GTI Industry Briefing

August, 2020 | No. 37

Edited by GTI Secretariat
August, 2020

Contents

Top News

Industry News

News Flash

Contents

GTI Summit 2020 Online Edition Makes Its Global Virtual Debut to Enable "The 5G For All" (1/2)

The GTI Summit 2020 Online Edition, themed with **"The 5G For All"**, went virtual globally as expected on July 1st-2nd, 2020. It has attracted delegates from organizations, operators, verticals and partners to be involved in the summit, to jointly propel 5G industrial maturity, explore new business opportunities, as well as unleash the full potential of 5G to all walks of life and deal with development challenges in the times of COVID-19 and beyond. *(**To watch the full video, please click here.**)*

Part I

Mr. Craig Ehrlich, Chairman, GTI

GTI has been accelerating the industrial development of 5G. It has mature 3.5GHz industry, a fast-developing 2.6GHz industry, and has 5G universal model and enterprise network for verticals. 5G will play a significant role in the era of intelligent connectivity, supporting economic growth, transforming businesses and delivering innovative new services.

Mr. Zhao Houlin, Secretary General, ITU

2020 witnesses the greater value generated from connectivity. The economic effect built on connectivity has also been favorable to the growth of the global economy. 5G has emerged as a new mobile communication technology that serves as a crucial ICT infrastructure and a key platform to enable new businesses and services. To promote the development of 5G, ITU has provided full support in terms of standards, spectrum, applications, as well as sustainable development.

Mr. Mats Granryd, Director General, GSMA

2020 will be known in the history books as "the year that changed everything". By 2025, 5G will account for 20% of global connections, operators are expected to invest around $1.1 trillion worldwide, and roughly 80% of that will be in 5G networks. He urges governments and regulators to enable the mobile industry to realize the full potential of 5G, digital transformation and global economic growth; ensure more exclusive spectrum to be assigned to mobile operators at more reasonable prices; lower taxes and tax reliefs to stimulate 5G investment; encourage innovation and industrial collaboration.

Mr. Kazuhiro Yoshizawa, President & CEO, NTT DOCOMO

5G will accelerate the transformation of society, bringing inestimable impacts to people's lives. Through its joint efforts with partners in blending network, cloud, device and data, DOCOMO has been able to provide brand new immersive experience for tournaments and concerts in consumer market, and to offer telemedicine and remote support services in 2B market.

Mr. Dong Xin, CEO, China Mobile

5G will become the information artery of society, an accelerator of industrial transformation and upgrade, and a new cornerstone of digital society. The development of 5G will drive a range of new emerging information technologies to be deeply integrated with the economy and society, and foster digital economy to enter into a new era led by intelligence. To this end, China Mobile will strengthen the implementation of "5G+" Plan, accelerate the 5G for All, and contribute further to the global 5G development.

Mr. Hyeonmo Ku, CEO, KT

As the competition is getting fierce, KT has to move to the 2B market and has created more than 150 corporate applications in the media and entertainment industry, healthcare industry and education. Yet there are still many challenges remaining in the 5G B2B market in terms of devices with 5G modules, barrier to professional knowledge and differential services. Therefore, we need to work together to see 5G as a platform and unleash the full potential of 5G.

GTI 5G Global Device Initiative was jointly released by GTI and other 27 global operators and vendors, including China Mobile, Bharti Airtel, Sprint (currently T-Mobile), SoftBank, Vodafone, KT, Huawei and Qualcomm etc. It aims to promote maturity of multi-mode, multi-band and multi-form devices, support SA and NSA, and multi-band such as 700MHz, 2.3GHz, 2.6GHz, 3.5GHz and 4.9GHz, as well as 5G RCS to lay a foundation for 5G global roaming and scalable deployment.

GTI Summit 2020 Online Edition Makes Its Global Virtual Debut to Enable "The 5G For All" (2/2)

Part II

Mr. Börje Ekholm, President & CEO, Ericsson

The key reason for leading operators' success is that they have been seeking differentiation. Network quality is an important part of any strategy for any operators, and the quality mobile connectivity will become even more important in the 5G era. We will not be able to define the killer app for 5G. The killer app will be clear once the infrastructure has been built out, and that will create multiples of value, compared to the infrastructure itself.

Mr. Liang Hua, Chairman of the Board, Huawei

Looking to the future, how can we speed up 5G rollout and make "5G for All" a reality? First, 5G, cloud, and AI are converging, enabling various industries and creating new value. Second, wireless technology standards must be globally unified and harmonized in order to realize the commercial value of ICT technologies and drive the industry forward. Third, an open and collaborative ecosystem that thrives on shared success will promote the healthy development of the 5G industry.

Mr. Rajeev Suri, President & CEO, Nokia

How Industry X, 5G and other cutting-edge technologies will allow economic growth while simultaneously supporting more people-focused value. Specifically, by supporting stronger local ecosystems, better environmental stewardship, and healthier communities. Long-term value creation, greater equality, and a global economy that works for everyone - but only if governments, telcos and enterprises all work together in order to make this aspiration a reality.

Mr. Cristiano Amon, President, Qualcomm

From the number of 5G Smartphone shipments, Qualcomm is projecting 750 million in 2022. Spectrum is really critical to unlock true 5G performance. Millimeter wave is where you're really going to achieve the full potential of 5G. The networks are only half the story, we have to talk about the devices. Except the Smartphones, Qualcomm has now CPEs, customer premise equipment for fixed broadband, modules for industrial applications, mobile hotspots, tablets and even PCs, and that will keep going to other industries.

Mr. Xu Ziyang, Executive Director & CEO, ZTE Corporation

Telecom operators should focus on scenario-based deployment and adopt the value-driven strategy to tailor precision cloud and network services for industry customers, and make rapid iteration and agile innovations to address uncertainties, thereby driving high-quality growth of all industries and the digital economy. ZTE proposes the precision cloud and network integration solution, where cloud on demand and network-cloud synergy are available based on the distributed precision cloud and deterministic precision network.

Mr. Huang Qingfeng, President, Shanghai Zhenhua Heavy Industries Co., LTD.

The advantages of 5G can solve the pain points of the transformation and development of the terminal industry, injecting new impetus into the construction of the "Smart Port", and further catalyze new changes in port terminals. ZPMC will also further expand the application of 5G in the company's smart parking industry, people's livelihood consumer industry, digital industry and other business areas, to strengthen global cooperation.

Mr. Sameer Vuyyuru, Head of WW Telco Business Development, AWS

Based on the real time feedback from customer base, the current inputs, as well as opportunities and challenges, it is the best way to build telecom engagement model and provide quality differentiation service, so as to increase revenue and opportunity. IT cloud will promote efficient transformation, provide true cost of operation reduction, and de-risk the move from a data center based architecture to a cloud.

Mr. Bill Huang, Founder & CEO, CloudMinds

5G is very important to build a human level performance for robotics. The company places the brain of the robot in the cloud and uses mobile communications to connect to the robot body, to provide cloud assistant robots, security patrol services, sanitization services, and no contact retail services. CloudMinds believes cloud robots will be the future of mobile services combines, and provide the growth and the services that consumers need.

GTI 5G Global Device Initiative Jointly Launched to Realize Global Roaming and Economy of Scale

Backed by statements from China Mobile, Bharti Airtel, SoftBank, Sprint(now T-Mobile US) and 23 operators and vendors, GTI announced its 5G Global Device Initiative at the GTI Summit 2020 Online Edition, to promote 5G devices supporting multi-mode and multi-band to realize global roaming and economy of scale. *(**For more details, please click here.**)*

To further support the massive rollout of 5G services with various deployment modes and frequency bands, the industry requires the development and availability of global devices at scale. The 5G Global Device Initiative sets clear goals and action plans to propel the maturity of the 5G device ranging from smartphones to CPEs, MiFi and more through concerted efforts aligned with global operators and vendors.

The advocates show support and commitment in the form of video endorsements which underscore the motives and requirements from operators, and the broad support from the industry.

Content of the initiative

Objective:

1. To jointly promote the maturity and commercialization of the GTI 5G global device supporting multiple modes (SA/NSA) and multiple bands (Incl. n28/n40/n41/n77/n78/n79), and 5G RCS for scalable development and global roaming of 5G.
- Releasing 5G global device prototype in June and commercial device by the end of 2020
- Realizing scalable development of 5G global device in 2021

2. To support more Sub-6GHz and mmWave bands according to future requirements

Actions:

Operators will collaborate with industrial partners of devices, chipsets and test vendors to work on the following tasks:
- Defining requirements of modes, bands and roaming for 5G global device
- Completing and releasing 5G global device technical specification
- Conducting R&D on 5G global device
- Ensuring functionality and performance of 5G global device with GTI certification

Latest Progress

1. GTI 5G Global Device Prototypes supporting n28/n40/n41/n77/n78/n79 have been launched (*As of July, 2020*)

2. Multi-mode Multi-band Requirement (*As of July, 2020*)

# of Operators	NR Band	TDD/FDD	Band name	DL Freq	UL Freq
4	n77	TDD	3700	3300-4200	
4	n78	TDD	3500	3300-3800	
3	n41	TDD	2600	2496-2690	
3	n1	FDD	2100	2110-270	1920-1980
3	n3	FDD	1800	1805-1880	1710-1785
3	n28	FDD	700	758-803	703-748
2	n66	FDD	AWS-3	2110-2200	1710-1780
2	n40	TDD	2300	2300-2400	
2	n79	TDD	4700	4400-5000	
2	n8	FDD	900	925-960	880-915
2	n71	FDD	600	617-652	663-698
1	n25	FDD	1900+	1930-1995	1850-1915
1	n38	TDD	2600	2570-2620	
1	n70	FDD	AWS-4	1995-2020	1695-1710
1	n74	FDD	L- Band	1475-1518	1427-1470

