn; a total of 390MHz of spectrum is planned for allocation on a regional basis, comprising 190MHz within the 3410MHz-3600MHz range and 200MHz in the 3600MHz-3800MHz band. In addition, the Regulatory Authority for Broadcasting and Telecommunications (Rundfunk und Telekom Regulierungs, RTR) has earmarked the 700MHz band for 5G services and plans to make these frequencies available to operators from 2020. (April 27, 2018) Kronen Zeitung



## Canada

Six companies obtained licenses during a recent sale of leftover spectrum in Canada, a process the government said was evidence of its "continuing support for a competitive wireless market". A total of CAD43.4 million (\$33.7 million) was raised in the sale of licenses described as residual, those unassigned or returned from previous licensing processes in the 700MHz, 2300MHz, 2500MHz and PCS-G bands. The winners included mobile operators Telus, Ecotel, Freedom Mobile and Xplornet, along with telecommunications and media company Cogeco Communications and Iris Technologies, a provider of VoIP services. Cogeco Communications was the top bidder, acquiring 23 licenses in the 2300MHz and 2500MHz bands for CAD24.3 million. Xplornet acquired 16 licenses in the 2500MHz band for CAD8.2 million; Freedom Mobile

bought 11 licenses in the same range for CAD8.6 million. Ecotel spent CAD1.2 million on eight licenses, including two 700MHz blocks. Telus bought the PCS-G spectrum for CAD0.9 million. "The government will continue to support competition and investment in telecommunications so that Canadians continue to benefit from next-generation technologies and that Canada remains at the forefront of innovation," the Innovation, Science and Economic Development department said in a statement. Just last week at the TM Forum's Digital Transformation World event, Telus CTO Ibrahim Gedeon told Mobile World Live Canada will fall behind the rest of the world when it comes to the launch of 5G services because its spectrum allocation plan is no longer aligned with global trends.

(May 18, 2018) mobileworldlive.com



## Chile

The Minister of Transport and Telecommunications, Gloria Hutt, has called for a doubling of investment in the sector to overcome the nation's digital divide. 'All actors in the sector must do our best to reduce the digital divide that exists in the country, and persists for the 44% of people without access to fixed internet. Today in Chile we have 200 communes with residential fixed internet penetration of less than 20%, 110 communes that have less than 5% and 55 communes that have less than 1%. Today, all of them are very far from being part of the digital revolution.' Although no specific initiatives were outlined, the minister stressed that the government is aiming for Chile to be the first country in the region to develop and commercially launch a 5G network. Meanwhile, Undersecretary of Telecommunications Pamela Gidi indicated that sector regulator the Department of Telecommunications (Subsecretaria de Telecomunicaciones, Subtel) would be continuing to focus on consumer rights.

(May 22, 2018) telegeography.com

Pamela Gidi, the Head of Chilean sector watchdog the Department of Telecommunications (Subsecretaria de Telecomunicaciones, Subtel), has announced that the regulator is working on rules that will allow operators to sell spectrum concessions, and enable the authority to confiscate unused frequencies. Diario Financiero quotes the Undersecretary of Telecommunications as saying: 'We are going to promote the secondary market and we are evaluating the bill that established that spectrum can be sold to third parties and even repeal concessions if they are not used.' The issue has been on the agenda for Chile's regulatory agencies since 2014 when it emerged that, due to a legal loophole, Subtel could not rescind VTR's spectrum licenses. VTR had switched from providing services as a mobile network operator (MNO) to an MVNO model in late 2013.

(May 8, 2018) telegeography.com



## Croatia

The government has adopted its National Program for the Development of Shared Broadband Infrastructure (NP-BBI), which aims to deploy state-owned open access networks to provide internet connectivity in underserved and unserved rural areas. The HKR770.6 million (USD128 million) project will be 85% funded

by the European Regional Development Fund (ERDF), with the remainder from the state budget. The program, which was approved by the EC in June 2017, aims to meet the goals of the Digital Agenda for Europe strategy, having a broadband connection to every household by 2020. (April 23, 2018) [telegeography.com](#)



## Dominican Republic

The Dominican Telecommunications Institute (Instituto Dominicano de las Telecomunicaciones, Indotel) has announced that it has suspended plans to sell unused spectrum in the AWS band after concerns were raised over the transparency of the sale process. Specifically, a company identified as Servicios Ampliados de Telefonos (SATEL) has laid claim to the spectrum in

question, preventing its sale while a full investigation is carried out. Earlier this month Trilogy Dominicana (trading as Viva) offered to pay USD30 million for frequencies in the 1710MHz-1720MHz/2110MHz-2120MHz and 1730MHz-1735MHz/2130MHz-2135MHz bands, and submitted 10% of the final offer as a guarantee. (May 15, 2018) [telegeography.com](#)



