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CommunicAsia 2017: Shaping the future of the ICT industry

Asia's powerhouses aim for 5G at upcoming Winter and Summer Olympics

Can investment of \$100m in AI get Singapore's 'Smart Nation' vision back on track? Could smart factories of the future make humans redundant?





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5G is coming sooner than expected!

he talks and limelight about 5G for the past 2 years has started to become real, not just talking about a promising technology!

There are continuous commercial tests of 5G for most operators whether with single or multiple vendors even before waiting for the ITU standardization of the 5G Spectrums!

Since the race has started, operators want to be ahead of each other to deploy this great technology, promising huge capacity and very high speed that was never even expected at the launch of LTE few years back.

Vendors are looking for a better opportunity to increase their sales and they have been paid back for their R&D investment.

Still, the challenge is happening soon; the devices that can manage this speed and capacity of data will increase 25 times more and even much more!

The main and most important thing is the chipset of the device which was already launched by Qualcomm, but the 5G device needs new technology to operate from the receiver to the chipset and to operating systems, etc.

So, the new 5G devices can be launched after 2018. We're waiting for the standardization of spectrums to be out, unless some regional focused devices will be launched such as the case of Apple, using their own spectrum standard for the USA Market.



Can investment of \$100m in AI get Singapore's 'smart nation' vision back on track?

Singapore has announced that it will invest over \$100m in artificial intelligence (A.I.) in an effort to get its smart nation vision back on track. Singapore's Prime Minister Lee Hsien Loong publicly voiced his concerns over the project a number of months ago, and conceded that the Smart Nation initiative was moving much slower than initially expected. Prime Minister Loong claimed that the private sector really needed to do more in order to kick-start and propel the initiative forward.

T

hose analyzing the progress of the project have suggested that the stagnation has been caused primarily due to the fact that

Singapore currently has a lack of startup entrepreneurs, programmers and data scientists.

For those unfamiliar with the initiative and its purpose, smart nation was officially launched in November, 2014, and is supported by other government agencies. The innovative project was created as part of Singapore's efforts to co-create a better future for all its residents through technology enabled solutions.

The city intends to harness all new innovative technology at its disposal in order to improve urban living. It aims to rally the collective efforts of people, businesses and governments to work together to support better living, create more opportunities, enhance public transport networks and ensure a secure, but open data marketplace.

Fundamentally, the smart nation initiative ultimately strives to develop people-centric solutions to address global urban challenges. Through strategic deployment of technology across the country a tech savvy population can work quickly in an attempt to coordinate policies and synergize efforts collectively to create a smart nation.

The criticism directed at the initiative by Prime Minister Loong has sparked a reaction, and government officials have moved swiftly to reenergize the project and breathe new optimism into Singapore's ambition to become a smart nation and innovation capital by announcing two exciting new initiatives.

The city-state's Minister for Communications and Information, Yaacob Ibrahim, was asked directly about the comments made by the Singapore Prime Minister. However,



Yaacob insisted that he felt that they had 'got their act together', although he did concede that Singapore's push to become a smart nation might come a bit later than that of other countries.

Yaacob announced the two new initiatives which were being launched by Singapore's National Research Foundation (NRF), in collaboration with various local agencies. First, a national program called AI.SG from a partnership between six government agencies: the NRF, the Smart Nation and Digital Government Office (SNDG) in the Prime Minister's Office, the Economic Development Board, the Infocomm Media Development Authority, SGInnovate and the Integrated Health Information Systems.

The Minister for Communications said it was imperative for this collaboration to address the current challenges in society and industry, and outlined the three key areas the AI.SG will focus on. In a speech he delivered at the Innovfest Unbound conference, Yaacob said, "AI.SG will do three key things.

First, address major challenges that affect both society and industry, second invest in deep capabilities to catch the next wave of scientific innovation, and finally, grow A.I. innovation and adoption in companies."

The minister added that the three focus areas of application for AI.SG were finance, city management solutions and healthcare. It was also disclosed that the NRF will invest 150 million Singapore dollars (\$107.64) over five years in the AI.SG, and that the initiative will be spearheaded by a team comprising of Tan Kok Yam, deputy secretary at SNDG and deputy president of research and technology at the National University of Singapore (NUS) Professor Ho Teck Hua. NRF CEO. Low Teck Seng. said that the parties involved in this project enjoy a good working relationship which they established in previous R&D investments. The NRF CEO said, "AI.SG builds on the current A.I. knowledge and capabilities that we have built up across our Singaporebased research institutions with our past R&D investments."

The collaboration will attempt to tap into the local community by executing a number of different strategies ranging from networking



events, hackathons and will provide them with the opportunity to benefit from sharing resources and facilities, including software tools, open source frameworks, anonymized datasets and other A.I. high performance computing resources. The ultimate aim of that will be to create A.I. based solutions in order to combat and tackle real-world challenges.

The Minister for Communications also announced that the NRF will enter into a number of partnerships with local universities and research institutes to establish the Singapore Data Science Consortium, which has been specifically designed to strengthen the relationships between the universities, research institutes and the industry. Ultimately a collective effort across all parties will have a greater effect for their shared goal which is to make Singapore a smart nation.

With this cohesion of organizations in place, it enables companies to tap into data science experts at NUS, Nanyang Technological University, Singapore Management University and the Agency for Science, Technology and Research. Yaacob added: "This will help industry to adopt data science and analytics technologies to address real-world challenges." In addition to these two new initiatives being launched, just last month, accessing free public WiFi became much easier for the 180,000 tablet and laptop users who use Wireless@ SG. The new development will now allow them to log-in automatically after a setup process, instead of engaging with usernames and passwords each time it attempts to log in to the WiFi system.

For now, users of non-SIM devices can download a revamped Wireless@ SG app for seamless connection to hot spots after the first set-up, or can opt for a one-time password to be sent to their mobile phone if they log in through a browser.

The move builds on the automatic login already available on devices that use SIM cards, such as smartphones. Broadband service provider MyRepublic will also come on board as the fifth operator offering the Wireless@SG service, after M1, Singtel, StarHub and Y5Zone.

At the time of that announcement those tasked with the responsibility of leading the smart nation effort, noted that moves had been initiated in a bid to consolidate the digital efforts of different government entities. It was disclosed that Government Technology Agency (GovTech), a statutory board under Dr. Yaacob's ministry, will come under the Prime Minister's Office, along with the Smart Nation Program Office and technology planning teams from various agencies.

The minister also said it was important for everyone in society "to feel comfortable with the digital revolution, from internet banking to using apps." And it is more important for everyone to also experience government services, he said.

So despite the reservations from Prime Minister Loong in relation to the speed at which the initiative is moving, these recent announcements show that there is a shared desire from a range of entities that are desperate to execute the mission. Singapore is an incredibly innovative place and is noted worldwide for this, and is used as a benchmark by other cities who want to replicate Singapore's transformation to their own respective cities. This new investment represents an exciting opportunity to accelerate Singapore's desire to become an innovation hub. but most importantly a smart nation.

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Alastair Williamson, CEO at Ranplan, discusses how the increasing commitment to smart city initiatives highlights the need for coordinated indoor and outdoor wireless network planning.