# of Operators	LTE Band	TDD/FDD	Band name	DL Freq	UL Freq
5	B3	FDD	1800	1805-1880	1710-1785
5	B1	FDD	2100	2110-2170	1920-1980
4	B8	FDD	900 GSM	925-960	880-915
3	B40	TDD	2300	2300-2400	
3	B7	FDD	2600	2620-2690	2500-2570
3	B41	TDD	2600	2496-2690	
2	B2	FDD	1900 PCS	1930-1990	1850-1910
2	B39	TDD	1900	1880-1920	
2	B42	TDD	3500	3400-3600	
2	B28	FDD	700	758-803	703-748
2	B71	FDD	600	617-652	663-698
1	B34	TDD	2000	2010-2025	
1	B5	FDD	850	869-894	824-849
1	B25	FDD	1900	1930-1995	1850-1915
1	B66	FDD	AWS-3	2110-2200	1710-1780
1	B20	FDD	800	791-821	832-862
1	B38	TDD	2600	2570-2620	
1	B43	TDD	3700	3600-3800	
1	B70	FDD	AWS-4	1995-2020	1695-1710
1	B11	FDD	1500	1475.9-1495.9	1427.9-1447.9

Technology	Bands
2G GSM	B2, B3, B8, B5 (optional)
3G UMTS	B1, B2, B4, B5 and B8

GTI Global 2.3GHz Spectrum Roundtable to Accelerate Further Development of 2.3G Industry (1/2)

GTI Global 2.3GHz Spectrum Roundtable Online Edition aims to promote the development of the 2.3G industry through closed-door roundtable. This roundtable brought together delegates from governments, regulators, organizations, operators and industry partners to not only share the value, availability, policies of 2.3GHz Spectrum, but also to promote global coordination and availability of 2.3GHz spectrum for both 4G and 5G.

Key Takeaways

China Mobile's 2.3GHz Spectrum Strategy

Huang Yuhong
Deputy General Manager
China Mobile Research Institute

- The 2.3GHz frequency band is in the middle frequency band, with good propagation characteristics. The 2.3GHz frequency band also has a relative mature industry due to the driven force of 4G.
- We should overcome the coexistence interference problem of 2.3GHz through technological innovation, and make full use of this frequency band.
- China Mobile would like to collaborate with interest operators to address the common spectrum challenges and promote the maturity of the 2.3GHz ecosystem and do this as a global harmonized 5G golden band.

2.3 GHz Spectrum Plan & Release Experience Sharing in Indonesia

- 2.3G is very important for Indonesia as 700M, 2.6G and 3.5G are currently occupied by other industries , like analog TV, satellite and transponders , quite challenging to release soon.
- Indonesia 2.3GHz allocation status : 2.3G is used as capacity band. Telkomsel has 30MHz (2300~2330MHz) to resolve the network congestion and provide a good quality of cellular service, Smartfren has 30MHz (2330~2360MHz) to handle the PCS 1900 interference to UMTS 2100. The government is considering to auction the 2360~2390MHz this year for MNO.
- Indonesia has held trilateral meeting to handle the neighboring countries' interference by synchronization.

Denny Setiawan
Director of Spectrum Policy and Planning, Indonesia

2.3GHz Spectrum Plan & Release Experience Sharing in Russia

Valery O. Tikhvinskiy
Professor, NIIR of Russia

- In 2011 allocation of B40 to Osnova Telecom and Skartel for offering LTE services to Govt. agencies.
- In Dec. 2019 Russia Government has decided a new allocation of 2.3GHz band to Rostelecom for Internet connections to several offices and bureau of Russia federation (target of 100+K hotspot such as schools, etc.).
- Success of telecom vendors and manufacturers make 2.3GHz band more and more attractive for Russian mobile operators. The regulatory authority is considering using the 2.3 GHz band for 4G and 5G networks.

2.3GHz Wireless Broadband Best Practice Sharing in South Africa

- Telkom deployed TD-LTE 2.3G in 2012 and expand service from fixed broadband to mobile broadband.
- Lockdown during the COVID-19 is an incredible shock to the mobile network, but through the approximate deployment of the 300 Massive MIMO sites in the last three months and acquires 20M temporary spectrum, we managed to move up the network performance ranking from the fifth to the third.
- Telkom deployed the first 5G NSA site a month ago and achieved speed of 700Mbps by combing 3.5G (40M) and 2.3G.

Hugo van Zyl
Consumer CTO,
South Africa Telkom

GTI Global 2.3GHz Spectrum Roundtable to Accelerate Further Development of 2.3G Industry (2/2)

Key Takeaways

2.3GHz MBB Basic Capacity Layer Best Practice Sharing in India

Sawan Gupta
VP, Wireless Strategy & Engineering
India Bharti

- Airtel is the first in India to launch TD-LTE, and has up to 30MHz bandwidth in each circle, carrying 65% of total mobile data traffic across the entire Airtel network. The terminal support ratio for TDD2300 has increased from 92% in 2017 to 98% in 2020.
- Mobile traffic increased more than 60% in last one year, Airtel deployed some innovative capacity solution to efficiently address the traffic growth, which includes intelligent multi-beam and Massive MIMO.
- DSS of 2.3GHz is key to evolution towards 5G for Airtel.
- NR ecosystem for n40 is nascent, calling for more 5G devices in this band.

2.3GHz Industry Status and Evolution

- 2.3G fits into the mid-bands spectrum and is a good candidate for capacity-coverage layer.
- Europe is starting updating the 2300 MHz framework to account for 5G and Active Antenna System (AAS). There is a growing availability of 2300 MHz across Europe.
- Assignment of One single 80 to 100 MHz block to one operator, on a technology neutral basis , is recommended.
- LTE ecosystem for B40 is mature, NR ecosystem for n40 is growing. 5,827 devices support B40 and 14 devices support N40. 61 operators in 39 countries have acquired usage rights for that band.

Joe Barrett
President of GSA

GSMA View on 5G Spectrum Policy

Peng Zhao
Senior Director of Spectrum Policy
GSMA

- Operators needs 80 to 100 megahertz in the mid band to provide true capacity of 5G. Technology neutrality is key enables the flexible use of subsequent 3GPP standards.
- 2.3GHz sits between coverage and capacity bands with 100MHz bandwidth.
- 50 operators in 35 markets received licenses in 2.3GHz band for LTE, 80% of the TDD devices support B40.
- 2.3GHz is a key mid-band, and all we need is to see the take-off of ecosystem.

2.3GHz, Golden Mid-band Spectrum, Helps Achieve Big Business Success

- 2.3 GHz band is a golden mid-band spectrum and is the first choice in the first wave of 5G deployment.
- GTI has just released a 5G Global Device Initiative in GTI Summit 2020 to boost the industry development of 2.3G and other 5G band.
- GTI kicked-off a 2.3GHz Spectrum Task Force, to share experience, reach consensus and pave the way for 2.3GHz Spectrum industry development, and will release the 2.3G Industry White Paper in 2020Q3.

Li Nan
4G Evolution & 5G eMBB Coordinator, Spectrum WG Chair, GTI

For more details, please click here.

The 28th GTI Workshop to Address Key Issues for 5G Commercial Success (1/2)

The 28th GTI Workshop was held online as scheduled on 27th-30th July, 2020. Close to 300 industrial leaders and experts from over 20 global operators including Bharti Airtel, T-Mobile US, KT, LG U+, KDDI, SoftBank, Singtel, dozens of industry partners as well as international organizations or institutes attended the workshop. The industry most concerned key issues on 5G development and its commercialization, and topics on 5G global device, 5G smart phone network slicing as well as enterprise network were discussed in an open and in-depth way.

At the beginning of the opening note, Madam Huang Yuhong, the Secretary General of GTI, shared the key focus of GTI technical work in 2020, and the key topics of the workshop. For this year, GTI technical work will continue to focus on 4G & Evolution, 5G eMBB, 5G Enterprise Network Solutions, and Innovative Business and Services. Through working on 23 projects and 82 tasks with its partners, GTI will continue its endeavor in addressing the key issues for 5G commercial success on a global scale. Furthermore, Madam Huang briefly introduced the focused topics of the workshop, such as 5G commercial experience sharing and performance enhancement, intelligent network, 5G global device, 5G network slicing smartphone, and enterprise network solutions. In the end, she said that GTI will, as always, work with industry partners to solve the key issues of 5G development, and help 5G to be better integrated with multiple industries and to serve the public, so as to make its further contribution to the development of society and economy, as well as the improvement of people's lives.

Key Technical Focus in 2020

4G & Evolution

- Continue to improve **4G network capacity and capability**
- Promote **4G/5G collaborative evolution**

5G eMBB

- **Accelerate Sub-6GHz industry maturity:** release NSA recommendation white paper, learn key lessons from NSA/SA deployments and further focus on SA key issues such as IODT, MEC, network slicing, 4G/5G interworking, VONR, etc.
- **Promote 5G global device maturity:** research on solutions of 5G Device for networking slicing, research on 5G device technology evolution and performance enhancement, GTI Certification of 5G chipset and device, exploration on S-Module application and 5G-enabled industry device
- **Strengthen intelligent network research:** specify the benchmark test and evaluation approach for classification of network intelligence level, sort out high priority intelligent network use cases and study the solutions from NE and MS aspect
- **Kick off mm-wave study:** research on mm-wave products and test solutions

5G Enterprise Network Solutions (5G ENS)

- **Promote operator-provided ENS** by synergy between GTI and other relevant ICT and OT organizations
- **Explore advantages and key technical capabilities** of ENS to fit in industrial value chain
- **5G S-Module and device solutions** in Greenfield and Brownfield verticals
- Investigate solutions for operators to cope with the possibility of local licensed spectrum for verticals
- Research on **security** of 5G vertical industry service and device

Innovative Business & Service

- Explore 5G business models…
- Research on 5G applications such as **5G Cloud XR**…
- Reach out to other vertical industry platforms for 5G joint innovation

The 28th GTI Workshop to Address Key Issues for 5G Commercial Success (2/2)

During the workshop, the key 5G commercial progress in 5G SA network deployment and optimization, 4G/5G interoperability, and network intelligence etc. was introduced and discussed by relevant technical experts. An in-depth discussion on 5G global device technology solutions and network slicing feature of 5G smart phones was also conducted to promote the development of the 5G device industry.