## France

The telecoms regulator is open to the idea of consolidation in the country's competitive mobile market, its Chief Sebastien Soriano said, in what appears to be an about-turn from past policy. In an interview with Le Monde, Soriano said Arcep is not against consolidation provided operators "have a value-creating project for the country, and not for shareholders only." He gave the example of the Sprint, T-Mobile US merger in the US, which he said could lead to higher investments in 5G. France currently operates with four major operators (Orange, SFR, Free and Bouygues Telecom) and consolidation attempts in the past have failed due to stringent regulation. A report in October 2017 stated that since Orange's failed bid to merge with Bouygues Telecom in early 2016, the dynamics of the market had changed and companies were now looking to explore other avenues to improve their position rather than engage in M&A activity. In March, Arcep announced it would remain "very vigilant" if any M&A between the country's operators was attempted. The interview with Soriano coincides with a report by Arcep stating operators in France invested

€9.6 billion in 2017, €660 million more than the previous year (excluding spending on frequencies). "Two years ago, I asked operators to break open their piggy banks, to rise to national coverage challenges, and enable France to catch up on the connectivity front. With an investment of €9.6 billion, we are seeing the sector's growing commitment to making up for lost time, and coming in line with the country's infrastructure needs," Soriano said in a statement. (May 22, 2018) [mobileworldlive.com](#)

In a bid to boost 5G efforts, Arcep also launched a public consultation on making the 26GHz band available to kick-start 5G rollouts. The regulator explained in a statement that to satisfy very high capacity and very low latency imperatives, 5G will need "to use frequencies well above the highest ones being employed today, [for example] in the mmWave bands above 24GHz." "In Europe, the Radio Spectrum Policy Group identified the 26GHz band as the pioneer band in this range of mmWave frequencies, for a maiden use of the band before 2020," the regulator added. The public consultation will run until June 18.

(May 22, 2018) [mobileworldlive.com](#)



## Germany

The telecoms watchdog the Federal Network Agency (FNA, known locally as the Bundesnetzagentur or BNetzA) is likely to delay its 5G spectrum auction until early 2019, rather than this year as originally planned. Reuters cites a spokesperson for the authority as saying that the FNA wants to auction the frequencies as quickly as possible, but that the sale is likely to take place in early 2019. The development follows rumors that the process had been delayed by a row between the FNA and the Federal Ministry of Transport and Digital Infrastructure (Bundesministerium für Verkehr und Digitale Infrastruktur, BMVI). According to reports from

local daily Handelsblatt, the two bodies had clashed over bidding conditions for the auction, with the BMVI stating that participants guarantee seamless 5G coverage, whilst also targeting substantial returns from the auction process. For its part, FNA reportedly argued that the economic conditions should be 'realistic' and is looking to assert its decision-making independence from the ministry. The FNA is planning to auction off 2x60MHz in the 1920MHz-1980MHz/2110MHz-2170MHz range alongside 300MHz of unpaired spectrum in the 3400MHz-3700MHz range.

(May 16, 2018) [telegeography.com](#)



## Ghana

After three postponements, mobile money interoperability has finally been officially launched in Ghana, after a ceremony conducted by Vice-President Mahamudu Bawumia, writes Mobile World Live. The service was initially due to go live in November 2017, but was pushed back to January, then February this year due to a number of technical issues. The interoperability platform, which has been developed by the Ghana Interbank Payment and Settlement

Systems will allow users of mobile money providers to transfer cash via their handsets and is a move hailed by AirtelTigo CEO Ms Roshi Motman, who said: 'We welcome this giant step which will help our customers and all Ghanaians to enjoy increased convenience to send and receive money from one mobile wallet to another across networks in real time and reduce fraudulent transactions.'

(May 14, 2018) [telegeography.com](http://telegeography.com)



## Hong Kong

Cellular operator Hutchison 3 Hong Kong says it has been granted a temporary permit allowing it to develop future 5G technology in the 26GHz-28GHz millimeter wave (mmWave) band. The permit allows 3 Hong Kong 'to possess, establish, maintain and use transmitting and receiving stations, as specified, for radiocommunications and to conduct in-and-outdoor 5G trials in the second half of 2018'. The cellco applied

for a license to conduct indoor 5G trials using 3.5GHz spectrum in August last year. The news comes as Hong Kong's Office of the Communications Authority (OFCA) has revealed that 26GHz-28GHz spectrum licenses could be made available as early as April 2019, while 3.5GHz frequencies are likely to be awarded the year after.