> he race is on to lead the world in delivering smart cities, with AsiaPAC governments, operators and integrators all heavily

invested in smart city initiatives. However, if they are to realize the potential of their smart city visions for both people and things, then they need to take a fresh look at how to provide ubiquitous and seamless wireless connectivity both indoors and out. Certainly, the traditional approach of designing wireless networks from the outside-in will not be able to meet the increasing demand for greater capacity and coverage across dense urban environments.

The outside-in default approach to indoor planning relies on macro coverage to penetrate into buildings across indoor and outdoor environments such as office blocks, shopping centres, campuses or stadiums. But while this has worked adequately for 2G and 3G, the move to higher frequency bands with 4G/ LTE and 5G has made this approach unsustainable. As a result, mobile operators including those in AsiaPAC are supplementing the 'one size fits all' outdoor macro model with in-building systems based on Small Cells, DAS and Wi-Fi to improve indoor coverage and quality of service.

Independent models of indoor and outdoor, RAN and backhaul, RF performance and KPI indicators cannot take account of their overall interaction and interference and will therefore be implicitly inaccurate. With AsiaPAC countries accelerating their adoption of smart city technology such as smart lighting, building and transportation, a more holistic approach to network performance modelling is essential to understand how different types of wireless network infrastructures will work together. If networks are not planned in coordination they will not achieve seamless indoor / outdoor connectivity and will suffer from poor capacity, coverage and interference.

To help meet the indoor / outdoor challenge and make sure networks can cope with the increasing demand for greater capacity and coverage, Ranplan has developed iBuildNet, a suite of planning and optimization tools, which enable coordinated design and roll-out of indoor and outdoor Small Cell. DAS and Wi-Fi networks. The iBuildNet all-in-one solution reduces the time and cost of design and deployment and ensures support for future technologies and standards. iBuildNet can be used for all indoor and outdoor scenarios from purely in-building requirements for offices or factories, to combined indoor and outdoor facilities such as campuses and stadiums to outdoor urban and rural locations, as well as complex underground environments including tunnels and shopping malls.

iBuildNet includes 3D modelling, along with advanced data analysis to automatically optimize AP locations, antenna type, power and channel assignment for dense HetNets.

Ranplan will be launching standard and simplified Chinese language versions of iBuildNet to meet growing demand for localized support at CommunicAsia and MWC Shanghai. This follows successful events hosted by Ranplan in Taiwan and Indonesia that focused on the challenges of delivering seamless indoor and outdoor radio coverage and capacity.

In response to growing demand for iBuildNet in AsiaPAC countries, Ranplan has also signed a number of reseller agreements including Teltai and HLS . These partners put Ranplan in a strong position to take iBuildNet to market and provide local support and expertise to customers in these regions. These are another positive addition to the fast-growing reseller network Ranplan has developed over the last year, covering the Americas, Asia, Australasia, Eastern Europe, Middle East and North Africa.

If you are attending CommunicAsia and/or MWC Shanghai you can visit Ranplan at its stand or to arrange a meeting, demo or call, contact: info@ranplanwireless.com

www.ranplanwireless.com

ZTE strengthens IoT industry leadership with new appointment to ITU-T



ZTE Corporation, a major international provider of telecommunications, enterprise and consumer technology solutions for the Mobile Internet, is pleased to announce the appointments of two company experts to key study groups on the development of Internet of Things (IoT) technologies under the ITU Telecommunications Standardization Sector (ITU-T).

Lin Zhaoji, a ZTE engineer on Standards and Pre-Research, was appointed as Vice Chairman of ITU-T's Study Group 17 on Application Security. Huang Zheng, a ZTE engineer on Standards and Pre-Research, was appointed as Associate Rapporteur of ITU-T's Study Group 20 on the Internet of Things, Smart Cities and Communities. The two ZTE appointees will help the company drive the development of new technologies on Smart Parking, Smart Street Light and the Framework of Blockchain of Things as Decentralized Service Platform at ITU-T.

The two new appointments reflect ZTE's growing contributions to the ITU-T's standardization of IoT technologies. Within the ITU-T, ZTE has already played an active role in the development of X.1314, the first information security standard for IoT, as well as the use of object identifiers (OID) in IoT. The ITU-T's Study Group 20 is a key global industry body shaping the development of IoT technologies covering applications including Smart City, transportation, E-Health and Smart Homes.

Under ZTE's M-ICT strategy, IoT is one of the key focus areas for research and standardization as the company creates an industry ecosystem to promote collaboration and partnership. The Smart Street Light solution developed by ZTE is an innovative new solution that integrates street lighting, a 4G / 5G base station, power re-charging unit and a portal for weather and transportation information.

In 2017, ZTE released the world's first pre-commercial Smart Parking solution based on Narrowband IoT technology, integrating connectivity and processing capabilities to reduce waiting time for drivers by as much as 43%.

ZTE has been granted more than 400 patents on IoT technologies, the third-highest total among companies globally, according to data compiled by industry consultant LexInnova. In March, ZTE was ranked No. 1 in the latest annual rankings for international patent applications by the World Intellectual Property Organization.

The company has filed a cumulative total of more than 68,000 patent applications, with more than 28,000 granted. ZTE is a member of 70 major international standardization bodies, and has filed more than 30,000 standardization proposals.

Korea Telecom (KT) succeeds in 5G field test on airport railway



Korea Telecom (KT) Chairman Hwang Chang-gyu announced that it succeeded in a 5G field test on an airport railway which connects Seoul city center and Incheon to show a successful 5G pilot service in 2018.

For this test, KT built a 5G environment such as base stations and terminals in the watersheds and airport railway coaches in collaboration with Ericsson and the Airport Railroad, and realized a wireless transmission speed of about 4Gbps when the train was traveling at high speed.

KT said that the airport railway 5G field test is a verification procedure for the commercialization of the '5G-R (Railroad)', which provides gigabit speeds in high-speed railway.

In the future, KT plans to expand its 5G field test to major areas such as subways and high-speed railways, which can give a good first impression to foreigners. Based on this, it plans to discover a new service model that can inform Korea's ICT technology to the participants and visitors who visit Korea such as Pyeongchang in 2018. Last year, KT succeeded a 5G field test by constructing a 5G test network in the main areas of Seoul, Gangwon-do, Pyeongchang and Gangneung, by sending high-quality video. Last November, the company conducted experiments on the propagation characteristics of 5G frequency (28GHz) inside the KTX tunnel.

"This field test is a preparatory step to provide new services that applies 5G to the high-speed railway at commercial level," said Seo Chang-seok, general manager of KT Network Strategy Division. "KT is preparing to build a 5G pilot network in Pyeongchang and major cities in Seoul."

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Spark NZ outlines upgrade of New Zealand's voice communications



Voice communications in New Zealand is in for a massive upgrade with Spark New Zealand, the country's main telecom operator, announcing it is switching from the ageing Public Switched Telephone Network (PSTN) to a next generation IP-based network. The new network, to be progressively phased in over the next five years, will provide the foundation for Spark's voice services into the future and will bring together all voice communications – be it landline, mobile, video or data-based.