Also, the workshop presented a valuable reference for operators to develop their respective enterprise network through focusing on some key issues on spectrum strategy, industry requirements, key technologies, customized multi-scenario solutions and devices, end-to-end security solutions and the like. At the workshop, industry experts in digital twins, information models, and TSN (Time Sensitive Network) were also invited to share their unique views and perspectives to the key technologies in related industry applications. In addition, the latest progress in XR industry and standards was also discussed to jointly speed up the development of 5G Cloud XR.

Highlights of The 28th GTI Online Workshop

Topic: 5G Commercial Experience & Performance Enhancement

Background and issue: While 5G is rolling out globally, key issues towards 5G commercial deployment such as 4G/5G interoperability, voice solution and performance and TDD/FDD convergence are drawing more attention.

Discussion point:

- What are the lessons learnt from SA deployment and trials?
- How to further enhance the network performance?

Topic: Intelligent Network

Background and issue: 5G network becomes more complex as the number of devices and diversity of services increase, which brings unprecedented challenges to 5G network operation, and it is no longer economically feasible to keep increasing the human source input for network OAM (Operation Administration and Maintenance). Therefore, network intelligence has become an expected solution.

Discussion point:

- How AI can enable 5G network intelligence (use cases and impact on network architecture) ?
- How to incorporate DICT with RAN for a green and intelligent 5G Network?

Topic: GTI 5G Global Device

Background and issue: The maturity of 5G device supporting multi-mode multi-band becomes critical when it comes to realizing global roaming and economy of scale. The industry requires the development and availability of global devices at scale to support the massive rollout of 5G services.

Discussion point:

- How to reach the consensus in a broader scope regarding the common requirements on 5G Global Device in terms of bands, modes, features?
- What are the key technical issues (e.g. co-existence between WiFi and 5G, SRS requirements, OTA requirements) and how to jointly overcome?

Topic: Network Slicing Feature of 5G Smart Phones

Background and issue: Network slicing feature on smart phones is critical to operators, as it could provide differentiated services tailored to specific applications and enable flexible business models. This is yet to realize due to the lack of unified solutions to network slicing in smart phones and modifications to operating systems and applications.

Discussion point:

- What are the key technical issues of realizing network slicing in 5G smartphone? What are the solutions?
- How should the industry jointly solve the issues, and push the OS providers (e.g. Google, Apple) to make adaptive modifications in need?

Topic: 5G Enterprise Network Solutions

Background and issue: Despite the consensus on significance of 2B market, the industry seeks for a deeper understanding on key requirements of specific verticals, and E2E technical solutions with the right architecture and technologies for diverse scenarios.

Discussion point:

- What is the strongest demand in vertical industries such as factories and ports? How can digital twins empower vertical industries ?
- How to plan and use licensed spectrum to better empower vertical industries ?
- What are the core capabilities of 5G CPE/DTU and industrial gateway and how could they be used to address pain point issues ?
- How to increase uplink date rate and provide low cost & easy-deployed local break out solution in 5G ENS?
- How TSN (Time Sensitive Network)/5G virtual private network/edge cloud can empower vertical industries ?
- What are the key technical issues of guaranteeing the E2E security of vertical industries?

For more details about the Workshop, please click here; To download the presentations of the workshop, please click here.

3GPP 5G Formally Endorsed as ITU IMT-2020 5G Standard

The International Telecommunication Union Radiocommunication Sector (ITU-R) formally approved the 3rd Generation Partnership Project (3GPP) 5G technology (with the Narrowband Internet of Things (NB-IoT) included) as International Mobile Telecommunications-2020 (IMT-2020) 5G standard at the ITU-R Working Party 5D (WP5D) #35 meeting, which was convened online on July 9th due to concerns of the ongoing global pandemic.

A game-changer to the development of the mobile telecom industry, this announcement was collectively witnessed by more than 200 representatives and experts from regulatory agencies, telecom manufacturing and operating businesses, and research institutions from all over the world.

This great milestone was realized after the ITU affirmed through much scrutiny that 3GPP 5G fulfills the entire set of the technological requirements of IMT-2020 5G standard. Through close collaboration of industrial partners from all the relevant countries, ITU has reached the IMT-2020 5G milestone on schedule, leading the entire globe closer to a fully connected, intelligent world.

The standard, IMT-2020 5G, is an umbrella developed by the ITU towards 5G, or the fifth generation technology standard for mobile networks 2020 and beyond. To ensure technological leadership and superiority over previous cellular technologies, the ITU has posed challenging requirements and developed stringent assessment standards.

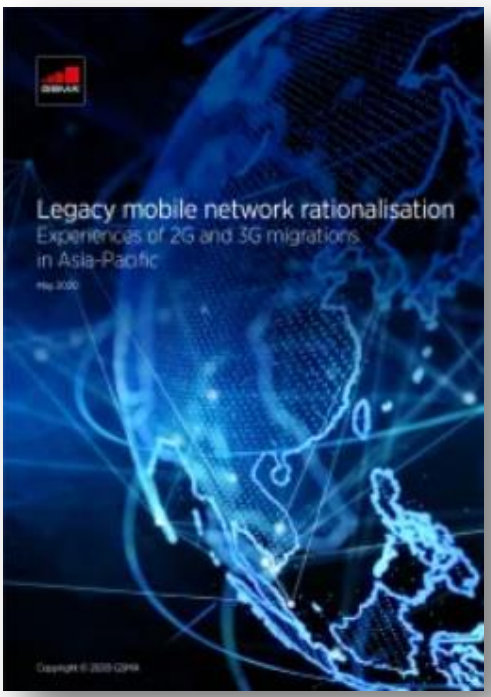
Since 2016, the ITU has been undergoing a profound and thorough assessment of all received candidate proposals based on 5G's three major use cases: enhanced Mobile Broadband (eMBB), ultra-reliable low-latency communication (URLLC), and Massive Machine-Type Communications (mMTC). Finally, 3GPP 5G was approved as the technology meets the technological standards of IMT-2020 for supporting diverse 5G applications in terms of service support, spectrum, and performance indicators. The technology boasts a peak rate of over 20 Gbps, a latency of less than 1 ms, and enablement of one million connections per square kilometer.

The host of the meeting, ITU-R WP 5D, is a working group under the ITU that is responsible for the terrestrial radio access of International Mobile Telecommunications (IMT) systems. Over the past 20 years, the ITU-R WP 5D standardized 3G (known as IMT-2000), 4G (known as IMT-Advanced), as well as the current 5G standard (or termed as IMT 2020 and beyond). 3G and 4G have enabled the mobile telecom industry to achieve significant accomplishments worldwide. Led by the ITU-R WP 5D, countries and regional organizations around the world will continue to work together on mobile communications.

GSMA Releases Asia Pacific 2G/3G Sunset Experience White Paper

Mobile operators worldwide are exploring opportunities to deploy 4G and 5G technologies by re-using spectrum currently supporting 2G and 3G services. The payoff from network rationalisation includes improved capacity, data speeds and broadband coverage. Drawing on experiences from mobile operators across the Asia-Pacific region, a new report from the GSMA takes an in-depth look at this important topic.

The pioneers are found in this region. The "Legacy mobile network rationalisation – Experiences of 2G and 3G migrations in Asia-Pacific" is based on projects conducted by mobile operators in six countries. It looks at the most suitable regulatory and market conditions for achieving a smooth and successful process.



For mobile operators around the world, it is an opportunity to reduce the extra cost of running multiple networks. Savings can be realized by:

1. Simplifying network management operations and RF planning;
2. Avoiding costly maintenance of ageing network equipment, including equipment spares;
3. Eliminating ongoing costs of software licences;
4. Reducing lease cost of tower space for multiple antennas; and
5. Lowering energy consumption of the network.

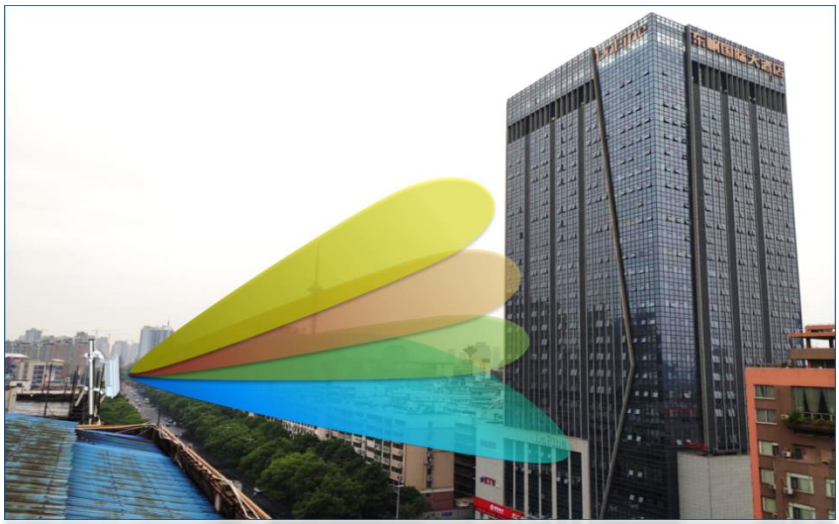
Network rationalisation benefits everyone

However, thanks to the potential for improved capacity, data speeds and broadband coverage; consumers and businesses also stand to gain. As a result, mobile operators can develop more innovative services based on 4G and, when the time is right, 5G.