(May 11, 2018) [telegeography.com](http://telegeography.com)



## India

State-run MTNL, the smallest player in India's crowded mobile market, plans to invest INR1.9 billion (\$27.9 million) to upgrade its mobile network and could be given a lifeline by the telecoms department in the form of critical 4G spectrum. Department of Telecommunications (DoT) minister Manoj Sinha said it is "seriously considering" allocating 4G spectrum to the financially troubled operator, which only offers services in New Delhi and Mumbai and has less than a 1 per cent market share by subscribers. The 4G spectrum offer would also be extended to BSNL, which serves the country's other 20 service areas and is also state-run. ET quoted Sinha as saying: "Now we are attempting to make its services better, and after a long time MTNL is investing money in improving its network and services. I feel they will roll out something in the next three to four months." Sinha said both BSNL and MTNL face a spectrum handicap, "so we are seriously considering how to provide them 4G spectrum so that they can become a viable and a major player in telecom sector", ET reported. In July 2017, BSNL chairman Anupam Shrivastava said he expected the government to approve its request for 700MHz spectrum for the launch of 4G service. The operator, the country's fifth largest with nearly a 9 per cent market share, had in June asked the DoT to allocate 5MHz of 700MHz spectrum in exchange for an equity infusion. Neither operator participated in the country's 4G spectrum auction in October 2016. GSMA Intelligence data for Q1 showed BSNL had nearly 110 million mobile connections, 81 per cent of which were 2G, while MTNL had 3.6 million connections, split almost evenly between 3G and 2G.

(May 22, 2018) [The Economic Times](http://The Economic Times)

India's beleaguered telcos could see new legislation, aimed at reinvigorating investment in the sector, passed by the end of this month, according to an Indian government spokesman. "We want to place the telecom policy before the Cabinet in four weeks. It will be open for public comments for two weeks, then we will finalize everything in a week and send to the Cabinet after that. It will be in place in June," India's Telecoms Secretary, Aruna Sundararajan told the New Indian Express newspaper. The National Digital Communications Policy 2018 will attempt to cultivate over \$100 billion in investment into India's telecoms sector by 2022. The Indian government has already passed legislation that will ease financial pressures on telcos by allowing them to restructure their debts. India's telecoms sector is beset by ultra-fine operating margins and spiraling levels of debt, brought about by the provision of extremely low -cost voice and data packages by industry new comer Reliance Jio. As a result, India's telecoms sector is widely considered to be one of the hardest markets for operators to turn a profit in. As part of the National Digital Communications Policy 2018, India will attempt to provide universal 50Mbps broadband across the entire nation. Sundararajan said that this was at the very heart of securing investment going forward. "The investment in the sector will come once industry stabilizes. There are efforts to stabilize industry soon. The crux of the policy is to have broadband for all," she said.

(May 8, 2018) [totaltele.com](http://totaltele.com)



## Italy

The government has launched its third and final tender for the provision of broadband infrastructure in unserved and underserved rural areas. The EUR103 million (USD126 million) tender, being run via state infrastructure body Infratel, covers 296,000 premises in 882 communities in the regions of Calabria, Puglia and

Sardinia. The contract will see all households passed by a broadband network which offers download speeds of at least 30Mbps. The first two tenders were won by Open Fiber, a wholesale network operator which is owned by utility group Enel and state lender Cassa Depositi e Prestiti (CDP). (April 23, 2018) [telegeography.com](#)



## Kosovo

The Kosovo government has won an arbitration case in a US court regarding the failed privatization of state-owned Kosovo Telecom – which offers services under the Vala brand – RTK reports. US-German consortium ACS Axos Capital had sought damages of EUR400 million (USD477 million) over the suspension of its bid to purchase the telco in 2013. President Hashim Thaci, who was Prime Minister at the time of the sale attempt, said in a statement: 'Kosovo will always welcome foreign investments but will not allow it be misused as a state.' The government had accepted a bid of EUR277 million from Axos for a 75% stake in the telco in April 2013. Parliament refused to accept the deal, however, and after more than six months of delays the government cancelled the agreement. Axos pursued the case, and initiated legal proceedings in April 2015. With the Axos case now resolved, Kosovo's Minister of Economic Development Valdrin Llluka added that the government is in talks with telco's board regarding potential restructuring measures as the company looks to tackle its mounting debt: the operator last month asked the state for an additional EUR60 million to pay creditors, or risk bankruptcy. (May 8, 2018) [telegeography.com](#)

The World Bank is reportedly working on developing a fiber rollout program for Kosovo that would lift fiber coverage to 95% of the nation's territory. RTK quotes Economic Development Minister Valdrin Llluka as saying that the international organization was assisting with a two-year, USD30 million project. The program is still passing the World Bank's approval stages and would see fiber infrastructure rolled out in areas where it not economically viable for operators to deploy networks themselves. The minister claimed that fiber coverage is currently around 65%. (May 22, 2018) [RTK](#)