It will enable richer, better customer experiences with voice, video, and collaboration features over whatever Spark service is available to them at the time, and provides the platform for new voice products and services into the future. "This is a significant and essential upgrade of our oldest network, providing us with a future- proof platform for the latest voice technology, and allowing us to develop and deploy new services. We've been talking about doing this for over a decade now, and many other countries are also in the process of retiring their PSTNs, so it's great to finally be able to get on with it here," says Spark's Chief Operating Officer, Mark Beder.

Beder says although the upgrade is a massive technical and logistical undertaking, it will be largely invisible to customers with minimal disruption to services. The vast majority of customers won't need to do anything and their existing phones and devices will continue to work normally when they switch over from the PSTN to the new IP-based network, which Spark is dubbing the "Converged Communications Network" (CCN). Spark has already been successfully trialing the transition by consolidating and decommissioning 10 of the smaller, more remote exchanges – out of the 482 PSTN exchanges scattered around the country. Another four exchanges will be decommissioned shortly.

Beder says, "These trials have been very successful. All the changes take place behind the scenes and disruption to customers has been minimal. The migration entails a small outage of a few minutes, scheduled during off-peak times for residential customers."

Most customer devices being used today will be compatible with the CCN, but there may be some rare exceptions with legacy low-speed dial up services such as older medical and house alarms, EFTPOS terminals and PABX systems. Newer IP-based digital products with more and better functionality can replace these services and Spark will be working with vendors and customers to help make the transition as easy as possible for customers as the upgrade rolls out in coming years.

Indian telecommunication firm sells stake in tower unit Infratel for \$952m



Indian telecommunications colossus Bharti Airtel has sold off its stake in tower unit Infratel in an effort to reduce the company's debt. It has been reported that a consortium of investors acquired the stake for a fee of around INR61.9bn (\$952m) which represented Bharti Airtel's 10.3% stake in the tower unit. The consortium of investors was spearheaded by private equity company KKR and the Canada Pension Plan Investment Board.

It has been claimed that the same consortium of investors had expressed

an interest in acquiring a significant stake in Infratel back in October 2016 – following the decision by Bharti Airtel's board to approve selling off a proportion of the unit. Reports had surfaced at the beginning of the month which suggested that Airtel had withdrawn its initial plans to sell a controlling stake in the tower business in favor of disposing of around 22%. Now, following the confirmation of the sale – Airtel's holding stake in Bharti Infratel has now been reduced to 61.7%.

The telco subsequently issued a stock exchange filing explaining that the proceeds raised from the sale of its stake will be distributed to pare back the company's debt. Airtel chairman Sunil Bharti Mittal expressed his delight at the investment by the consortium and declared that it represents a clear indication of confidence from global investors in Digital India's initiative – and the telecom infrastructure sector as a whole. He said: "This investment by a consortium of marquee, long-term investors underlines the confidence of the global investors in India's growth story and the government's Digital India initiative in particular. It further reinforces the positive outlook for the telecom infrastructure sector."

Airtel's sale comes hot on the heels of the Competition Commission of India's decision to clear a deal from rival telco Reliance Communications to sell off a 51% stake in its tower business to Canadian investment company Brookfield Group. Earlier this week, The Supreme Court in India ordered mobile operators to re-verify the IDs of all of its subscribers – which is expected to cost operators around \$153m.

Australian telecommunications firm announces launch of new IoT lab in Melbourne



One of Australia's leading telecommunication companies has announced that it will launch a new IoT lab which has been described as a 'game changer' for the country's IoT ecosystem. Telstra Corporation Limited - is one of Australia's largest and most successful telecommunications and media organizations.

It formally disclosed details regarding the launch of its IoT lab in Melbourne, after months of speculation surrounding the project. Telstra CTO, Hakan Eriksson outlined his vision for the project, and said that he hopes university students, start-ups and multinational companies can work with some of the best equipment and minds in this industry in order to bring their IoT solution to life. According to Eriksson the IoT lab in Melbourne will be a public space which will allow anyone with the opportunity to create, test and prototype IoT solutions which shared the goal to improve the overall IoT ecosystem in Australia.

The lab seeks to enable those in the IoT sector to assess how their IoT applications and services will work on Telstra's network through stringent testing in a controlled environment. In addition to this, the Australian telecommunications company stressed that the new facility was the latest phase in its overall 'Innovation Lab initiative' which included both software and hardware for testing.

Telstra's CTO conceded that from their standpoint, they're experts from a network perspective, but not in relation to applications in areas such as agriculture, power distribution and logistics. He told The Financial Review, "We're experts in the network part of it, but not in all the applications that run on top such as agricultural applications, power distribution applications or logistics applications... and they are not experts in networks, so we needed a meeting place."

Eriksson suggested that innovators will also want to gain access to the lab in order to utilize Telstra's infrastructure, experts, community engagement, facilitators, and extensive 4G network.

LG reports highest quarterly operating income in eight years



LG Electronics Inc. (LG) announced first-quarter 2017 revenue of KRW 14.66 trillion (USD 12.70 billion), an increase of 9.7 percent from the same period last year. LG nearly doubled its operating income to KRW 921.5 billion (USD 798.3 million) with the Home Appliance & Air Solutions Company posting its highest quarterly operating income in eight years.

LG Home Appliance & Air Solution Company reported a 10 percent increase in first-quarter sales from the same period a year earlier and 15 percent higher than the previous quarter. Revenues of KRW 4.64 trillion (USD 4.02 billion) reflected strong performance in Asia and Latin America. Domestic sales were 33 percent higher year-over-year due to strong performance by TWINWash washing machines, air conditioners and some refrigerators, as well as the company's newest premium LG Styler clothes management system and air purifiers. As LG enters the peak season, the company foresees an improvement in the business environment across much of Asia and Latin America, two key growth markets.

LG Home Entertainment Company recorded its highest first-quarter operating margin of 8.8 percent on sales of KRW 4.33 trillion (USD 3.75 billion), largely due to expanding sales of premium products, improved cost structure and a more flexible strategy to deal with the increase in panel prices. The company expects TV demand in the next guarter to remain positive due to opportunities in North America, Latin America and Asia, led by the growing popularity of premium LG OLED and Ultra HD TV products and the rollout of the new LG SIGNATURE OLED TV W.

LG Mobile Communications Company reported revenues of KRW 3.01 trillion (USD 2.61 billion), an increase of 4 percent guarter-over-guarter and 2 percent year-over-year, driven by the launch of the flagship LG G6 smartphone and new mass-tier models. The company reported smartphone shipments of 14.8 million units this guarter, up 10 percent from the first quarter of last year in large part due to the Americas. While effects of last year's reorganization are beginning to bear fruit, price competition in the mass-tier segment and competition from other flagship models are expected to increase this year.

LG Vehicle Components Company reported strong sales of KRW 876.4 billion (USD 759.2 million), a 48 percent increase from the first quarter of 2016 thanks in large part to the successful collaboration with General Motors on the popular Bolt electronic vehicle. Continued investments in R&D and growth are expected to continue to affect profitability this year.



