GTI

Industry Briefing

December, 2024 | No. 40

Edited by GTI Secretariat
December, 2024

Content

GTI Forum on Digital Intelligence · Hong Kong: Sub Forum One (Namely 40th GTI Workshop)

The 40th GTI Workshop was held in Hong Kong on September 11th. It was attended by over one hundred experts and representatives from universities, international organizations such as GSMA and Omdia, as well as partners including China Southern Power Grid, Qualcomm, Intel, Huawei and Ericsson, to discuss new technologies, new capabilities and new applications in 5G-A and AI integration.

Madam Huang Yuhong, the Secretary General of GTI, highlighted that the integration of 5G-A and AI will create both new opportunities and values, and will bring new impetus to the digital intelligence. AI is set to unlock more possibilities for 5G-A development, and 5G-A will enhance the foundation for AI development in return, the collaborative development of which will jointly create a new era of 5G A^2. With the integration of 5G-A and AI enhanced, it's estimated that more new connections will be built up, new services, new scenarios and new experiences will be created, and new ecology will be built as well. GTI is dedicated to fully promoting the 5G-A×AI integrated development plan, with main focus on driving forward the three core tasks, which are to build open labs, build an open collaborative innovation community, and explore innovative use cases. It's devoted to working with global partners to create a new global 5G-A×AI development ecology and create new value space for industrial development.

At the workshop, in addition to releasing the latest achievements of the 5G-A×AI Open Labs, GTI also launched other two joint Labs with Ericsson and Intel respectively. Together with GSMA, GTI released the first two "Challenges", which are the "New Calling (IMS Data Channel) Services Challenges" and the "Wireless Network Intelligence Challenge". The two announced challenges aim to solve the key issues facing the integration of 5G-A and AI development and explore more cooperation opportunities.

GTI Forum on Digital Intelligence · Hong Kong: Sub Forum Two

Prof. Jiannong Cao, Director of the Research Institute for AIoT, PolyU

As AI becomes deeply integrated into daily life, it raises questions about its accuracy, ethics, and governance. Addressing these concerns requires collaboration across disciplines, as different stakeholders—governments, industries, and citizens—may lack a deep understanding of the technology. Education is essential for fostering meaningful discussions and addressing these challenges.

Madam Yuhong Huang, Secretary General, GTI, General Manager, China Mobile Research Institute

To ensure AI benefits society, we propose three key initiatives: first, balancing technological innovation with ethical standards by establishing strong review mechanisms to ensure AI aligns with laws and human values; second, fostering international cooperation to tackle global AI challenges and develop universal standards; and third, prioritizing talent development through cross-disciplinary AI education to accelerate technology adoption and industry integration.

Prof. Xin Yao, Vice President (Research and Innovation), Lingnan University

AI ethics is a complex and multidimensional field, covering issues such as transparency, fairness, and privacy. From a technical perspective, I believe that AI ethics requires not only technical solutions, such as explainable AI and fair machine learning, but also non-technical approaches like policies and regulations. Ethical considerations should be integrated throughout the entire lifecycle of AI systems, from data collection to model deployment and monitoring. AI ethics is crucial for the real-world application of AI, and addressing these issues is key to ensuring the trustworthiness of AI systems in practice. I encourage more collaboration in this interdisciplinary research area.

Prof. Yan Xu, Professor, HKUST Center for Business Strategy and Innovation

AI and digitization have driven three major transformations: from items to bits, from places to spaces, and from products to services. Physical items like music, books, and travel services are increasingly digitalized, with platforms like Spotify, Netflix, and Amazon replacing traditional forms. AI enhances these digital services by personalizing recommendations and improving logistics. The concept of "place" in business has shifted to digital spaces, where services are accessible online. Moreover, products are evolving into services, such as Rolls-Royce offering engine usage rather than selling engines, leveraging AI for better maintenance and efficiency.

Prof. Zhiqiang Wu, Executive Director of Peking University Wuhan Institute for Artificial Intelligence

He reflected on AI's evolution, noting that while true general intelligence is still far off, current technologies like large language models pose risks if misused. He compared AI to tools like calculators, which can be harmful in the wrong hands. He also emphasized the role of governments, especially Hong Kong, in promoting global AI cooperation, similar to the unified approach in 4G/5G standards, stressing the need for responsible AI management.