Telecoms watchdog the Regulatory Authority for Post and Electronic Communications (Autoriteti Rregullator i Komunikimeve Elektronike dhe Postare, ARKEP) has approved three new sets of regulations, which look to shore up consumers' rights and update existing rules to ensure net neutrality. 'Regulation No. 36, On the quality of electronic communication services' (No. 016/B/18) defines minimum quality of service (QoS) parameters for retail services, as well as the methodology for measuring those metrics and requires the submission of reports on performance regarding those targets. Under the rules, ARKEP will also publish an annual QoS report. 'Regulation No. 37 On general authorizations' (No. 019/B/18) updates the conditions and procedures for the provision of electronic communication networks in Kosovo. The regulations require existing operators to submit fresh notifications within six months to update their license. Finally, 'Regulation No. 38 On contracts, transparency and disclosure of information, and other safeguards for end-users for the provision of electronic communications networks and services' (No. 022/B/18) defines the terms and conditions that should be included in contracts for the provision of electronic communication services to the public and includes measures to increase transparency for customers. In addition, the regulations feature a range of additional requirements relating to net neutrality, under which ISPs are obligated to include in their contracts for fixed networks: maximum download and upload speeds, guaranteed minimum speeds (no less than 20% of the maximum speed), average speeds and hours of peak usage. For mobile networks, operators must detail the maximum speed a customer could expect to experience at least once a day, alongside the advertised speeds. (April 26, 2018) [telegeography.com](#)



## Macau

The Macau Post and Telecommunications Bureau (Correios e Telecomunicacoes de Macau, CTT) says that separate licenses will not be required for the provision of future 5G mobile services, with the technology to be included in an updated converged telecoms concession. A report from the Macau News Agency cites CTT Director Derby Lau Wai Meng as saying: 'We proposed that the changes to the communication law that will license current operators of 3G and 4G [services] in the future should have a technology-neutral role, not mandating a specific technology in the licensing. This

communications convergence legislation will include the use of 5G.' Ms. Lau also said that the regulator is willing to support cellcos with regards to 5G network rollouts: 'We want more favorable conditions for the operators we can supply 5G to. The changes will give more powers for operators to install the network and more power for the government to supervise it.' Macau is home to four mobile network operators: CTM, Hutchison 3, SmarTone and China Telecom Macau. (April 25, 2018) [telegeography.com](#)



## Norway

The National Communications Authority (Nasjonal kommunikasjonsmyndighet, Nkom) has established the overarching rules for its planned auction of spectrum across several frequency bands, it has announced. With the regulator having previously revealed its intention to offer spectrum in several different bands – 6GHz, 8GHz, 10GHz, 13GHz, 18GHz, 23GHz, 28GHz and 38GHz – at auction due to potential demand, the sale process is expected to take place

in the fourth quarter of this year. Having consulted on its plans for the spectrum sale the Nkom has now confirmed that it plans to use a combinatorial multiple-round auction (CMRA) method, though it noted that the detailed rules for the sale process will be subject to an independent public consultation, which is scheduled for July/August 2018. Nkom plans to complete the auction in Q4 2018.

(May 9, 2018) [telegeography.com](http://telegeography.com)



## Peru

The Communications Ministry (MTC) has announced the grant of a 20-year nationwide MVNO licence to Incacel Movil, a subsidiary of Spain's InfoPyme. Last September the Spanish public telephony operator acquired the assets of Virgin Mobile, which decided to abandon its Peruvian venture after just a year of activity. Incacel will become the country's fifth mobile

operator, with Dolphin Telecom and Cuyomobile also having been awarded licences over the past year without having launched activities. Movistar currently dominates the Peruvian mobile market with 14.9 million subscribers at the end of 2017, followed by Claro (12.5 million), Entel (6.4 million) and Bitel (5.1 million).

(April 23, 2018) [telegeography.com](http://telegeography.com)



## Philippines

The Philippines' government again delayed the timeframe for selecting a third operator, with the license now expected to be awarded in September, Philippine Daily Inquirer (PDI) reported. A new oversight committee set up in April to monitor the selection of the country's third mobile operator is scheduled to meet next week to approve the draft terms of the process. Eliseo Rio, acting secretary of the Department of Information and Communications Technology (DICT), expects the final terms to become effective in late June or early July, after which the bidding process can start. Bidders will have two months to prepare their offers, PDI said. In February when DICT released the draft selection criteria, it said it aimed to finalize the terms by end-March and hold an auction on 18 May. Rio said interested bidders include

Philippine Telegraph and Telephone, Now, Converge ICT Solutions, EasyCall Communications Philippines and a group led by businessman Dennis Uy, the newspaper reported. Press reports also indicated interest from China Telecom, South Korea-based LG Uplus, Japan operator KDDI and Viettel in Vietnam. Rio expects more companies to compete for the license once the terms have been finalized. The government began pushing for the entry of a new player into the market in late 2017 to break the control of Globe Telecom and Smart Communications, the mobile unit of PLDT, which each held a near 50 per cent market share at end-March. In November 2017, Philippine president Rodrigo Duterte invited China to invest in the country's telecoms sector to end the duopoly. (May 21, 2018) [mobileworldlive.com](http://mobileworldlive.com)



## Poland

The Office of Competition and Consumer Protection (Urzad Ochrony Konkurencji i Konsumentow, UOKiK) has approved the acquisition of a stake in local telco Netia by the Cyfrowy Polsat group, imposing no conditions on the transaction. While the watchdog noted that the operations of the two firms do overlap in certain areas such as pay-TV, internet access and

cellular services, it decided that the deal would not result in a restriction of competition. In December 2017 Cyfrowy Polsat acquired a 32% stake in domestic rival Netia for PLN638.8 million (USD177 million), saying it would launch a tender to purchase additional shares to take its interest in Netia to around 66%.