Facebook-owned application WhatsApp introduced end-to-end encrypted messaging last year, and while it was received well by the general public, security implications have made it a difficult ride for the company. In January, a report revealed vulnerabilities in the messaging service that could allow Facebook and others to intercept and read WhatsApp messages. Experts are now calling into question the security of encrypted messaging services.



hatsApp introduced full encryption for its services in March 2016 as a means of ensuring that only the sender

and the receiver could view messages being sent via the app. The new privacy feature applied to everything that is uploaded within a WhatsApp chat, including photos, videos and group messages. WhatsApp says end-to-end encryption prevents content and calls from "falling into the wrong hands."

"Every day we see stories about sensitive records being improperly accessed or stolen," the company said in a blog post at the time. "And if nothing is done, more of people's digital information and communication will be vulnerable to attack in the years to come. Fortunately, end-to-end encryption protects us from these vulnerabilities."

Written in WhatsApp's 'Security' section on the app, it reads: "Many messaging apps only encrypt messages between you and them, but WhatsApp's end-toend encryption ensures only you and the person you're communicating with can read what is sent and nobody in between, not even WhatsApp. This is because your messages are secured with a lock, and only the recipient and you have the special key needed to unlock and read them." That all sounded great until security researcher Tobias Boelter discovered a WhatsApp security loophole which he reported to Facebook in April 2016. Boelter discovered a vulnerability that could potentially allow the company to read messages sent via WhatsApp and also provide government agencies a "backdoor" to access messages of people who believe their messages to be secure. Facebook said it was aware of the issue and that it wasn't pursuing a solution because it was "expected behavior".

The loophole has been described by security experts as an acceptable tradeoff that allows WhatsApp to be easy to use on a daily basis. The risk to majority of users is said to be "remote" since the vulnerability only allows for targeted surveillance of individuals or groups of individuals at specific times, as opposed to a large scale mass surveillance of WhatsApp users worldwide.

The vulnerability centers on the generation of unique security keys in WhatsApp's end-to-end encryption, using the acclaimed Signal Protocol, developed by software organization Open Whisper Systems which maintains an encrypted communications application called Signal. These security keys are traded and verified between users to guarantee communications are secure and cannot be intercepted by someone in the middle. However, Boelter discovered it's not that simple...

WhatsApp, he claims, is able to force the generation of new encryption keys for offline users, which the user and sender of the message would be unaware of, and make the sender reencrypt messages with new keys and send them again for any messages that have not been flagged as delivered.

This change in encryption is unknown to the recipient, and the message sender is only made aware if they have opted-in to encryption warning in WhatsApp settings, but this is only after the message has been delivered. This process of re-encrypting and re-broadcasting previously undelivered messages could potentially allow WhatsApp to intercept and download messages that were intended to be sent privately.

"If WhatsApp is asked by a government agency to disclose its messaging records, it can effectively grant access due to the change in keys," says Boelter.

The vulnerability is not necessarily an issue related to the Signal Protocol because Open Whisper Systems' messaging app, Signal, does not share the vulnerability. If a message recipient using Signal changes the security key while offline, for example, the sent message will not be delivered and the sender will receive notification of the change in security keys without the message being automatically sent. This differs to WhatsApp, which automatically resends an undelivered message with a new key without warning the user.

The loophole has been verified by other security experts, such as Steffen Tor Jensen, head of information security and digital counter-surveillance at the European-Bahraini Organization for Human Rights, who says, "WhatsApp can effectively continue flipping the security keys when devices are offline and re-sending the message, without letting users know of the change till after it has been made, providing an extremely insecure platform."

WhatsApp responded in a statement insisting it "does not give governments a 'backdoor' into its system and would fight any government request to create a backdoor." The controversy adds to a growing list of privacy issues for WhatsApp ever since it was acquired by Facebook in 2014 for \$22 billion.

After the recent March 22 Westminster attack in London, the British Government said it wants its security services to have access to all encrypted messaging applications such as WhatsApp, as it was revealed that the app was used by the attacker to send an encrypted message before the incident.

Home Secretary Amber Rudd told Sky News it was "completely unacceptable" that the police and security services were not able to access the encrypted WhatsApp service to see the message that was sent by the attacker. Rudd said: "You can't have a situation where you have terrorists talking to each other – where this terrorist sent a WhatsApp message – and it can't be accessed."

The UK recently passed the Investigatory Powers Act which allows the government to intercept bulk data of users held by private companies, even without suspicion of criminal activity. According to a Guardian report, private companies can be forced to "maintain technical capabilities" that facilitate data collection through hacking and interception. Companies can also be made to remove "electronic protection" from data. Some experts suggest WhatsApp's exposed vulnerability could be a "gold mine for security agencies" and facilitate government interception of private citizens. Professor Kirstie Ball, co-director and founder of the Centre for Research into Information, Surveillance and Privacy, says: "It's a huge threat to freedom of speech, for it to be able to look at what you're saying if it wants to."

WhatsApp first came under fire for security reasons in August last year after updating its terms-of-service to begin sharing user phone numbers, profile data, status message and online status with Facebook for advertising purposes.

The Electronic Privacy Information Centre (EPIC) accused WhatsApp of breaking its promise to users after announcing in 2014 that its sale to Facebook would not affect its privacy policy, and that it would never share or sell personally identifiable information such as phone numbers, name and profile data.

WhatsApp defended itself from the accusations, referring to an option for users to opt-out of the sharing portion of the terms-of-service. But that didn't protect WhatsApp and Facebook from a Federal Trade Commission consent order, claimed EPIC, which requires companies to offer 'opt-in' consent to users before asking them to agree to new terms.

WhatsApp provided an opt-in option in a way, but it wasn't clear enough how to access it. For instance, a user had to click "read" to view the terms-ofservice agreement before the opt-in checkbox appears on screen.

Facebook and WhatsApp subsequently ended the sharing of user data in November last year after pressure from the European Union's independent data protection authority Article 29 Working Party in October. The European Commission filed charges against Facebook for providing "misleading" information during the period before it acquired WhatsApp, following its data sharing change.



Asia's powerhouses aim for 5G at upcoming Winter and Summer Olympics

The 5G race in Asia is underway with the region's powerhouses Japan and South Korea going head-to-head. Both countries have major international sports showcases coming up, giving local telcos the chance to flex their muscles. South Korean providers are working towards early deployment of 5G for the PyeongChang Winter Olympics in 2018; while Japanese providers have the opportunity to showcase fullfledged 5G at the 2020 Summer Olympics in Tokyo.

TELECOM Review

he Olympic Games have long played host to some of the world's most innovative technology showcases.

From the first electronic stopwatches at the Stockholm Olympics in 1912, to the live television broadcasts at the Berlin Olympics in 1936, and instant video replay at the Salt Lake City Olympics in 2002; host cities strive to show the world what they're made of. This time, the spotlight is on Japan and South Korea to showcase 5G technology.

Commercialization of 5G is not expected to start before 2020, as governments, companies and standardization groups negotiate and try to standardize norms between different countries for a smooth 5G transition.

The timeline would appear to give Japan an advantage over South Korea to provide 5G for the 2020 Tokyo Olympics.

However, South Korea shows no sign of giving up on its 5G ambitions as it aims to showcase pre-standard 5G for the Winter Olympic Games.