Importantly, based on the experience in the Asia-Pacific region, network rationalisation lessons learned include:

1. Operators typically initiate legacy shutdown plans and usually switch off at different times depending on their user base;
2. Which technology to retire depends on specific market circumstances and potential obligations;
3. The full process generally carries a transitional period of around three years, with preparations commencing earlier than formal public announcements;
4. A reasonable formal notice period commonly comes along with a well-designed campaign targeting affected customers, possibly assisted by the regulator;
5. Switch-off process may include upgrade incentives for long tail customers, with comparably priced plans, and handset recycling initiatives.

ZTE and China Mobile Complete the Verification of 5G Massive MIMO 1+X SSB Solution



ZTE Corporation together with the Guangzhou branch of China Mobile, has completed the verification of the new three-dimensional coverage solution, 5G Massive MIMO 1+X SSB (Synchronization Signal and PBCH block) solution, in the central business district of Guangzhou, China.

The solution has greatly optimized the coverage performance of high-rise buildings and improved the vertical coverage rate by more than 30%. In addition, fewer beams transmission has significantly saved resource and reduced power consumption.

To achieve high-quality 5G network coverage, ZTE has introduced 5G Massive MIMO 1+X SSB innovative solution. "1" here refers to the wide beam with power boosting, to provide basic coverage and implement staggered transmission between adjacent cells in time domain. To adapt to various three-dimensional coverage scenarios, "X" can be configured on demand to expand vertical coverage and achieve optimal network coverage.

ZTE and the Guangzhou branch of China Mobile have fully verified the performance of 5G Massive MIMO 1+X SSB coverage solution in various scenarios, including high-rise buildings, outdoor pavement and continuous network. The result turns out that the horizontal wide beam "1" with power boosting could achieve equivalent horizontal coverage of 8 beams while the flexible "X" vertical beams configuration has increased the coverage rate of high-rise buildings by over 30%.

Compared with the horizontal 8-beam solution, the 1+X SSB solution with fewer beams configuration has increased the access capacity by 30% and the service capacity by 5% under the high-load network condition while reducing equipment power consumption by 10% under the low-load network condition.

In 2020, the Guangzhou branch of China Mobile and ZTE announced to build Guangzhou into a leading 5G "pilot city". Both parties have carried out a number of innovative research projects, such as the new 5G DAS multi-channel joint transmission technology to achieve low-cost and high-efficiency 5G indoor coverage.

Moreover, the two parties will continue cooperation in various fields, including Massive MIMO complex networking, AI and big data based AAPC (Automatic Antenna Pattern Control) tool, which efficiently optimizes 5G Massive MIMO multi-antenna weight, and 5G Massive MIMO 1+X SSB automatic horizontal/vertical beams optimization.

Moving forward, ZTE and the Guangzhou branch of China Mobile will further expand the application scope of 5G Massive MIMO 1+X SSB solution in commercial 5G networks, thereby fully leveraging its values in vertical coverage performance, network capacity and equipment power consumption.

rain and Huawei Jointly Launch Africa's First Standalone 5G Network

rain, South Africa’s data-only mobile network launched its first Standalone 5G (SA 5G) network in the country. Powered by Huawei, this is the first commercial standalone 5G network in Africa.

rain's Standalone 5G is currently available in Cape Town covering areas including Sea Point in Cape Town, Claremont, Goodwood, Bellville, Durbanville, and Cape Town City Centre.

The newly released SA 5G network are built on rain's own sites. This allows rain to significantly enhance its fixed wireless broadband (FWA) service experience in the covered areas.

"Standalone 5G will further improve 5G network performance with increased the uplink rate, lower latency, and improved reliability, ushering in high-end cloud VR and cloud gaming services, more diversified enterprise and home broadband services, " said rain Chief Marketing Officer Khaya Dlanga.

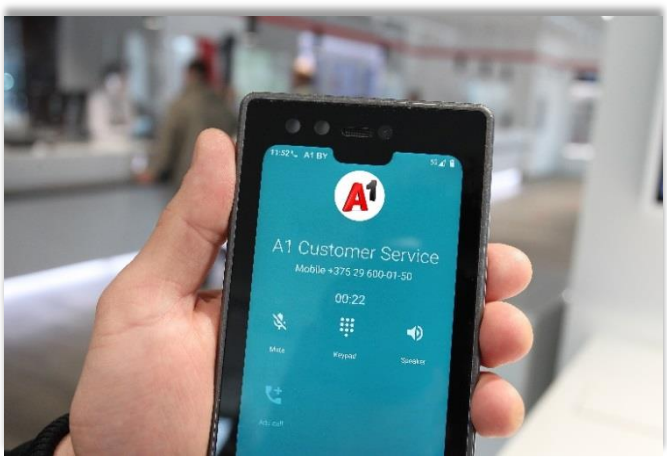
As the ultimate form of 5G networks, SA 5G supports advanced network-slicing functions and mobile edge computing(MEC), allows for rain to explore new ideas and customized services based on ultra-low latency and much higher capacity with SA 5G, realized by Huawei’s Converged Core Solution and Massive MIMO technologies.

"SA 5G will demonstrate how 5G is powerful in realizing South Africa’s 4IR future. Powered by Huawei’s world’s leading 5G solutions, our SA 5G will enable the industries ‘digital transformation in the future, such as smart healthcare, smart ports, smart mining and smart manufacturing in South Africa. We will work with the trustworthy strategic partner to further expand our 5G networks and bring the best service and experience to our customers," Khaya added.

ZTE and A1 Launch the First 5G SA Test Network in Belarus

Belarus’s first call completed also in a new standard format by virtue of VoNR technology.

May 25, 2020, ZTE Corporation and A1, a Belarusian telecommunications operator have launched a 5G SA (Stand Alone) network in test mode in Belarus. It signifies the first full-fledged 5G network in Belarus constructed in standalone architecture.



The high-speed 5G SA network, under the 3.5 GHz spectrum bandwidth, features a great support of a variety of applications, such as Gigabit without Fiber Connectivity, Cloud XR, ultra-HD live broadcast, automatic driving and remote surgery.

On its first 5G SA test network, A1 has also completed Belarus’s first call in a new standard format, by virtue of VoNR (Voice over New Radio) technology for 5G packet voice transmission.

Ooredoo Qatar's 5G Commercial Services Go Live with Nokia Cloud-Native 5G Core Network

Nokia has announced that Ooredoo Qatar has launched a Nokia-powered cloud-native core network for commercial 5G services, allowing the operator to provide superior mobile broadband services to its roughly two million subscribers in Qatar.

The new core network facilitates automation for improved network efficiency and streamlined network management. The transformation of the core network also enables Ooredoo Qatar to bring new and exciting use cases such as Industrial IOT (IIoT), Voice over Broadband (VoBB), Voice over WiFi (VoWiFi) to its subscribers. Furthermore, Nokia's equipment and professional services will help Ooredoo Qatar to scale its network more efficiently with automated operations and enhanced robustness.

5G technology demands a dynamic, agile, and easily scalable core network, which can address the ever-increasing traffic without any impact on the performance. The cloud-native core is essential to meet the critical business objectives of 5G, including better bandwidth and latency, the requirement of IoT, and providing new and exciting services that go beyond the traditional offerings of voice, broadband and messaging by service providers.

Nokia AirFrame data center hardware, CloudBand Application Manager, CBIS OpenStack Software, Voice and Cloud Packet Core Virtual Network Functions, and Nuage Networks Software Defined Networking solutions were all included as key parts in upgrading Ooredoo Qatar's core network.

More than 10 virtualized network functions (VNFs) are deployed on the cloud platform, covering data, voice, subscriber management registers and policy control enabling voice and data services. The new cloud core network supports 5G Non-Standalone (NSA) architecture and provides a smooth transition to a 5G Standalone network architecture.

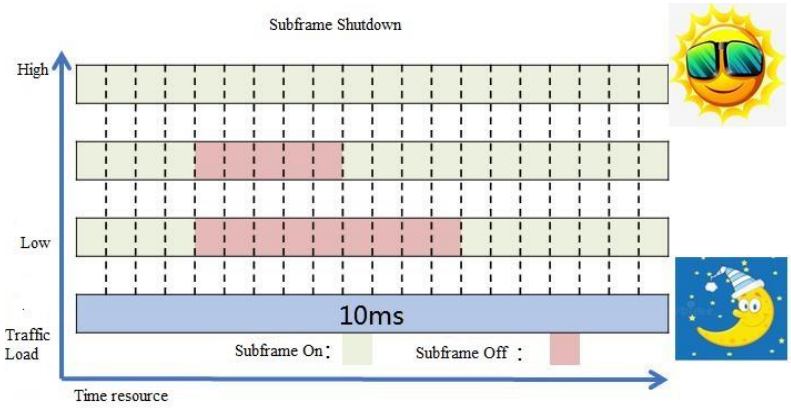
Yousuf Abdulla Al Kubaisi, Chief Operating Officer at Ooredoo Qatar, said: "We are delighted to reach this milestone by launching the state-of-the-art cloud-native 5G core network with Nokia for carrying 5G commercial services. Collaboration with Nokia, a global technology leader, will help us in providing low-latency, high-speed and content-rich services to our subscribers. This project is testament to our commitment to bringing the latest technology to our subscribers, in line with our goal of complete customer satisfaction, and reiterates our leadership position in the global 5G ecosystem."