(May 15, 2018) [telegeography.com](http://telegeography.com)

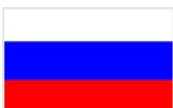


## Portugal

The National Communications Authority (Autoridade Nacional de Comunicacoes, ANACOM) has confirmed that there is no longer a justification for identifying universal service providers within the fixed line sector, due to decreased usage levels. Instead, the watchdog hopes to channel the spare funding into universal broadband provision, or will consider reducing existing tariffs. The scheme has attracted EUR23.8 million (USD28.0 million) worth of funding over the last five

years, but there are only said to be two fixed line customers currently benefitting from universal service provisions. Further, during 2016 and 2017 the average use of payphones dropped to just two calls a day, with 'illicit calls' accounting for the bulk of payphone usage. Going forward, ANACOM notes that all existing services will be maintained by the operators, and the relevant markets will continue to be monitored.

(May 22, 2018) [telegeography.com](http://telegeography.com)



## Russia

The government is poised to replace the Ministry of Communications & Mass Media (Minkomsvyaz) with a new regulatory body known as the Ministry of Digital Development, Communications & Mass Communications. The news site claims that the switch

was finalized in a decree signed by Russian president Vladimir Putin on May 15. As part of the change, Nikolai Nikiforov, the current Minister of Communications, will be replaced by Konstantin Noskov, who currently heads the government's Analytical Centre. (May 18, 2018) CNews



## South Korea

Having detailed the reserve price for its upcoming auction of spectrum suitable for the deployment of 5G services last month, South Korea's Ministry of Science and ICT (MSIT) has now confirmed the sale will get underway on June 15, the Korea Times reports. All three of the nation's cellcos – SK Telecom, KT Corp and LG Uplus – will compete for frequencies in the 3.5GHz and 28GHz bands, with the ministry offering up 280MHz of spectrum in the former and 2,400MHz in the latter. A minimum bid price of KRW2.65 trillion (USD2.5 billion) has been set for the 3.5GHz frequencies, which are being offered for use for an initial ten-year period, while a block in the 28GHz spectrum band will cost KRW621.6 billion for a five-year license; all new spectrum will be available for use from December 2018. It has also been confirmed that the MSIT has set a limit on the maximum amount of frequencies that can be assigned to one mobile carrier, with this limiting each operator to winning no more than 100MHz in the 3.5GHz band and 1,000MHz in the 28GHz band. SK Telecom remains unhappy with these restrictions, however, with one unnamed official at the company cited as saying: 'It is regrettable that the ministry set the limit on the effective use of limited resources ... Measures to provide additional frequencies should be urgently drawn up to prevent a shortage.' Both KT and LG Uplus are understood to be happier with the

caps though, with an official for the former saying: 'The measure will also correct SK Telecom's previous monopoly.' (May 4, 2018) telegeography.com

The Ministry of Science and ICT (MSIT) has announced the reserve price for its upcoming auction of spectrum suitable for the deployment of 5G services. According to Yonhap News Agency, the regulator confirmed its pricing plans at a public hearing held ahead of the sale process itself, revealing that the minimum cost of blocks in the 3.5GHz band will be KRW2.65 trillion (USD2.5 billion), while blocks in the 28GHz band will cost at least KRW621.60 billion. With the auction scheduled to get underway in June 2018, the MSIT will offer a total of 28 blocks in the 3.5GHz band, and a further 24 blocks of 28GHz spectrum. All frequencies will be usable from December 2018. Licenses for the spectrum in the 3.5GHz band will be valid for ten years, while for the 28GHz band they will be valid for five. A determination on spectrum distribution is expected to be made at a later date, however, with one option under consideration said to be sharing the spectrum equally between the nation's three mobile network operators – SK Telecom, KT Corp and LG Uplus. Although the latter two cellcos favor such a distribution method, SKT has indicated its preference for a spectrum allocation method which would favor the largest bidder. (April 20, 2018) telegeography.com



## Sweden

The Post and Telecom Agency (Post & Telestyrelsen, PTS) says it is planning to auction wireless spectrum licenses for 5G services in the 3.4GHz-3.8GHz band in 2019. The regulator intends to offer 300MHz of frequencies on a nationwide basis, while also reserving 100MHz for regional concessions. The PTS says that existing licensees in the 3.4GHz-3.8GHz band will

not have to relinquish their frequencies and reapply for spectrum, although they can volunteer to have spectrum reassigned if they so wish. The regulator is also looking at selling off 5G mobile licenses in the 26.5GHz-27.5GHz band, though it is awaiting moves towards the international harmonization of the band before proceeding. (May 4, 2018) telegeography.com