"The PyeongChang Winter Olympics will become the world's first 5G Olympics utilizing the IoT [internet of things] and UHD. We are aiming to make use of the technology for the sake of people's convenience and memory above anything else," said Lee Hee-beom, president and CEO of the PyeongChang Organizing Committee for the 2018 Olympic and Paralympics Winter Games, in a recent interview with Business Korea.

"5G test networks are to be established in the venues, the Seoul Incheon International Airport, downtown in Seoul and so on," Lee added. "The networks will provide extremely realistic media services and content based on hologram, virtual reality, etc."

2018 Winter Olympics to provide 'immersive experiences'

South Korean mobile operator Korea Telecom (KT) says it wants to give spectators at the 2018 Winter Olympics what it hopes will be their first 5G experience, regardless of whether 5G has been commercially deployed.

South Korea plans to use the Winter Olympics in February 2018 to test 5G on the hundreds of thousands of spectators, providing them with access to very high definition content or virtual reality.

KT chief executive Chang-Gyu Hwang has promised that 5G will bring "dramatic changes.

" A KT spokesperson at Mobile World Congress this year said: "KT will introduce brand new services that have not ever been possible with the radio technologies of the current generations."

The current 4G standard enables fast broadband access via smartphones, but governments and manufacturers foresee the next generation enabling connection speeds of up to 1,000 times faster than what's currently available.

Dexter Thillien, an analyst at IBM Research, says operators are "looking to 5G as a differentiator, especially in markets where LTE (4G) is ubiquitous" such as South Korea.

5G at the Winter Olympics in South Korea will be "pre-standards 5G" says Thillien. "The Olympic launch is more a marketing ploy to say they were the first." The main obstacle the country faces when introducing 5G before standards have been finalized, is that the frequencies used might not, in the end, be used at a global level.

"We know, for example, that the spectrum of frequencies that will be used in South Korea is not available in Europe, but will be in the United States," says Thillien.

In June 2016, KT confirmed its intention to deploy 5G technology at

the PyeongChang Winter Olympics. Speaking at Mobile World Congress Shanghai last year, Dongmyun Lee, EVP at KT, said some of the services to expect through 5G will include a drone equipped with a video camera. Lee said viewers will be able to experience the Games from the athlete's point-of-view thanks to 5G.

A 5G proof of concept was completed by KT and NEC in April last year for 5G wireless backhaul solutions utilizing spectrum in the 70GHz and 80GHz bands.

The trial was conducted at Phoenix Park Ski World in PyeongChang using KT's commercial mobile network infrastructure.

The operator has been collaborating with vendors such as ZTE and Ericsson for the development of 5G. The carrier currently offers LTE services using spectrum in the 900 MHz, 1800 MHz and 2.1 GHz bands, having initially launched LTE services in January 2012.

Most recently, at this year's Mobile World Congress in Barcelona, KT's chief executive presented the PyeongChang 5G Specifications based on a 5G end-to-end network. This was the first time a perfect 5G mobile network interlocked with 5G terminals, basestations and core devices was presented.

"5G end-to-end network," jointly developed by KT and Samsung Electronics, is wirelessly connected to base stations and terminals and interlocked with core network equipment that act as the control tower. It performs all key functions, such as customer authentication, mobility and linkage with external networks, required for providing customers with 5G services.

In addition, KT applied "5G distributed architecture" to the 5G end-to-end network in order to improve the efficiency of the existing network architecture (4G, LTE), which handles all data traffic at the network center.



5G distributed architecture can virtualize core networks to handle data traffic and allocate them to any desired area. As data transmission starts at the nearest location to a customer, even high capacity media which cannot be handled by 4G (LTE) networks can be transmitted smoothly with low latency.

KT predicts that 5G distributed architecture could stably commercialize 5G-based services such as connected cars that deliver traffic information with low latency, remote medical service systems that require real-time control and smart factories. Chief Manager at KT Infra R&D Center, Hong Beom Jeon, said: "KT will complete 5G trial service networks in the second half of the year based on the 5G end-to-end network that contains core devices. We will provide spectators with entirely new 5G service experiences such as Sync View, 360° VR and omni-view, etc."

KT's rival in South Korea, SK Telecom, says it will also offer immersive experiences at the 2018 Winter Olympics such as the possibility to see live holograms of the athletes as well as socalled omni-view camera angles through which viewers can choose to watch an event from multiple points-of-view.

SK Telecom's '5G White Paper' says the Korean government has set up the Creative 5G Mobile Strategy, under which it presented SNS, mobile stereoscopic image, intelligent service, ultra-high-speed service and UHD/hologram as the five core services.

South Korea, China, Japan and the EU have started to establish a special organization to define the 5G concept and share views on 5G networks and the services around it. Initial discussions are ongoing, according to SK Telecom's report, focused on innovation of mobile telecommunication technology to deliver gigabit data rate and the potential 5G services that can reflect people's lifestyles in 2020, the year the industry is aiming to commercialize the technology.

In an effort to meet the requirements of the evolution to 5G from in and out of the country, SK Telecom has conducted its own research on 5G networks from 2013 and is actively participating in global 5G discussions.

One of the company's most significant achievements was in February this year when it announced it had successfully tested its 5G network on a connected car running at 170 kilometers per hour, reaching 3.6Gbps data transfer speeds, the highest for a 28GHz-based 5G pilot network.

SK Telecom worked with Ericsson and BMW to achieve the speed at the German vehicle manufacturer's driving center in Incheon city, west of South Korea's capital Seoul. The operator also announced plans with Ericsson and Qualcomm to conduct interoperability testing and overthe-air field trials based on 5G New Radio (NR) standards that are being developed in 3GPP.

The trials are intended to closely track and push to accelerate the first 3GPP 5G NR specification that will be part of Release 15.

The companies say the trials will showcase new 5G NR technologies that use wide bandwidths in the higher frequency bands to increase network capacity and achieve multi-gigabit-per-second data rates. Such technologies are said to be critical in meeting the connectivity requirements for things like virtual reality, augmented reality and connected cloud services.

Commercial 5G deployment at 2020 Summer Olympics

Ericsson has also been working closely with Japanese telecoms corporation SoftBank to conduct 5G trials in Japan. Telecom operators in Japan are working aggressively to showcase commercial 5G in time for the Summer Olympics in 2020. Ericsson and SoftBank announced plans for a 28GHz trial in Tokyo that will involve indoor and outdoor environments, covering both device and mobility stationary tests.

SoftBank's trial with Ericsson will use the vendor's mmWave (millimeter wave) 28GHz 5G test bed solution, which includes basestations and device prototypes and will showcase advanced 5G technologies such as massive-MIMO (multiple input, multiple output), massive beamforming, distributed MIMO, multiuser MIMO and beam tracking. Also part of the mix will be multi-gigabit data rates and ultra-low latency.

"SoftBank started to verify 4.5 GHz radio back in August 2016 and now 4.5 GHz is becoming the leading candidate band for 5G services in Japan together with 28 GHz," says Hideyuki Tsukuda, senior vice president at SoftBank. "We are leveraging Ericsson's Test Bed with 28 GHz radio to validate a lot of advanced features at super low-latency and high throughput, which helps position us as a pioneer of 5G."

Mikael Eriksson, head of Ericsson Japan, said he is "confident that we will be the first to deliver 5G services and that we will deliver the best performing end to end network in Japan."