Dr. Serge Stinckwich, Head of Research, UNU Macau

He agreed with Yann LeCun that AGI is still far from realization and that the real risks of AI come from how humans use it. AI's growing role in society requires a more empirical approach, as its impact on marginalized groups, particularly in the global South, can be significant due to biases in Western-trained models. Within the UN, efforts like the 2021 UNESCO AI ethics guidelines and a 2023 advisory board are addressing global AI governance, aiming to ensure responsible use and reduce the digital divide, especially in regions with limited internet access.

Dr. Bei Yu, Department of Computer Science and Engineering, CUHK

He shared a story about using a large language model (LLM) to develop "ChatEDA," a tool that simplifies user interactions with complex Electronic Design Automation (EDA) software. By fine-tuning the LLM, ChatEDA translates natural language inputs into script requirements and optimizes tool performance. He emphasized the ethical challenges of AI in specialized fields, particularly around data privacy, security, and preventing harmful outputs.

41st GTI Workshop
(Namely GTI Spectrum and Technology Workshop)

The 41st GTI Workshop (Namely GTI Spectrum and Technology Workshop) was held in Nanning, Guangxi, from November 24 to 26. The event was attended by over a hundred senior representatives and industry experts from international organizations, industry partners, universities, and research institutions. The workshop focused on sharing the current global spectrum development status and advanced spectrum strategies, addressing key issues facing the development of the 5G/5G-A industry, and exploring new technologies for network and terminal intelligence, key technologies and innovative applications for low-altitude smart networks and 5G industry private networks, with the aim of promoting the digital and intelligent development of the industry.
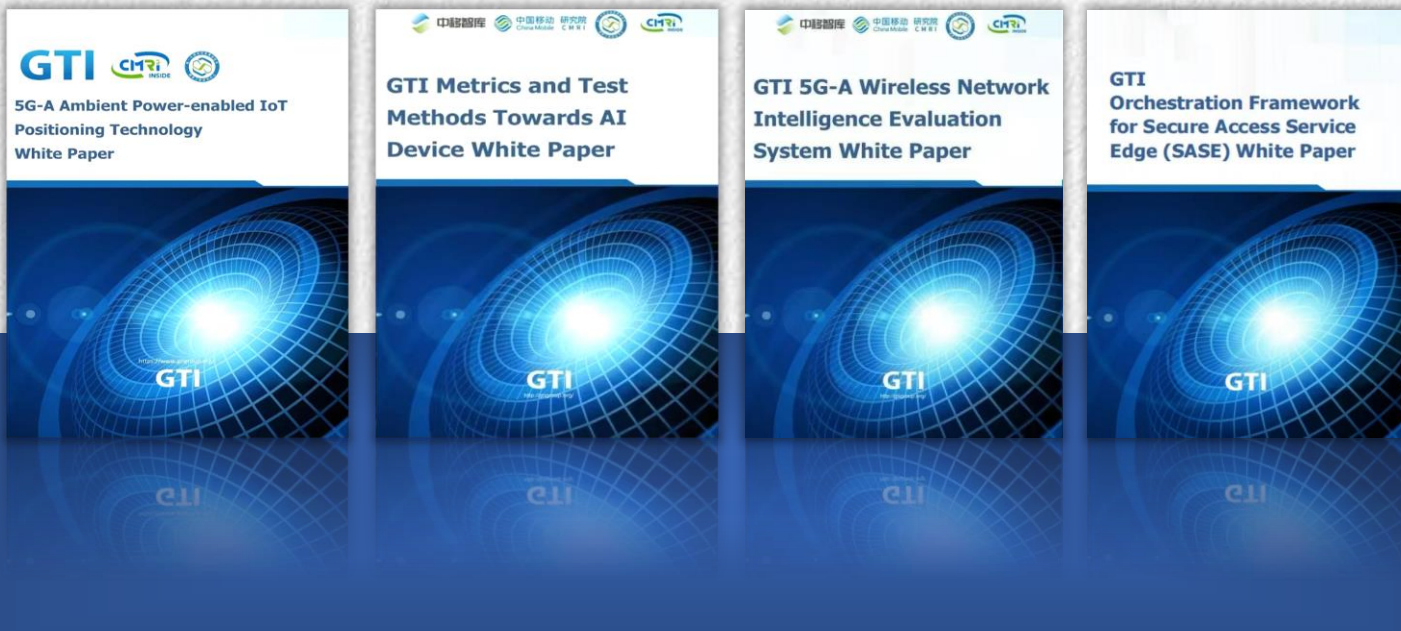

The workshop focused on three key themes: **Spectrum and Technology, the Integration of 5G-A and AI, and the Role of 5G-A in Empowering Industry Innovation**.