## Taiwan

The National Communications Commission (NCC) has suggested that, should the price war between the nation's mobile network operators in the 4G arena continue, it could impact on the prospects for 5G in the nation. The NCC's warning comes after mobile market leader Chunghwa Telecom launched a new 4G tariff earlier this month offering government workers, teachers, school staff and military personnel unlimited mobile data and unlimited phone calls to

on-net numbers for TWD499 (USD16.9) per month. In the wake of this, its rivals Taiwan Mobile, Far EasTone and Asia Pacific Telecom all launched competing plans. Explaining the possible impact of a price war on the development of 5G services in Taiwan, NCC spokesperson Wong Po-tsung said: 'If telecoms simply want to boost their market shares and revenue by luring subscribers from competitors, rather than with innovative business models, it would not be positive



for the development of 5G in the nation ... What they are doing does not help to make the pie bigger. They are not benefiting from innovative business models that could sustain them through the maintenance

and operation of 4G services, the auctioning of the 5G service spectrum and finally commercial operation of 5G ... That would hamper sustainable development of the nation's telecommunications industry.'

(April 23, 2018) The Taipei Times



## Thailand

True Move, Thailand's second largest wireless operator by subscribers, has confirmed that it will not participate in the 1800MHz spectrum auction scheduled for August, claiming that it has sufficient bandwidth in a number of spectrum bands to provide its services. The company also said that the THB37.45 billion (USD1.16 billion) minimum reserve price would create an excessive financial burden for the operator. The National Broadcasting and Telecommunications Commission (NBTC) launched the 1800MHz spectrum pre-auction process on April 26. The NBTC will auction three blocks (2x15MHz each) with a reserve price of THB37.45 billion (USD1.2 billion), valid for 15 years. All interested bidders are invited to submit their applications on June 15, with the NBTC scheduled to announce the qualified bidders by August 2; the tender itself will be held on 4 August. All bidders must deposit THB1.87 billion as a bid guarantee to participate in the tender. If only one bid is received, the regulator will postpone the auction for 30 days and if no applications are received during the grace period, one concession will be auctioned to the bidder at a 'one-time increment' of THB75 million on the THB37.45 billion reserve price'. (May 21, 2018) telegeography.com

State-owned Thai telecoms operator TOT and DTAC's

wholly owned subsidiary TriNet Company have signed a 'Lease of Telecommunication Equipment Agreement' and a 'Domestic Roaming Service Agreement' in order to launch a 4G TD-LTE network in the 2300MHz band. Under the collaborative framework, TOT will lease telecommunication equipment from TeleAssets (a subsidiary of TriNet) to deploy a fixed-wireless and mobile broadband network. TOT will use a portion of its network capacity in the band (60MHz overall) to provide its 4G services, while the remainder will be used by TriNet via a roaming agreement, under which TOT will receive an annual revenue stream of THB4.51 billion (USD142.5 million). The National Broadcasting and Telecommunications Commission (NBTC) gave TOT the green light to develop 4G services using its existing 2300MHz spectrum for a ten-year period in October 2015 (i.e. ending in 2025). TOT selected Telenor-backed DTAC as its preferred partner to deploy the network in May 2017. The proposal involved DTAC's wholly owned subsidiary TriNet Company purchasing 60% of TOT's total network capacity in the band. TOT and DTAC initially aimed to sign the final agreement in Q4 2017, after concluding negotiations regarding term and conditions, and securing approvals from the relevant government agencies.

(April 27, 2018) telegeography.com



## Togo

The Minister of Posts & Digital Economy Cina Lawson has announced that she will issue 4G mobile licenses to the country's incumbent mobile network operators (MNOs), Togo Cellulaire (Togocel) and Moov Togo, allowing them to offer ultra-fast mobile internet and kick start the availability of financial services within the framework of the 2018 Finance Act. Under the terms of the license awards, the recipients are required to provide 4G coverage to at least 40% of the population by 2022. Further, Ms. Lawson has revealed plans to extend the duration and scope of the two cellcos'

existing 2G and 3G licenses until 2032 – dovetailing with the duration of the new concessions. In October 2016 the Minister of Posts & Digital Economy began official talks with Togocel and Moov concerning the award of 4G licenses with the aims of driving down prices, improving service quality and boosting the availability of broadband internet on the national level. Speculation had mounted that the government would also look to open the field to an oft-mooted third mobile player, but the latest announcement seemingly confirms that the Togocel-Moov duopoly will continue. (May 9, 2018) telegeography.com