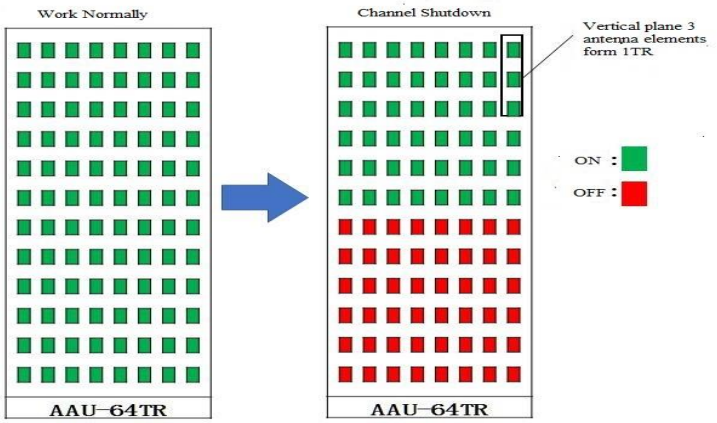
Henrique Vale, Vice President of Nokia Software for Middle East and Africa, said: "The transformation of Ooredoo Qatar's legacy core network to a fully cloud-native 5G core in a very short time frame demonstrates the strength of our end-to-end portfolio and exceptional delivery expertise. Ooredoo Qatar's new core network will enable it to bring innovative and the latest use cases to its subscribers and also prepares the network for providing scalable 5G commercial services."

CICT and China Mobile Collaborate to Save Energy of 5G Network

CICT has helped Shanxi Branch and Gansu Branch of China Mobile save energy of 5G network based on subframe shutdown and channel shutdown . Actual test result is that the measured energy saving effect can reach up to 26.57% with subframe shutdown function , the highest energy saving effect can reach 17.82% with channel shutdown function, and the energy saving effect can be as high as 27.65% when turning on this two functions at the same time, thereby helping China Mobile reduce cost of 5G network construction.

Subframe shutdown function is to reduce the total power consumption of the power amplifier module by discontinuous transmission of signals when the network is in a low load state. The energy-saving effect of this scheme is related to the PRB utilization rate, and the energy-saving effect is more obvious when the PRB utilization rate is low.





Channel shutdown technology monitors traffic in real time. When the traffic is lower than the threshold, some RF channels will be shut down, and the other RF channels will work normally.

CICT also introduces other software energy-saving technologies for different base station types and different scenarios: Micro base station shutdown, deep sleep, carrier shutdown and etc. These technologies can adjust the power of the base station in time according to changes in the traffic volume under different conditions, reduce the power of the device or put it into a sleep state, thereby achieving the purpose of reducing power consumption.

In addition to above software energy technology, CICT also introduces hardware energy-saving technologies to reduce power consumption from the base station architecture. For example, dynamic voltage regulation scheme is to use PLC communication technology to regulate voltage of power supply dynamically , thereby reducing cable loss to achieve save energy and increase remote distance.

CICT is planning on AI energy-saving technology. The AI algorithm is used to find the mapping relationship between the historical space-time characteristic data of the cell in the network and the radio resource utilization rate, and then the radio resource utilization rate of the cell is effectively predicted, thereby maximizing energy saving effect.

Huawei Works Together with Industry Partners to Finalize 3GPP Release 16 NR Specifications

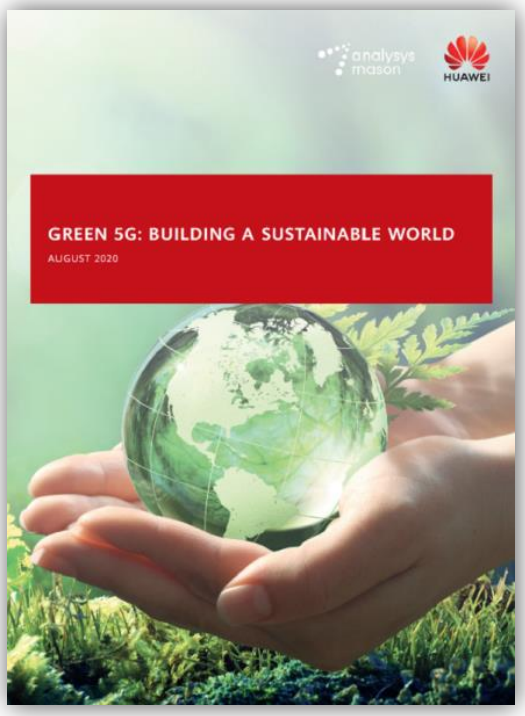
On July 3, At the TSG RAN#88-e plenary meeting, the 3rd Generation Partnership Project (3GPP) announced the freeze of Release 16 NR Specifications, marking the completion of the first evolutionary release of 5G technologies.

This is the first time ever that 3GPP has ratified a technological standardization outside of physical meetings. With daunting challenges arising from the ongoing pandemic worldwide, global industry partners united as one to jointly complete the evolutionary release of 5G specifications, Release 16 NR, with an excellent quality.

Release 16 highlights not only 5G's continued enhancement in terms of high bandwidth and low latency, but also its extended applicability to a wide range of vertical industries, as well as new features designed to increase network performance and deployment efficiencies. More than 20 standard technological features were newly added, including a series of improvements for enhanced mobile broadband (eMBB) and vertical applications. These eMBB improvements cover Massive MIMO, cell interruption-free handover, and remote interference suppression. A number of technologies are also specially consolidated for vertical industries, such as ultra-reliable low-latency communication (URLLC), NR vehicle to everything (V2X), non-public networking (NPN), and positioning.

For more details, please click here.

Analysys Mason and Huawei Release Green 5G White Paper



Joint release of the Green 5G White Paper by Analysys Mason and Huawei

At the Better World Summit 2020 hosted online by Huawei, Analysys Mason, a global consulting and research organization specializing in telecoms, media and digital services, and Huawei jointly released the *Green 5G White Paper*.

This white paper analyzes 5G's role in increasing the energy efficiency of mobile broadband networks against the backdrop of skyrocketing demands for digital connections. It also explores how 5G will lead vertical industries into a sustainable digital world by boosting energy efficiency and reducing carbon emissions.

A science-based, comprehensive assessment is presented based on Life Cycle Assessment (LCA) in regard to the contribution of 5G technology to improving the energy efficiency for mobile broadband as well as its vertical industries. Based on such assessment, the Green 5G White Paper aims to provide an extensive reference to governments, telecom carriers, and industrial organizations in terms of pursuing 5G applications.

For more details, please click here.

Nokia to Set up Robotics Lab at Indian Institute of Science for Research on Socially Relevant Use Cases Based on 5G and Emerging Technologies

Nokia has announced a collaboration with the Indian Institute of Science (IISc), the country's leading institute and university for research and higher education in science and engineering, to establish the Nokia Centre of Excellence (CoE) for Networked Robotics. The CoE will promote inter-disciplinary research involving robotics, advanced communication technologies and Artificial Intelligence (AI) to develop socially relevant use cases across areas like emergency management, agriculture and industrial automation. The centre will promote engagement and cooperation between academia, start-ups and industry ecosystem partners in research and development of use cases. This centre supports and aligns with the Government initiatives of 'Start-up India'.

The Nokia CoE, a state-of-the-art network robotics laboratory, will be available to the IISc community and its ecosystem partners for advanced research projects involving designing next-generation networks and applications of Artificial Intelligence for solving pertinent social problems. Nokia will share its expertise in next-generation network innovations and leverage Nokia Bell Labs' technical expertise in robot orchestration, robot network controller and human-robot interaction to aid the research and development of the end-to-end use case technology solutions. IISc will engage its cross-disciplinary faculty and researchers, and provide its in-house expertise in algorithms, drones and robotic systems.

For more details, please click here.

True and ZTE Corporation Announce Collaboration to Build a Commercial 5G Network in Thailand

ZTE Corporation recently announced collaboration with True Corporation Public Company Limited (True) to build a commercial 5G network in Thailand. True, a fully licensed operator in Thailand, with a 30% market share in the mobile market of the country, will adopt ZTE's 5G RAN products and services to build a commercial 5G network in Thailand.

ZTE will provide True with a series of products, including 5G 64TR/32TR/8TR/4TR macro stations and single-band/multi-band indoor QCell, to build a full-scenario and high-performance tri-band 5G network on 700MHz, 2.6GHz and 26GHz.

Featuring ultra-low latency, ultra-multi channels and ultra-high bandwidth, ZTE's 5G products and technologies will enable True to rapidly improve the wireless system capacity and the user experience, thereby supporting True in building a leading 5G network in Southeast Asia in 2020.

Since 2019, ZTE has been working with True in various technical tests, jointly verifying multiple 5G products, including 3.5GHz 64-channel Massive MIMO, 2.6GHz 64-channel Massive MIMO and 2.6GHz QCell. In addition, ZTE and True have verified the leading 5G technologies, such as downlink 16-stream MU-MIMO and 4/5G carrier dynamic sharing.

For more details, please click here.

ZTE, China Mobile and Migu Complete the Industry's First Pre-Commercial Trial of 8K VR Service Based on 5G MEC

ZTE Corporation announced in late May that ZTE, along with the Guangdong Branch of China Mobile and Migu, China Mobile's entertainment and data service subsidiary, has completed the industry's first pre-commercial trial of 8K VR FoV (Field of Vision) service based on 5G MEC on the live network of China Mobile.