SoftBank is competing headto-head with NTT DoCoMo, the predominant mobile phone operator in Japan. Last November, the operator announced it had completed a 5G trial with Samsung Electronics that achieved a data speed of more than 2.5Gbps with a mobile device that was in a vehicle traveling 150 km/h, which proved the feasibility of connectivity for 5G devices in fast moving trains. The transmissions were conducted using the 28GHz band. In early May this year, NTT DoCoMo announced its new medium-term 5G strategy for implementation through the 2020 fiscal year, effective immediately. The plan focuses on six declarations that DoCoMo will act upon to realize a more innovative business structure in the coming era of 5G.

The underlying objectives of the "Declaration beyond" plan are: 1. to "exceed the expectations of customers and help them connect with their aspirations via exciting and unexpected services" and 2. to "create all new value propositions in collaboration with business partners as DOCOMO challenges new frontiers with an eye to 2020 and beyond."

Despite the major advances made in the design and evolution of 4G cellular networks in Japan, NTT DoCoMo says new market trends are "imposing unprecedentedly challenging requirements" which are driving the company to the "necessity of a 5G mobile network."

The high-level targets of the company's 5G strategy, according to the DOCOMO 5G White Paper, include higher system capacity, reduced latency, higher data rate, massive device connectivity (IoT), as well as energy saving and cost reduction.

Japan's mobile operators are working tirelessly to develop 5G wireless technology to cater for an estimated half a million visitors to the 2020 Summer Olympic Games. Estimations suggest that this could increase network capacity from anywhere between 100- to 1000-fold.

"The Olympic Games is a sports festival, but also it's a chance to show the innovation of scientific technologies," said Tokyo's organizing committee CEO Toshiro Muto. "We have the potential to make this Olympic Games wonderful [and one] that the people of the world are going to admire."

FEATURE

Planning wireless networks inside out

Alastair Williamson from Ranplan looks at how a new generation of radio planning tools for small cells helps to solve the challenges of indoor data.

The vast majority of data services are already consumed indoors, an unsurprising fact considering the average time spent by people at work or in the home and the tendency to use tablets and smart phones sitting down, rather than on the move. Traditionally, operators have designed their indoor networks using external cell sites to penetrate into buildings, believing this to be more cost effective than installing separate, independent indoor systems. While this approach to delivering capacity from the outside in was effective enough in the 2G and 3G era, with the move to higher frequency bands with 4G/LTE and 5G, it has become an outdated approach.

This problem is particularly apparent with large complex building structures. With the range of materials used, ensuring a signal penetrates evenly using external transmitters is simply not possible. Given that seven stories are considered as a reasonable maximum for outdoor signal penetration from street level, people in tall buildings may get a good view but no connectivity. This is further compounded when it comes to combined indoor-outdoor facilities such as campuses and stadiums.

The indoor and indoor/outdoor solution has to be built around small cells or DAS networks, while also integrating seamlessly with WiFi networks and of course, the macro cell network at the indoor / outdoor threshold. Indoor small cells do not suffer from the same issues and also make a compelling business case based on increasing affordability of deployment, cheaper maintenance costs and superior RF power levels.

The problem for network designers is that traditional outdoor design tools just won't hack it indoors, resulting in a growing need for new radio planning, design and optimization tools to determine the most effective locations, configuration and parameters for indoor systems. For effective radio planning inside buildings, the structure has to be defined and modelled in as much detail as possible, including a detailed knowledge-base of propagation characteristics of different materials and the leakage out into the external environment, potentially causing handover issues.

UK based Ranplan Wireless recognized these challenges early on and developed iBuildNet, the first all-in-one, heterogeneous indoor network planning, optimization and simulation solution for small cell, DAS and WiFi networks. The tool uses powerful algorithms to allow users to perform cross-system design and simulation with accurate modelling of coverage, traffic steering and handover. This allows users to optimize their network and prevent small cells from being installed in inappropriate locations.

iBuildNet is a cost-effective and flexible solution that includes 3D modelling, along with advanced data analysis to automatically optimize AP locations, antenna type, power and channel assignment for dense HetNets. It also simplifies and unifies workflow and reporting along with asset, project and audit management, which speeds up and reduces the cost of designing and deploying complex indoor wireless networks.

iBuildNet is also capable of planning indoor and outdoor environments in coordination, reversing the conventional default outside-in approach. And with mobile operators increasingly embracing WiFi to deliver greater coverage and capacity for the enterprise, iBuildNet allows indoor and outdoor WiFi and cellular networks to be planned in coordination, reducing the time and cost of deployment and ensuring support for future heterogeneous technologies and standards.

Operators need to deliver the same user experience regardless of location. If the outside in approach does not work, it is time for them to take a fresh look from the inside out.

For more information contact: info@ranplanwireless.com

Or visit: www.ranplanwireless.com 🎟

Nokia, China Unicom conducting live trial of Virtualized Services Router



Nokia and China Unicom are conducting a live trial in China Unicom's commercial network using the Nokia Virtualized Services Router (VSR). The trial involves more than 5,000 residential subscribers and allows China Unicom to simplify and accelerate the delivery of residential broadband using a new, agile and flexible network which is based on virtualized network functions (VNFs). The initial trial is being carried out in the province of Shandong and will expand to the other parts of the country over the next two years as it evolves to the next phase, which will include delivery of IPTV services.

China Unicom is adopting Software Defined Networking (SDN) and Network Functions Virtualization (NFV) to enhance efficiency, agility, openness and scaling capabilities to evolve to a cloud-ready network. The successful trial of the industry-proven Nokia VSR will increase operational efficiency and enable faster creation and delivery of new services.

The trial uses the Nokia VSR as a next-generation, virtualized Broadband Network Gateway (BNG) for residential subscriber management functions and advanced service capabilities. As part of its initiative to transform its metro service edge, China Unicom plans to migrate massive BNG services to the virtualized platform to leverage the opportunities of the cloud era.

"We are proud to be a part of China Unicom's initiative to evolve its metro edge to a cloud-centric architecture," said Sri Reddy, head of IP Routing and Packet Core business at Nokia. "The Nokia VSR provides delivery of broad and rich virtualized IP edge applications with superior performance and enhanced scalability. Upon completion of this network transformation project, China Unicom will ensure increased operational efficiency and deliver a superior customer experience for its subscribers."

Xiaomi hopeful new flagship smartphone can be catalyst for success



Chinese smartphone maker Xiaomi has unveiled its newest flagship smartphone – and the organization is confident the device can have a positive impact in the saturated smartphone industry. Xiaomi CEO conceded that the company had suffered a significant sales slump last year, and that it was going through somewhat of a 'transitional period'.

However, that pessimism has been replaced with optimism with the launch of the 'Mi 6' smartphone. Management at Xiaomi believe the new device can serve as a catalyst that will see them make up for lost ground on rivals, after a disappointing 2016. The Chinese conglomerate launched the 'Mi 6' at an event in Beijing, having shelved plans to launch it at MWC in Barcelona, earlier this year. Well what is so different about this product that has Xiaomi representatives believing it will provide a pathway back to challenge the titans of the smartphone sector? The first striking feature is the similarity to that of the iPhone 7, but the price isn't one of them. The entry model - featuring 64 GB of storage - comes in at 2499 RMB, that's around \$360, with a 128 GB option (2899 RMB, \$420) and ceramic edition (2999 RMB, \$435) completing the range. All three are far cheaper than iPhone equivalents, but, interestingly for Xiaomi, the range is more expensive than the company's usual flagship prices.