## Uganda

The government has implemented a series of measures aimed at facilitating the sale of a stake in state-owned fixed and mobile operator Uganda Telecom Ltd (UTL). The telco's license will be extended by 20 years, it will get cut-price access to the National Backbone Infrastructure (NBI), and it could be granted additional wireless frequencies. The cabinet has also ordered all government ministries and departments to use UTL as their ISP. In March 2017 the telco was renationalized,

with the state assuming control of a 69% stake from Libyan firm LAP GreenN, which is itself part of the Libyan Post, Telecommunication and Information Technology Holding Company (LPTIC). The government blamed the Libyan shareholder for failing to invest in UTL. The company entered receivership last year after accruing debt of around UGX700 billion (USD190 million), though this had been brought down to around UGX500 billion by early 2018. (May 3, 2018) telegeography.com



## United Kingdom

Ofcom has called on the UK's mobile network operators to work together on managing their use of spectrum and foster a spirit of collaboration as the UK prepares itself for the rollout of 5G services in the coming years. Speaking at the Dynamic Spectrum Alliance's Annual Summit in London this week, Ofcom's spectrum group director, Philip Marnick said that effective spectrum management was critical to the successful implementation of 5G. "Our objective is to ensure that spectrum does not inhibit the rollout of 5G," he said. "Managing spectrum efficiently is crucial to improving how we enjoy technology today and enabling the services of tomorrow. It demands a collaborative approach. This includes exploring options for greater

sharing of spectrum amongst different users and looking at new ways to ensure all industries can access the airwaves they need to unlock the full potential of future technology." The challenges of the current approach to spectrum management was a key theme at the conference and was touched upon by most of the speakers during the day. "We live in a world where protection is key. Everyone thinks they own the bit of spectrum they've got...we work in a way to make sure people can't get in and it's very much a keep off the grass approach. But, it's a world we can't live in. It's an approach of 'no you can't' and we've got to move to a world of 'how do we make it work?'" he said.

(May 3, 2018) [telegeography.com](http://telegeography.com)



## United States

The Federal Communications Commission (FCC) has announced that its controversial 'Restoring Internet Freedom Order' will take effect on June 11, 2018, effectively abolishing existing Net Neutrality principles. FCC Chairman Ajit Pai issued the following statement: 'I strongly support a free and open Internet. And that's exactly what we've had for decades, starting in the Clinton Administration. The Internet wasn't broken in 2015, when the prior FCC buckled to political pressure and imposed heavy-handed Title II rules on the Internet economy. It doesn't make sense to apply outdated rules from 1934 to the Internet, but that's exactly what the prior Administration did. Now, on June 11, these unnecessary and harmful Internet regulations will be repealed and the bipartisan, light-touch approach that served the online world well for nearly 20 years will be restored.' On December 14, 2017 the FCC voted in favor of repealing Net Neutrality rules. The plan was approved following a 3-2 vote – split along Republican-Democrat party lines. The divisive move has generated widespread protests from defenders of the Obama-era rules. (May 11, 2018) [telegeography.com](http://telegeography.com)

The Federal Communications Commission (FCC) has adopted a Notice of Proposed Rulemaking (NPRM) to consider updating the framework for licensing Educational Broadband Service (EBS) spectrum in the 2496MHz-2690MHz (2.5GHz) band. The watchdog notes that this band constitutes the single largest band of contiguous spectrum below 3GHz, and as such, is prime spectrum for next-generation mobile services such as 5G. According to the FCC, EBS spectrum currently lies fallow across approximately 50% of the US, primarily in rural areas. Moreover, access to this spectrum has been strictly limited since 1995, and current licensees are subject to outdated regulations. The NPRM proposes to modernize and rationalize the spectrum band to allow for more flexible use. There are two types of 2.5GHz license in the US: Broadband Radio Services (BRS) concessions and EBS concessions. The former is technically the commercial

version of the license; these licenses can be owned by commercial companies and bought and sold at will. The latter can only be owned by educational or religious organizations, although they can be leased for use by commercial entities. (May 11, 2018) [telegeography.com](http://telegeography.com)

The FCC has voted to launch its first 5G spectrum auctions targeting 6,000 licenses in the 28-GHz and 24-GHz bands. The vote was unanimous, though FCC commissioner Mignon Clyburn concurred, which was short of full-throated support given some concerns she had with portions of the item. The vote was on a public notice seeking comment on the proposed application and bidding procedures for the spectrum. The auction for 28-GHz spectrum will begin November 14, with the 24-GHz auction following immediately after the first auction's conclusion. The 5G auctions will be the first since the broadcast incentive auction freed up TV spectrum for wireless broadband. Clyburn's less-than-enthusiastic support stemmed from several concerns she has around issues including which auction should come first and whether to permit parties to apply for the second auction before the first is closed. FCC Commissioner Jessica Rosenworcel suggested it was about time the FCC held such auctions. "[I]t is troubling that this agency has watched as South Korea, Germany, Australia, the United Kingdom, and Romania have already announced plans for 5G auctions," she said. "Today, thankfully, this agency takes steps to put ourselves back in the running. I'm glad my colleagues are ready to get back on track. Today we schedule our first 5G auction and finally get out of the starting gate." FCC Chair Ajit Pai suggested that the timing had to do with an obstacle not of the FCC's making. "It's important to mention that we will be able to commence spectrum auctions later this year because of recent legislative action," Pai said. "I'm grateful to Congress for passing, and the President for signing, legislation fixing a technical problem involving upfront payments by auction bidders for spectrum." He said that was what had stood in the way of holding the auctions,