By deploying vCDN on the 5G MEC platform, the pre-commercial trial has adopted advanced FoV encoding technology, video trans-coding, intelligent CDN and other edge capabilities to save more than 70% of bandwidth, thereby significantly improving the VR service experience and promoting the development of 5G video services.

As a world-leading provider of video solutions, ZTE has developed a complete set of 5G+8K VR solution and the ecosystem for end-to-end industry cooperation. By virtue of Migu's experience of 5G+VR live streaming for big events and ZTE's solution, integrated with technologies from Intel, Kandao Technology, Tiledmedia, the two parties have cooperated to provide users with an immersive viewing experience through low-latency and ultra HD VR live streaming. The cooperation between ZTE and Migu has achieved the full upgrade of VR service in terms of video capture, editing, transmission and broadcasting, thereby enabling the commercial use of 5G+8K VR services.

For more details, please click here.

Nokia and U.S. Cellular Team up for 5G mmWave to Modernize 5G Capabilities for Enhanced Customer Experiences

Nokia and U.S. Cellular announced an agreement to add 5G mmWave capabilities in the 24 GHz and 28 GHz spectrum bands. U.S. Cellular will deploy Nokia's award-winning AirScale portfolio, with Cloud RAN capabilities, to provide enhanced Mobile Broadband (eMBB) 5G mmWave.

The Nokia AirFrame open edge solution for Cloud RAN will also be included in the deployments, enabling a virtualized RAN that provides scalable benefits such as, significant Total Cost of Ownership (TCO) reduction through simplification automation and operation efficiency gains, as well as through the support of open ecosystems.

To support U.S. Cellular's advanced IoT and enterprise customers, the company has also opted to include Nokia's Worldwide IoT Network Grid (WING) solution as a deployment component, which allows the scaling of 5G IoT services faster and more cost-effectively.

For more details, please click here.

ZTE, the Platinum Winner of Future Digital Awards 2020 for its full-scenario Common Edge Solution

ZTE Corporation has been rewarded the Platinum Winner of Edge Computing Solution by virtue of its full-scenario Common Edge solution of central communication. Presented by Juniper Research, this award is one of Future Digital Awards for 2020, in recognition of organizations that have made outstanding contributions to their industry and are positioned to make a significant impact in the future.

ZTE's full-scenario Common Edge solution has revolutionized the traditional closed telecoms network architecture, integrating mobile access network and the Internet deeply, so as to accelerate service innovation. The solution is composed of RAN accessing MEC, fixed network accessing MEC, integrated MEC, and cloudified MEC. The solution makes edge computing ubiquitous, helping operators transform from network access pipelines to diversified value-added service providers.

For more details, please click here.

New Nokia Research Reveals Biggest 5G Drivers for Enterprise IT and OT

Nokia announced new research highlighting 5G plans, expectations and the biggest 5G WAN and LAN drivers for businesses across key industries in the US and UK. The study, which was conducted in partnership with Parks Associates and surveyed over 1,000 IT decision-makers, covered key enterprise segments including energy, manufacturing, government/public safety, and automotive/transportation.

Results reveal that two thirds of participants surveyed (65%) are familiar with 5G, and one third (34%) report they are already using 5G and are highly satisfied with the service. While nearly half (47%) of IT decision-makers say their organizations have already started planning for 5G, others are waiting for more widespread 5G availability (54%), and nearly one third (30%) reported they would also like to better understand the value of 5G before developing a strategy to use it in their organization.

The research also identified video as the 'killer app' for 5G across verticals and different business sizes, with 83% finding it compelling and 48% citing 5G-enhanced video monitoring as a near-term (0-4 years) opportunity. Respondents can readily grasp the additional value that 5G can bring to video, with 83% finding video alerts such as detecting and recognizing who is on premise as valuable capabilities. Video was followed by remote-controlled machinery with 77% of participants interested, and connected cars at 73%.

For more details, please click here.

ZTE Tests the World's First Digital Indoor Distribution Capacity Multiplication Technology

30 July 2020, ZTE Corporation has successfully tested the world's first digital indoor distribution capacity multiplication technology by using the latest 5G QCell 300 MHz ultra-wideband product, thereby achieving the single Pico RRU downlink peak rate of 4.3Gbps and increasing network capacity by three times.

ZTE's latest 5G QCell ultra-wideband product features the industry's highest transmission power of 4*750 mW, and supports 3.3 GHz to 3.6 GHz continuous 300MHz ultra-large bandwidth.

With three 5G mobile phones accessing the network simultaneously in the test, the single Pico RRU downlink peak rate has reached 4.3Gbps, which can not only meet the deployment requirements in high-traffic scenarios, but also meet the extreme performance requirements of vertical industries.

Developed by ZTE, the latest digital indoor distribution capacity multiplication technology has combined multiple Pico RRUs into one super cell, which can reduce handovers and interference while independently scheduling and reusing radio resources of each Pico RRU, thereby multiplying the capacity of the combined cell and efficiently resolving the contradiction between capacity and user experience.

For more details, please click here.

Nokia and Elisa See Sustainability Leap in World-First 5G Liquid Cooling Deployment

Nokia announced that its liquid cooling 5G AirScale Base Station solution has helped Finnish mobile operator, Elisa, reduce the potential energy expenses of its base station by 30 percent and CO2 emissions by approximately 80 percent. This is the first time a commercial 5G liquid cooling solution has been deployed anywhere in the world and highlights Nokia's strong commitment to sustainability and combatting climate change.

The Nokia Bell Labs-developed solution will enable Elisa to achieve 30 percent lower power consumption and related savings at its site in Helsinki, Finland. Approximately 90 percent of energy consumed by base stations is converted to waste heat, however, with a heat re-use option – where waste heat is converted and repurposed – Elisa has been able to reduce its CO2 emissions by approximately 80 percent.

Liquid-cooled sites are silent, require zero maintenance, and can be 50 percent smaller and 30 percent lighter than standard active air conditioning units. They offer operators and owners of base station sites significant savings and potentially longer base station component life.

Fore more details, please click here.

Huawei and Partners Launch the First Batch of 5G toB Ecosystem

At the "5G for Good, Innovate for New Value" summit, Huawei and 5G industrial partners jointly launched the first batch of 5G industrial applications. This initiative accelerates the development of 5G, marking the maturity of the 5G industry ecosystem.

Around 50 partners joined the ecosystem so far, including those specialized in both industry and general equipment domains. The scope spans multiple verticals, including 5G industrial communication modules and terminals, 5G antennas, smart manufacturing, smart logistics, smart coal mining, smart healthcare, new media live broadcast, smart city, and smart power grid.

5G drives the digital transformation of industries, facilitating the adaption of 5G network capabilities (from eMBB to URLLC to mMTC) to achieve scaled commercialization of industrial applications. We look forward to working with industry partners to advance 5G across industries toward bigger success.

For more details, please click here.

Nokia and KDDI Conduct PoC on Fully Virtualized Cloud RAN to Support 5G Era

Nokia announced that it is working with Japanese mobile operator, KDDI, in a joint initiative aimed at delivering a fully cloudified RAN solution. The planned lab-based Proof of Concept (PoC) will use Nokia's AirScale All-in-Cloud BTS solution and enable KDDI to research how flexible, virtualized radio network technology can support the diversifying network performance requirements in the 5G era. KDDI joins an expanding portfolio of global customers using Nokia's Cloud RAN solutions.

Nokia's AirScale All-in-Cloud BTS is a fully cloudified 5G BTS, placing both the real-time and non-real-time baseband in the cloud. The virtualized real-time baseband processing takes place at the far edge of the network to meet extreme latency requirements and provide the ability to scale to meet demand.

AirScale All-in-Cloud BTS will be used in the planned PoC to provide a flexible network configuration of a base station virtualization and enable the provision of an optimal 5G network. KDDI launched commercial 5G services in March 2020 and is pursuing a policy of collaborating with global companies to incorporate new ideas and technologies into its 5G network. KDDI has been working closely with Nokia on this PoC as well as 5G core standalone network trials.

For more details, please click here.

Huawei Holds “5G for Good Summit” to Innovate for New Value

The “5G for Good Summit” was successfully held under the theme of New Value and New Opportunities. The summit was attended by global operators, industry organizations, media groups, analysts, and think tanks, joined by more than 200 upstream and downstream enterprises in the industry chain that specialize in the Internet, finance, ports, mining, healthcare, and mobile modules. Together, they explored and shared insights about the opportunities created by 5G to five industries – connectivity, computing, cloud, AI, and industrial applications.

5G Applications Facilitate Global Economic Recovery

This summit began with a high-level cross-industry discussion focusing on the exploration of the opportunities created by 5G to five industries. The discussion was led by Dr. Ye Tan, a famous financial commentator, joined by Mr. Li Hongwu, Director of China Unicom Research Institute, Mr. Chen Yunqing, Vice President of China Telecom Research Institute, Mr. Huang Gang, Deputy General Manager of China Mobile (Shanghai) Industrial Research Institute, Mr. Yang Minghui, President of CITIC Securities, Mr. Song Liang, Academician of Canadian Academy of Engineering and Professor of Fudan University, and Mr. Richie Peng, President of Huawei's 5G Product Line, to discuss the opportunities created by 5G and how the emerging technologies promote the rapid recovery of global economy.

A 5G Open Lab Established at “5G for Good Summit” to Build Shanghai into a High Ground of 5G Industry

During 5G for Good, Innovate for New Value Summit, Mr. Zhang Jianming, Deputy Director of Shanghai Municipal Commission of Economy and Information Technology, announced the establishment of a 5G open lab in Shanghai, a milestone 5G project for the city. This initiative will accelerate the aggregation of 5G industries and help Shanghai foster a collaborative innovation ecosystem.