➢ **Spectrum and Technology:** regulatory authorities, GSMA, and partners such as Ericsson and Nokia shared updates on global spectrum allocation progress and spectrum planning strategies for 6G. They unanimously agreed that spectrum is crucial for industry development and called for further global collaboration to promote unified spectrum allocation and efficient utilization.

➢ **The Integration of 5G-A and AI:** academic and industry partners from institutions like the Universiti Malaya, Siemens, Huawei, and ZTE discussed innovations arising from the GTI 5G-AxAI Development Program. They explored advancements in new services and business models such as 5G new calling, XR immersive experiences, low-altitude economies, and Open Gateway.

➢ **The Role of 5G-A in Empowering Industry Innovation:** partners including Singapore operators, China Academy of Industrial Internet, ITEI, and HBIS Digital, conducted in-depth analyses of the digital and intelligent transformation needs of industries like steel and manufacturing. They shared application cases and experiences using new technologies such as passive IoT, integrated sensing, and AI network models in scenarios like 5G+ smart manufacturing, 5G+ industrial quality inspection, and 5G+ smart warehousing.

41st GTI Workshop
(Namely GTI Spectrum and Technology Workshop)

Four White Papers are Released at the Workshop

GTI
5G-A Ambient Power-enabled IoT Positioning Technology White Paper

GTI Metrics and Test Methods Towards AI Device White Paper

GTI 5G-A Wireless Network Intelligence Evaluation System White Paper

GTI Orchestration Framework for Secure Access Service Edge (SASE) White Paper

White Papers can be downloaded through: https://www.gtigroup.org/wpaper_list.html

Use Cases Sharing
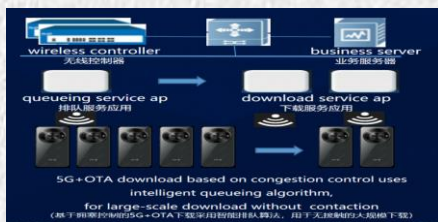
Intelligent Algorithms in 5G+ Terminal Intelligent Manufacturing

5G smart manufacturing, leveraging AI and machine vision, enables high-definition transmission, large-scale data transfer, and low-latency control. AI algorithms like deep learning vision, smart queuing, and AGV scheduling are transforming processes and delivering significant benefits.

➢ **AI-based Machine Vision**: Dynamic image recognition with AI self-learning, achieving 99.8% accuracy in multi-angle, moving, and multi-code scanning, saving 2 workers per station (approx. 150,000 yuan/year per station).

➢ **5G Smart Queuing**: A queuing algorithm to prevent network congestion during 5G downloads, enabling non-contact terminal downloads via OTA and reducing the risk of damage.

➢ **AGV Smart Scheduling**: Cloud-based AGV scheduling and path planning algorithms automate warehouse operations, achieving 100% automation of material handling and significantly improving storage efficiency, creating a "dark warehouse" model.

5G Private Network for Urban Rail Transit

Shanghai Metro, with 23 lines and 1,000+ kilometers of track serving over 10 million daily passengers, developed the **world's longest and fastest 5G-A network** in collaboration with Shanghai Mobile and Huawei to address weak signal issues and support key operations such as dispatching, equipment maintance and safety management. Key innovations includes:

➢ **5G Tunnel Positioning**: The EasyMacro 1D positioning solution uses a UL-RTOA (Uplink Time of Arrival) algorithm for beacon-free positioning, ensuring precise location tracking with 3-10m accuracy, supporting dynamic scheduling and smart inspections.

➢ **EasyMacro Antenna Deployment**: Huawei's integrated EasyMacro system eliminates the need for leaky cables, saving over 500,000 yuan per kilometer and reducing deployment time by 60%.