Another quite obvious iPhone comparison that stands out is that there is no headphone jack on Xiaomi's new device, just as Apple elected to do with last year's iPhone 7. The Chinese firm has seemingly followed that trend, or is doing what makes sense for itself in this instance, that is already ammo for Xiaomi skeptics.

With the Mi 6, Xiaomi has bumped up

its RAM to 6GB, the most it has ever offered in a smartphone. The device is powered by a Snapdragon 835 10nm processor with a 64-bit, octa-core CPU with a whopping 3350 mAh battery that the company said will last a day thanks to "optimization" controls built into its MIUI operating system.

The device will go on sale from a number of selected stores in China in the next few days, expansion into international markets carefully selected by executives will commence at a later date, Xiaomi declined to provide a specific date it plans to initiate this launch. Xiaomi suffered a huge blow when the dynamic face of the organization, Hugo Barra decided to quit the company to lead Facebook's VR department.

Xiaomi revealed it cleared \$1 billion in revenue in India, its second largest market behind China, last year, while Lei Jun added that it ranks second in the country, but nothing has been said of its performance in the other 20-odd countries where its phones are sold.

Chinese smartphone maker produces 1 phone every second in India



Leading smartphone maker Xiaomi has revealed that it is producing one device every second in India. The Chinese tech colossus has revealed that a staggering 95% of the Xiaomi smartphone being sold in India were being made in the country.

That disclosure was made by vice president and managing director of Xiaomi India, Manu Jain, at the announcement of a new manufacturing plant in the scenic coastal city of Vizag in the southern Indian state of Andhra Pradesh. Xiaomi also disclosed details of its latest phone the Redmi 4A. Mr. Jain said, "With this new plant and our latest Redmi 4A, we are truly excited to be playing a role in enhancing the quality of life for people in India and being a part of the fabric of the country.

"We have been able to create employment for more than 5,000 people. Over 90 percent of the workforce will be women. " In addition to this, he thanked Foxconn for being Xiaomi's manufacturing partner in India.

However, the news for Xiaomi isn't so good at home in China. Its smartphone sales took a whopping hot falling by 36% which left the organization in fifth place in the smartphone sales chart. Huawei, Vivo, Apple and OPPO are all ahead. It appears its investment in India has paid off.

At the start of the year it announced that it crossed the US\$1bn revenue mark in the country, this result comes just two years after its official launch in India. Former vice president of Xiaomi, Hugo Barra first announced its intentions to open the manufacturing plant in Vizag back in August 2015. At the time, the former VP said, "Manufacturing smartphones locally is a significant step towards incorporating Xiaomi into the fabric of India in the years to come.

" However, two months ago Barra stunned the organization when he quit his role with Xiaomi – to take up a new post in Silicon Valley with social networking leader Facebook. Barra has been tasked with the responsibility of leading Facebook's VR team.

By March 2016, it was also revealed that over 75% of Xiaomi phones being sold in India where being manufactured in its plant in the region. However, with a second manufacturing plant now in operation, Xiaomi will now be able to produce one phone every second during its operational hours.

Japan's NTT DoCoMo develops world's first spherical drone display



Japan's NTT DoCoMo, Inc., in a continuing quest to create innovative new business, has developed a spherical drone display - an unmanned aerial vehicle that displays LED images on an omni-directional spherical screen while in flight - which DoCoMo believes to be a world first (as of April 16, 2017).

The device comprises a spherical external frame, an internal LED frame consisting of a series of eight curved LED strips that extend from top to bottom, a drone fitted inside the sphere and legs protruding underneath.

During flight, the LED frame spins on its axis in a rapid horizontal motion,

forming an afterimage effect to create the illusion of a solid sphere of motionless LEDs. The highly maneuverable drone can be operated virtually anywhere, including venues such as concert halls or arenas where it can fly around as part of a performance or deliver advertising messages, event information, etc.

The maximum diameter of the spherical frame is about 88cm and the entire device, including the drone, weighs just 3.4kg. The display measures 144 pixels high and 136 pixels wide (horizontal circumference).

Equipping a drone with a spherical display had proved difficult until now due to challenges such as the display interfering with the airflow of the drone's propellers as well as the added weight of the display. However, DoCoMo's solution uses a largely hollow display that is exceptionally lightweight and allows air to flow through it, yet it still achieves the illusion of a solid display by creating an afterimage effect with rapidly spinning LEDs.

DoCoMo aims to commercialize its spherical drone display in the fiscal year ending in March 2019. Going forward, the company will explore potential entertainment and messaging solutions for event venues, including stadiums and concert halls.

DoCoMo will showcase its spherical drone display at NTT ULTRA FUTURE MUSEUM 2017 during the Niconico Chokaigi conference at Makuhari Messe, which will begin on Saturday, April 29. The exhibition will include a flight demonstration inside the event hall.

Under the "docomo Drone Project," DoCoMo is exploring ways to combine aerial mobility and communications mobility in innovative solutions for logistics, messaging, entertainment and other fields.

China set to tighten grip on internet controls



Chinese President Xi Jinping plans to tighten the country's internet regulations with a pledge on May 7 to increase controls over search engines and online news portals, CNBC reported. The increased security implementations are the latest in President Jinping's attempts to oversee strict Communist Party control over internet content in China.

One of the President's top priorities for China is "cyber sovereignty". He has also reasserted the ruling Communist Party's ability to limit and guide online discussion in the country. China's five-year cultural development and reform plan released by the party and State Council, or Cabinet, aims for the "perfecting" of laws and rules related to the internet.

According to the plan, carried by the official Xinhua news agency, there will be a qualification system for people working in online news. Without sharing specific details, it said, "Strike hard against online rumors, harmful information, fake news, news extortion, fake media and fake reporters."

Chinese media must follow the Communist Party by upholding the correct guidance on public opinion and promote "positive propaganda". The scope of the Chinese government's control over the internet is evident by the fact that many foreign websites, such as Google and Facebook, are blocked.

Just recently the Chinese government introduced tighter rules for online news platforms and network providers. Regulators claim that the controls are necessary since the country faces growing security threats, and say the rules are implemented in accordance with the law.

The plan aims to "Strengthen and improve supervision over public opinion." It also calls for more effort to be put into promoting China's view and cultural soft power globally, but no further details were provided.

Huawei shares its vision for future cities in Qatar



In line with the Qatari government's National Vision Strategy 2030, Global ICT leader Huawei shared its vision for future cities during the Arab Future Cities Summit Qatar that was held in Doha on April 11 – 12, 2017.

Held under the theme 'Advanced Technology Transforming Qatar's Future', the Summit highlighted the impact of technology on tomorrow's urban developments, with a particular focus on Qatar.