The innovation center will provide application incubation, function testing, scenario verification, and investment conversion, thus to build a world-class 5G ecosystem open platform. With this platform, enterprises will be empowered to deeply integrate cutting-edge technologies and achieve systematic collaboration across the entire industry chain.

For more details about the above two news, please click here.

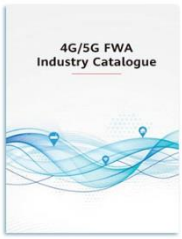
Huawei and Partners Establish 4G/5G FWA Technology Forum to Foster Wireless Home Broadband

The 4G/5G FWA (Fixed Wireless Access) Technology Forum was successfully held, bringing together the Global mobile Suppliers Association (GSA); leading chipset, module, and terminal vendors; operator representatives; and analyst agencies. At the forum, Huawei and 20 industrial partners jointly announced the establishment of the 4G/5G FWA Technology Forum as a platform that convenes industrial and ecosystem partners to jointly promote the rapid development of 4G and 5G FWA technologies.

According to the joint declaration, the forum will serve to help:

- Share trends in the industry, identify directions in technical development, accumulate successful experiences, and overcome business challenges.
- Improve the 4G and 5G FWA technologies required to provide wireless broadband connection solutions with increased performance and cost-effectiveness.
- Enhance the collaboration between FWA solution providers and mobile network operators to improve the industry's ecosystem and ensure business success.
- Promote the success of the FWA industry to accelerate the provisioning of broadband access to anyone, anywhere, with the goal of "connecting the other half" of the world's population.

In addition, the **4G/5G FWA Industry Catalogue** was revealed at the forum. It collects together main references of the information about mainstream FWA vendors and their product's main functions to promote the product information sharing between vendors and operators. The participants of the forum shared their views of the FWA industry, as well as technological trends and specifications. They called for greater willingness and solidarity to continuously improve R&D efficiency and product performance while reducing costs.



Download

For more details, please click here.

ZTE and Omdia Co-host a Global 5G SA Webinar

ZTE Corporation announced that it has hosted a live-streaming global 5G SA webinar in partnership with Omdia, a global leading technology research powerhouse.

At this webinar, experts from Omdia and ZTE have shared their insights on the global industry trends of 5G SA, and explored the various 5G SA deployment practices in China.

"56% of telecommunications service providers are preparing to deploy 5G core networks and 5G SA networks in the next 24 months," said Dario Talmesio, Research Director of Service Providers Strategy at Omdia. "For that, China provides important learning opportunities from real-life implementations, as Chinese telcos are pioneering in 5G SA now."

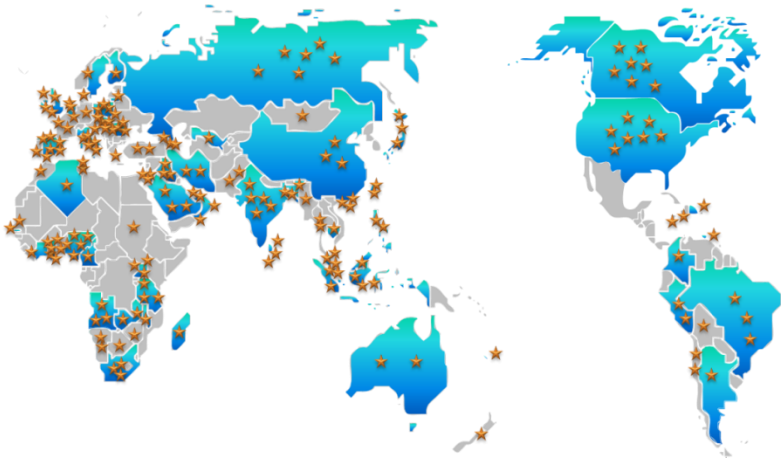
Jason Tu, Principle Scientist of NFV/SDN Products at ZTE, has elaborated the benefits of deploying 5G SA networks as well. "NSA/SA dual-mode terminals are now very popular in the market. The large -scale deployments of 5G SA networks in Chinese market have successfully verified the 5G SA end-to-end solutions. " said Jason.

ZTE has increased the coverage and capacity of 5G SA networks through FAST (FDD Assisted Super TDD), and has further enhanced the capability by virtue of low latency, mobile edge computing, network slicing and network sharing, according to Alex Wang, Managing Director of 5G RAN Solutions at ZTE.

For more details, please click here.

TD-LTE & 5G Global Market Overview

Global Deployment as the Mainstream Mobile Broadband Technology



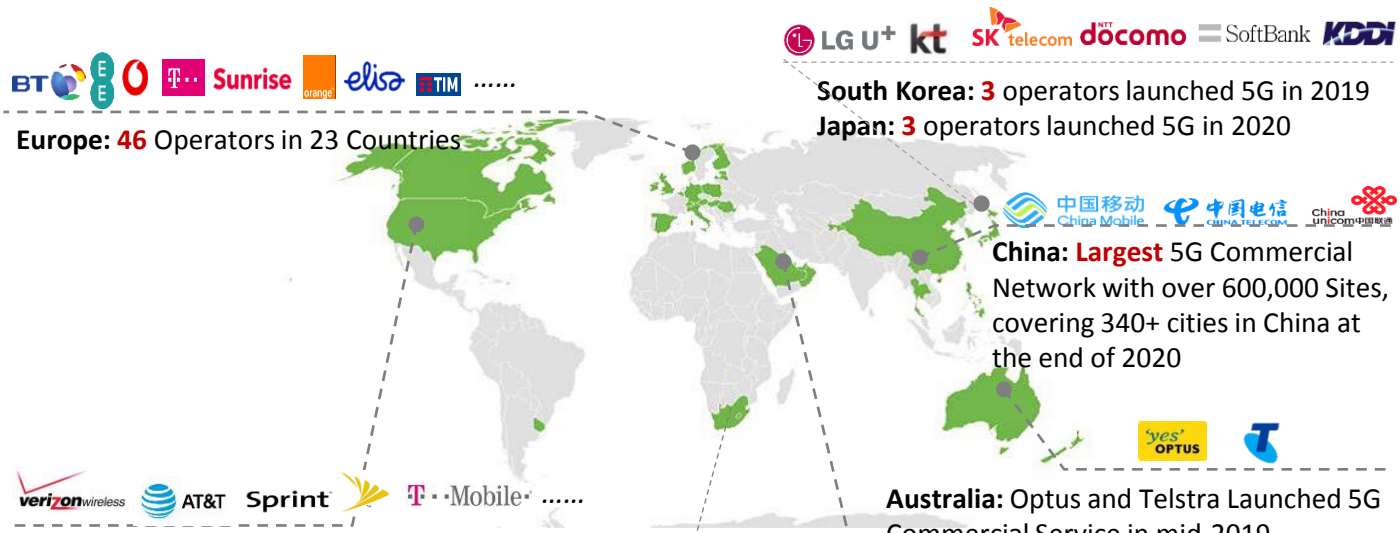
- **182** TD-LTE commercial networks in **86** countries have been launched
- **168** TD-LTE commercial networks in **81** countries are in progress or planned
- **2.48** million TD-LTE base stations (By Q4, 2019)
- **2.9** billion TD-LTE subscribers

Source: GTI, TDIA, GSA, GSMA
As of Q2, 2020

5G Global Commercialization is Accelerating

92 5G Commercial Networks Launched

394 Operators in the world have deployed, tested or trialed 5G



Europe: 46 Operators in 23 Countries

South Korea: 3 operators launched 5G in 2019
Japan: 3 operators launched 5G in 2020

China: Largest 5G Commercial Network with over 600,000 Sites, covering 340+ cities in China at the end of 2020

US: 7 Operators have launched 5G in compliance with 3GPP standard

Australia: Optus and Telstra Launched 5G Commercial Service in mid-2019

South Africa: Rain and Vodacom launched 5G respectively in Oct. 2019 and May 2020

Middle East: 13 operators in 5 countries

Data: As of Q2, 2020

GTI Breakthroughs and Achievements in 2020 (1/2)

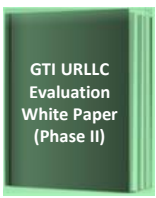
11 New Released White Papers and Technical Reports

5G Enterprise Network Solutions (5G ENS)

GTI Security Consideration for 5G Smart City White Paper
This white paper focuses on the potential security threats and challenges brought by the application of 5G technologies to Smart City, and the security capabilities required to address these threats.

GTI Wireless Solution for 5G ENS White Paper
This white paper summarizes differentiated network requirements of industry customers, proposes three types of wireless enterprise network solutions, and describes and analyzes the network architecture, network performance (coverage, performance, reliability, and isolation), application scenarios, and industry conditions.

GTI 5G Network Architecture and Capability Customization for ENS White Paper
This white paper indicates that as 5G technologies mature, an increasing number of vertical industries are becoming aware of the fact that industry-specific private 5G networks will aid their digitalization and industry upgrade, helping the enterprises meet the needs of a faster and more diverse market.



GTI URLLC Evaluation White Paper (Phase II)
Phase II involves more vertical, such as Differential protection in electrical power distribution and motion control in factory automation. And more simulation assumptions are adopted, such as FDD, new frequency band (700MHz), new frame structure, etc.

GTI Vertical Models and Enterprise Network Requirements White Paper
This white paper describes the requirements and application scenarios of 5G networks in major industries, summarizes and analyzes common scenarios and requirements, and provides a set of basic capabilities required for 5G networks to meet industry requirements.

GTI Vertical Spectrum Strategy White Paper
This white paper provides a GTI companies' initial study for the spectrum sharing issue for the operators to serve the vertical industry markets with their existing spectrum. The study assesses the overall system level performance for coexistence scenarios where a local vertical industry uses e.g a URLLC factory network has to fulfill the desired latency and reliability requirements.