➢ **One Network for All Services**: The 5G network replaces multiple independent systems, supporting applications like smart inspection, electronic fencing, video surveillance, and vehicle status monitoring.

5G RedCap Smart Chemical Industrial Park

Wanhua Chemical, in collaboration with China Mobile and Huawei, has built a 5G-enabled smart factory, applying 5G to safety, production, and maintenance with 5,000 terminals. Key innovations include 5G explosion-proof phones, AI robots, and AGV forklifts.

In 2024, 5G RedCap (lightweight 5G) became a key industry focus. Wanhua is the first to deploy large-scale RedCap video networks for smart safety monitoring in chemical parks.

RedCap balances cost and performance, offering 5G NR access, reliability, and energy efficiency. Wanhua's wireless RedCap cameras have improved monitoring, reduced costs, and enhanced real-time hazard detection.

With 500 cameras deployed, Wanhua cut violations by 78% and saved nearly 10,000 yuan per point. China Mobile has launched a 5G RedCap video surveillance solution, creating new opportunities for connected security.

Global MBBF 2024: Accelerating 5.5G and AI Convergence to Lead the Mobile AI Era

The Global Mobile Broadband Forum 2024 (MBBF 2024) has kicked off in Istanbul with the theme "5.5G Leads Mobile AI Era". More than 1,000 guests from mobile network carriers, ecosystem players, and leaders from vertical industries have gathered to discuss a wide range of topics, from business model innovation to industry development and key technological directions in the Mobile AI era.
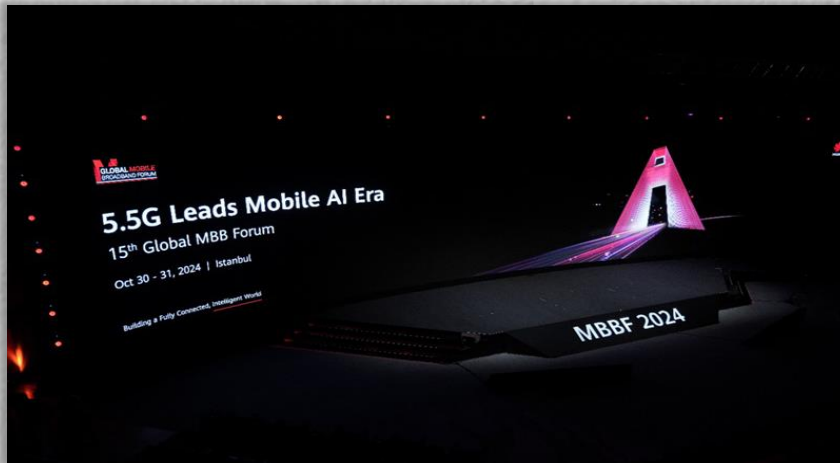
This forum was set up to further promote the **convergence of 5.5G and intelligent applications to create greater value for the mobile industry**. During the forum, Huawei and Türkiye network carriers have jointly provided diverse intelligent 5.5G field experiences. Also, various players in the Mobile AI ecosystem will be displaying their intelligent connectivity applications for people, homes, things, vehicles, and industries.

MBBF 2024 began with the opening remarks from Ken Hu, Huawei's Rotating Chairman. "In the future, AI will change everything. Everyone will be able to use it, anytime and anywhere. Mobile networks and devices will play an important role to make that happen, just like what we have done to enable telephones and mobile Internet as a universal service," said Hu.

2024 has brought both the commercial launch of 5.5G and the unprecedented expansion of artificial intelligence (AI) into our everyday life and work. Globally, more than 3 million AI-capable applications have been developed, more than the total number of non-AI apps available in the app store. That early commercial 5.5G rollout coincides with the first year of AI adoption in various devices is tremendously significant — it heralds the dawn of the Mobile AI era.

Li Peng, Huawei's Senior Vice President and President of ICT Sales & Service delivered a keynote on **how to maximize new growth opportunities in the mobile AI era**. "The mobile AI era is here," said Li. "We will see new forms of interaction with devices, **new intelligent services, and structural changes in traffic models. This will bring huge new opportunities for the mobile industry**."

Li then detailed how carriers can make the most of these new opportunities and drive new growth by reshaping services, network infrastructure, O&M, and business models. He shared how leading carriers around the world have already verified AI service capabilities on live 5.5G networks across a wide range of scenarios for individuals, homes, travel, and business.