The two-day event saw the participation of global and regional industry leaders, including Huawei, who discussed the various aspects of future cities such as connected transport, smart stadiums, cyber security, airport technology, security, government technology and smart economic zones. "Cities around the world are evolving when it comes to providing services and safety to ever-growing populations," said Zong Yan, CEO of Huawei Qatar.

"Huawei continues to invest heavily in innovation for these future cities, spending annually on research and development to a tune of USD 11 billion in 2016. Huawei believes in having an agile and innovative ICT platform that relies on ROADS (Real Time, On Demand, Always Online, DIY, Social) in order to provide all stakeholders with solutions needed in establishing Safe and Smart City capability under one umbrella."

"Smart City development extends over 3 mega waves, which are technology trends, service portfolio and digital ROADS," said Safder Nazir, VP of Huawei Digital Industries Middle East, during his keynote speech.

Huawei also showcased its nextgeneration technologies during the event including Smart City Platform, Safe City (Intelligent Operation Center), Intelligent Video Surveillance and Intelligent Transportation (Fleet Management, NBI and OceanConnect), which illustrated Huawei's expertise in defining a complete Smart City framework, as well as its on ground implementation based on Qatar's unique smart city requirements.

Huawei's extensive smart and safe city expertise is critical to the public safety and protection of over 400 million people in more than 100 cities across 30 countries.

Huawei will demonstrate its leadership in safety prevention and response across four key areas, which include social security and unrest, accident disaster, public health and natural disaster.

Huawei is set to host its Global Safe City Summit in the UAE later this month, with participation by over 400 public safety and law enforcement agencies, telecom providers and ICT experts. The two-day event will serve as a platform for insights and best practices on safe city solutions that are empowering governments around the world.

Could smart factories of the future make humans redundant:

One of the greatest threats to jobs around the world is automation - smart factories of the future. Germany's 'Industry 4.0' initiative promotes the computerization of traditional industries such as manufacturing, as do many government initiatives around the world. While some praise the idea of "intelligent manufacturing", tech leaders have spoken out in support of a universal basic income (UBI) to avoid technology companies being perceived as job destroyers.

> n 1962, the first industrial robot made its debut as 'Unimate' which came online at General Motors in New Jersey. Since then, the manufacturing industry has changed

drastically. In the 1990s, production robots were lined up in factories piecing together products across assembly lines in a painfully repetitive process. Now, the manufacturing industry is going through the first stages of adopting artificially intelligent robots that can make production decisions in real time.

How does real-time artificial intelligence work in manufacturing? The technology enables sensors to spot defects in production. When a defect is detected, the data is fed to a computer system in the cloud, which can then immediately remove the defective part of equipment from the production line and order a replacement. This efficient real-time problem solving can save manufacturers billions of dollars in repairs and recalls.

Jeff Immelt, chairman and chief executive of General Electric (GE), says manufacturing and industrial companies "need to become digital to survive." Immelt believes the manufacturing industry must "turn information into insights and into outcomes." The advantages of smart manufacturing are clear: it enables industrial product companies, for instance, to keep their inventories as lean as possible to reduce costs and keep stock on-hand for when needed. Germany's Industry 4.0 initiative defines smart factories as being characterized by adaptability, resource efficiency, and making great use of wireless connections, sensors and big data.

5G, expected to be commercially deployed by 2020, will play a major role in connecting production line robotics by providing high performance mobile services, says Ericsson's recent report 'The 5G Business Potential'. The manufacturing industry, it says, shows a strong market potential for ICT players.

The use of 5G in smart factories could offer "extensive benefits to manufacturing processes," the report adds. "Connected cameras and sensing devices can, for example, provide feedback to control centers enabling skilled staff to control and steer manufacturing remotely, resulting in increased productivity and flexibility."

Industry digitalization investments are growing, according to the report, generating revenue for ICT players worth an estimated US\$3.3 trillion by 2026. In a nutshell, the manufacturing industry is entering a new digital intelligent era. Smart manufacturing aims to take advantage of advanced information and manufacturing technologies to enable flexibility in physical processes to address a dynamic and global market.

There will need to be increased workforce training for such flexibility and use of the technology rather than specific tasks as is customary in traditional manufacturing, according to experts. Many fear that smart manufacturing will become so advanced that the need for humans in the workforce will diminish.

"There is going to be a backlash when it comes to jobs," said Sayantan Ghosal, an economics professor at the University of Glasgow speaking to CNBC, who has written about how unemployment could rise once AI is rampant in the workplace. Ghosal has spoken out in support of a universal basic income to support people who are affected by the digitization of industries such as manufacturing.

The pace of development of artificial intelligence software has "surprised" even top executives such as Sergey Brin, the co-founder of Google. The rapid growth of automated services and "intelligent manufacturing" has led many leading figures in the technology community like Brin to support the idea of a UBI.

At the World Government Summit held in Dubai this year, Tesla chief executive Elon Musk said a UBI would be necessary. "There is a pretty good chance we end up with a universal basic income, or something like that, due to automation," he said. Echoing Musk's prediction, Marc Beioff, chief executive of Salesforce, has warned that Al could create "digital refugees".

The technology industry is becoming more aware of its role in driving automation and job displacement, according to experts, and technology companies do not want to be the punching bag for workers who are made redundant because of technology advancement. But it is still unclear how a basic universal income could work.

There have been suggestions that every government could pay its citizens a monthly sum to get by. However, this could backfire because it would only provide a bare minimum for living, and workers would still try to seek out higher standards of living by working. Another potential avenue for a UBI is through a sovereign wealth fund, where governments would take an equity stake in all of the major publicly listed companies in the country and pay citizens money from the investments.

Bill Gates, the founder of Microsoft, has floated the idea of a "robot tax" as a way for governments to generate more income for displaced workers in the future. In an interview with Quartz, Gates said, "If a human worker does \$50,000 of work in a factory, that income is taxed. If a robot comes in to do the same thing, you'd think we'd tax the robot at a similar level."

Faced with the potential job losses automation could bring, governments are finding themselves at a tricky crossroad. On one hand, alarm bells have been sounded, warning of the potential layoffs the role of robotics could cause. But on the other hand, automation has been a major driver of efficiency in manufacturing and other complex industries.

Information from the Bureau of Labor Statistics in the United States shows that manufacturing jobs increased in the country between 1994 and 2000. After that period, manufacturing jobs spiraled downwards – a loss of five million jobs in the intervening years. However, productivity during that period increased.

IDC's 'FutureScape: Worldwide Robotics 2017 Predictions' report says almost one-third of robotic deployments will be smarter by 2018, capable of collaborating with other robots and working safely alongside humans. What's more, the report predicts that by 2019, governments around the world will have drafted or implemented specific legislation for robotics and safety, security and privacy.

However, the World Economic Forum predicts that automation will result in the net loss of over five million jobs across developed countries by 2020. Another study, conducted by the International Labor Organization, states that as many as 173 million workers across Southeast Asia are at risk of job displacement by robots, which are predicted to become prominent in the manufacturing of clothing.

Now that the evolution of technology is advancing at a faster rate than it ever has, governments, companies and experts are left to weigh the benefits of automation (efficiency, increased profits) against the disadvantages (mass job losses). Should jobs be sacrificed for the efficiency that technology can bring?





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