5G Network

GTI NSA Commercial Network Deployment White Paper (v2.0)
This white paper will serve as a platform to share and present the results of the test and the strategies of the 5G NSA commercial network deployment, parameters and performance optimization experience, thus provide a reference to industry partners, so as to jointly promote the 5G industry maturity, accelerate its scale commercialization and evolution to SA, and embrace the property of 5G ecosystem.

GTI Breakthroughs and Achievements in 2020 (2/2)

5G Device

GTI 5G Global Device White Paper
This white paper identifies and explores the 5G multi-mode multi-band device requirements of wireless network operators and service providers deploying the latest generation of mobile broadband technology. The paper also highlights certain key 5G technological requirements related to multi-mode mobility and MIMO support required by GTI operators.

GTI 5G S-Module White Paper (v3.0)
This white paper mainly focuses on the 5G S-Module and has been carried out in several sections in turn. It analyses the required basic functions, the hardware technical requirements, the electrical interface technical requirements, test & certification and the typical technical solutions for 5G S-Module.

GTI 5G Device RF Component Research Report (v4.0)
This report has been carried out in two directions respectively, the sub-6GHz RF components and the millimeter wave RF components. It analyses the industrial status, key technologies, design challenges, alternative process and research progress of core 5G RF components, such as power amplifier, filter, low noise amplifier and switch.

GTI 5G Device OTA Test Specification (v2.0)
This specification targets enhanced Mobile Broadband (eMBB) scenario for 5G Device products testing. It provides evaluation criteria for UE OTA performance in the 5G test.

※ To get the full version of GTI white papers,
- View on the GTI website http://gtigroup.org/Resources/rep/
- Scan the QR code to download GTI APP to view

GTI APP

37 GTI Device Certification Achievements

GTI CERTIFIED

5 Test Specifications

GTI 5G Device Function and Performance Test Specification V3.0.0
GTI NB-IoT Module Test Specification
GTI NB-IoT Interoperability Test Specification
GTI Test Solution for MIoT Terminal -Smart Smoke Detector V1.0.0
GTI 5G Device Function and Performance Test Specification (v4.0)

5 Certified Test Labs

中國泰爾實驗室 · 中国移动 China Mobile · GERI Gumi Electronics & Information Technology Research Institute · TesTime · SPORTON LAB.

27 Certified Products

Chipsets, modules and devices

http://www.gtigroup.org/e/action/ListInfo/?classid=610

GTI Organization

Leaders Committee

Provide guidance to GTI

Sunil Bharti Mittal	Chairman/CEO	Hyeonmo Ku	Masayoshi Son	Nick Read
Founder and Chairman Bharti Enterprises	China Mobile	CEO KT	Chairman & CEO SoftBank Group Corp	CEO Vodafone

Steering Committee

Decision-making body of GTI

Craig Ehrlich Chairman GTI	PS Tang Managing Director Arete M	Randeep Singh Sekhon CTO for Airtel India & South Asia Bharti Airtel	Tongqing Gao Executive Vice President China Mobile	Guillermo Vazquez Director Engineering & Technology of Broadband Latam DIRECTV Latin America - AT&T	Satoshi Konishi EVP, KDDI Research Inc. VP, Technology Planning, KDDI Corp. KDDI
TBD KT	Paul Berriman Group CTO PCCW-HKT	Mathew Oommen President Reliance Jio	Osamu Kamimura Vice President and Head of Spectrum Policy Office SoftBank	John Saw Group CTO Sprint	Luke Ibbetson Director of Strategy and R&D organization Vodafone

Partner Forum Leadership Committee

CICT 中国信科 · ERICSSON · greenpacket · HUAWEI · 工業技術研究院 Industrial Technology Research Institute · NOKIA · Qualcomm · qorvo all around you · SAMSUNG · SERCOM · ZTE中兴

GTI Secretariat

GTI Press Office

Gather partner media resources, and enhance GTI's international influence

GTI Certified

GTI CERTIFIED

Meet the requirements of the industries, and promote the scale development of the industry

Promote the maturity of technologies and products

Technical Work

——4 Programs

Program 1: 4G & Evolution

No. of Projects: 6

Massive-MIMO
Uplink Enhancement
Smooth Evolution
Roaming
Innovative Business & Service
LTE Plus

No. of tasks: 17

Program 2: 5G eMBB

No. of Projects: 6

Sub-6GHz
Above 6GHz
New Device
Architecture
Test Equipment
Network Intelligence

No. of tasks: 34

Program 3: 5G Enterprise Network Solution

No. of Projects: 7

Vertical Requirements and Solution
Spectrum Strategy for Verticals
Products for Verticals
Technical Architecture and Solutions
Operating and Management
Security
Vertical Solutions

No. of tasks: 18

Program 4: Innovative Business & Service

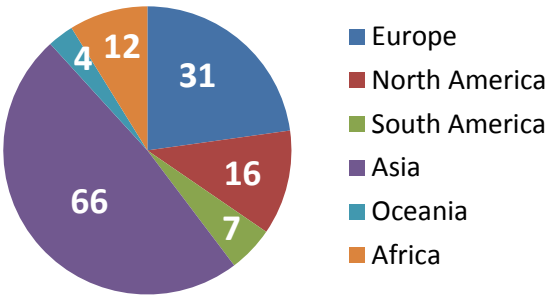
Cloud XR
Global Roaming
Business Model
.....

Detailed information is coming soon

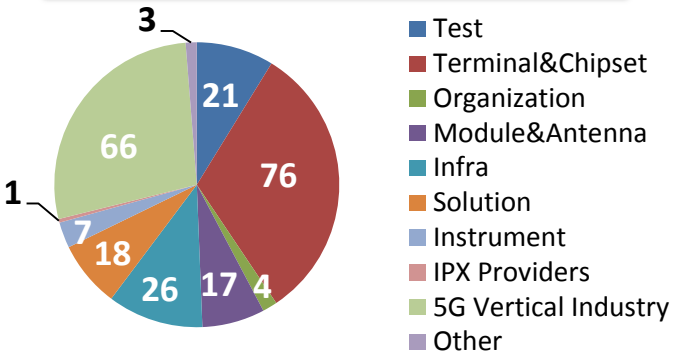
GTI Members Updates and Activities in 2020

136 Operators and 239 Industry Partners Joined GTI by Q2, 2020

136 Operators



239 Industry Partners



66 Vertical Industry Partners

Including IoT, IoV, Communication Capability, Industrial Internet, Cloud Robot, VR/AR

BAIC	Changhong	China AVIC	EVE Energy	Feitian	BOCO
GAEI	Goertek	Haier	Hisense	IESLab	Ehang
Jinan Towngas	LeAutolink	Neusoft	Oviphone	Canny Robot	Ecaray
Philips Lighting	SAFT SA	Shougang Automation Information		iStaging	Skymind
Taiyo Yuden	WapWag	Wireless Car	Xiaomi	Bettershine	SIASUN
iQIYI	Hongyu	Holoview Lab	UISEE	CEPRI	G7 Networks
Pico	HiScene	Cyber Cloud	Shitian	3Glasses	Phansion
IDEALENS	7D Vision	ChipEsthesia	AEE	LIESMARS	KuangChi
AIpark	HUYA	DeepRobotics	JD Logistics	.....	

GTI Activities

2020	Jan/Feb	Mar/Apr	May/Jun	Jul/Aug	Sep/Oct	Nov/Dec
Summit				*Time: 1st-2nd July* *Online* **GTI Summit 2020 Online Edition**		
Workshop		*Time: 22nd-23rd Apr.* *Online* **The 27th GTI Workshop**		*Time: 27th-30th July* *Online* **The 28th GTI Workshop**		*Time: Nov.* **The 29th GTI Workshop**

Welcome to Join GTI

GTI, *founded in 2011 by Bharti Airtel, China Mobile, Sprint (Clearwire), SoftBank and Vodafone, has been dedicated to constructing a robust ecosystem of TD-LTE and promoting the convergence of LTE TDD and FDD. As 4G evolves to 5G,* ***GTI 2.0*** *was officially launched at the GTI Summit 2016 Barcelona, aiming not only to further promote 4G evolution and expand its global market, but also to promote 5G development and cross-industry innovation. After years of joint efforts, GTI has become one of the most influential global cooperation platforms with* ***136*** *operators and* ***239*** *partners.*

How to Join GTI

Join as GTI Operators (with TDD Spectrum)

1. Fill out the application form (download from http://gtigroup.org/about/join/2013-11-11/1419.html), and return to GTI Secretariat: admin@gtigroup.org;

2. Sign the Accession Form and return the signed copy to 5 initiators;

3. Once the participation process finishes, a GTI website account and associated password will be assigned to the new participant.

Join as GTI Observers (without TDD Spectrum)

1. Fill out the application form (download from http://gtigroup.org/about/join/2013-11-11/1419.html), and return to GTI Secretariat: admin@gtigroup.org;

2. Sign the declaration form and return the hard copy to GTI Secretariat;

3. Once the participation process finishes, a GTI website account and associated password will be assigned to the new participant.

Join as GTI Partners (GTI Partner Forum)

1. Fill out the application form (download from http://gtigroup.org/about/join/2013-11-11/1422.html), and return to GTI Secretariat: admin@gtigroup.org; GTI Secretariat and Working Group Chairmen will review;

2. Sign the Declaration Form and return the signed hard copy to GTI Secretariat;

3. Once the participation process finishes, a GTI website account and associated password will be assigned to the new participant.

GTI

CONTACT GTI:

If you have any questions, comments, suggestions regarding 4G, 5G or general enquiries regarding GTI, please contact: admin@gtigroup.org