and said he was "grateful that we were able to roll up our sleeves and work together with Congress and the Executive Branch to remove this roadblock." Pai was referring to a provision in FCC reauthorization legislation that included a "fix" allowing the FCC "to deposit upfront payments from spectrum bidders directly with the U.S. Treasury," without which the FCC would be unable to conduct future spectrum auctions. "Charter applauds the Federal Communications Commission for continuing to prioritize spectrum availability for the next generation of wireless connectivity that will position the U.S. to compete on the global stage in the race to 5G," said the company. "Today's Public Notice seeking comment on procedures for upcoming auctions in the 28 GHz and 24 GHz bands is an important step towards increasing the amount of spectrum commercially available for 5G. 5G represents the next generation of wireless technology that together with our advanced high speed network will enable Charter to ultimately provide our

customers a truly ubiquitous connected experience powered by ultra-fast, low latency broadband." "AT&T commends the FCC for moving forward with mmWave spectrum auctions later this year," said AT&T EVP Joan Marsh. "The 24 GHz and 28 GHz bands, which are the focus of today's Spectrum Frontiers public notice, are an important piece in the mix of spectrum that will be required to make 5G a reality. We are encouraged by the Commission's commitment to make this necessary spectrum available, and we are hopeful similar auction rules for the 37 GHz and 39 GHz bands are soon to follow." "CTIA applauds the FCC for moving forward with the first high-band spectrum auctions for 5G use," said CTIA SVP Scott Bergman. "Spectrum availability is a key input in the readiness and ability of the U.S. to win the global race to 5G. We look forward to working with the Commission on implementing these critical auctions and on identifying and auctioning additional bands, including mid-band spectrum, to power the wireless networks of the future." (April 17, 2018) multichannel.com



## Uzbekistan

Minister for Development of Information Technologies and Communication Uzbekistan Azim Akhmed khadjayev held a round with telecom operators and internet service providers. Additionally, the basic purpose of the meeting was to discuss the issue of improving the quality of communications service quality. According to a report, number of complaints on quality issues are increasing day by day. Furthermore, the number of complaints are growing constantly. In the first quarter of this year exceeds 1.5 percent. The

cabinet of Ministers approve the resolution on the issuance of low quality in communications on April 7, 2018. The resolution was on the topic of "On measures of further improving the quality of communication services". According the resolution, the instructions was given to all the telecom operators to improve the quality of communication, information and technology services. Furthermore, in this roundtable, the operators were given the opportunity to discuss the issues which they are facing in the telecom market.

(May 9, 2018) telegeography.com



## Zimbabwe

The ICT Minister Supa Mandiwanzira has confirmed that the government has no plans to sell off its 60% stake in the country's third largest mobile network operator, Telecel, and is instead looking to buy out the minority 40% shareholder to take full control of the cellco. A report cites the minister as saying: 'We have been approached by many people who want to buy [our] 60% stake, but I am very clear that it is the government's position that this 60% [stake] is not up for sale.' He added that none of the approaches from prospective buyers were strong enough to guarantee a secure future for Telecel, noting: 'There is a lot of money required to revive the business and to capitalize it, so we need shareholders who are strong [enough] to capitalize the business.' Telecel has struggled to compete with larger rivals Econet Wireless and state-owned NetOne in recent years. Telecel had 1.65 million subscribers at the end of 2017 compared to NetOne's 4.96 million and Econet's 7.49 million.

(May 14, 2018) The Independent

The government has approved the merger of the country's media and communications watchdogs to create a single converged regulator. The government plans to combine the Postal and Telecommunications Regulatory Authority of Zimbabwe (POTRAZ) with the Broadcasting Authority of Zimbabwe (BAZ). The Secretary for Information, Media and Broadcasting Services, George Charamba, is quoted by The Herald as saying: 'The rationale behind merging BAZ and POTRAZ is simple; we are dealing with an industry that has been reconfirmed by technology and we are talking of technological convergence in an area that historically has been distinct.' He added: '[By] merging we will not have any walls between the two entities. It means as you regulate the telecoms [sector] you must be mindful of what is happening in the broadcasting [sector], so the best way would be to have one regulatory authority, so that decisions are done in a way that encompasses the whole sector.'

(April 30, 2018) The Herald

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