"Moving forward, there are two things we can do to capitalize on new opportunities in the mobile AI era," said Li. "First, we should prepare our networks to support AI. That means boosting network capabilities, especially uplink, latency, and capacity. Second, we can use AI to support our networks. With more complex networks, we can use AI to help automate O&M, optimize network efficiency, and guarantee a solid user experience."

China Mobile Henan and Huawei Successfully Build China's First Underground Mining Benchmark Based on Quick, Low-Investment 5G Deployments

China Mobile Henan and Huawei have deployed low-band intrinsically safe 5.5G coverage at well #2 in Liangbei, Pingmei Shenma Group, marking China's first-ever 5.5G deployment for underground mines in complex geological conditions. This low-investment 5G solution has enabled Henan's first 5G+ industrial Internet platform for coal mining, advancing intelligent coal mining in the region. At the August 26, 2024, work conference on intelligent coal mining in Henan, government agencies and industry experts outlined future goals and strategies for the sector's development.

Quick, low-investment 5G coverage promoting intelligent coal mining development in Henan

In April 2024, Henan launched a three-year program to advance digital and intelligent coal mining. China Mobile Henan and Huawei formed a team with experts from Pingmei Shenma Group's Liangbei Site to develop cost-effective 5G solutions for medium- and small-sized coal mines. The team created a solution based on a 5G deep mobile network (DMN), integrating AI, IoT, big data, and cloud computing to support intelligent coal mining.

This solution enabled unattended operations, replacing manual tasks with robotics, and allowed for digital management and visualized operations, improving safety, efficiency, and reducing labor costs. It extended coverage by 65%, reduced deployment costs by 30%, and sped up application deployment by 20%. In just three months, several intelligent applications were implemented, including 5G video-assisted roadheading control, AI-based robotic inspections, smart wearables, and drone inspections. The site now requires fewer than 900 workers, with only 200–280 per shift for production and maintenance.

China Mobile Henan and Huawei helping coal miners in Henan break new ground in intelligent coal mining development

At the conference, China Mobile Henan and Huawei showcased their low-investment intelligent 5G applications and DMN network solution for coal mining. The exhibition highlighted the DMN solution's advantages in setup, coverage, and intrinsically safe base stations, as well as its performance in uplink capacity, extended coverage, and low latency. Over 500 visitors attended, including senior managers from major mining companies. They praised the progress in intelligent coal mining and emphasized the need for increased investment and collaboration for sustainable development in Henan's coal mining sector.

The conference marked a breakthrough for 5G in low-investment coal mining applications. Moving forward, China Mobile Henan and Huawei will continue exploring new use cases to promote safe, efficient, and green coal mining in the province.

Ericsson and Telstra Advance Mobile Connectivity with the World-first Deployment of a New RAN Compute Platform

Ericsson and Telstra have achieved a world-first in mobile connectivity with the deployment of Ericsson's 4th generation RAN compute platform, setting the stage for 5G Advanced in Australia. Launched on August 14, 2024, the new platform boosts data capacity by over three times compared to the previous generation, offering enhanced speed, reliability, and energy efficiency. Telstra is the first telco globally to operate commercial traffic on this platform within its C-RAN hubs, which reduces energy consumption by 60% and enables flexible, scalable operations. The advanced RAN compute platform supports AI/ML capabilities, providing a programmable network and superior user experiences. This breakthrough prepares Telstra's network for future innovations and lays the foundation for 6G.

CMCC Beijing and CICT Mobile Pilot Transparent Antenna to Promote 5G Coverage of High-value Scenarios

With the rapid development of 5G sites, green and beautiful antenna coverage schemes are required in some high-value hot scenarios such as residential areas, commercial blocks, cultural and tourist attractions. CMCC Beijing and CICT Mobile piloted transparent antenna to promote 5G coverage in these high-value scenarios. Compared to traditional spotlight type antennas for high-rise coverage, transparent antennas can be well integrated with CBD shopping malls, high-end office buildings and 5A scenic spots with its unique transparent design and become a part of the landscape. Meanwhile, transparent antennas have 2dB gain increase, 20% volume reduce and 50% weight reduce, which effectively improved the network coverage and promoted user experience.
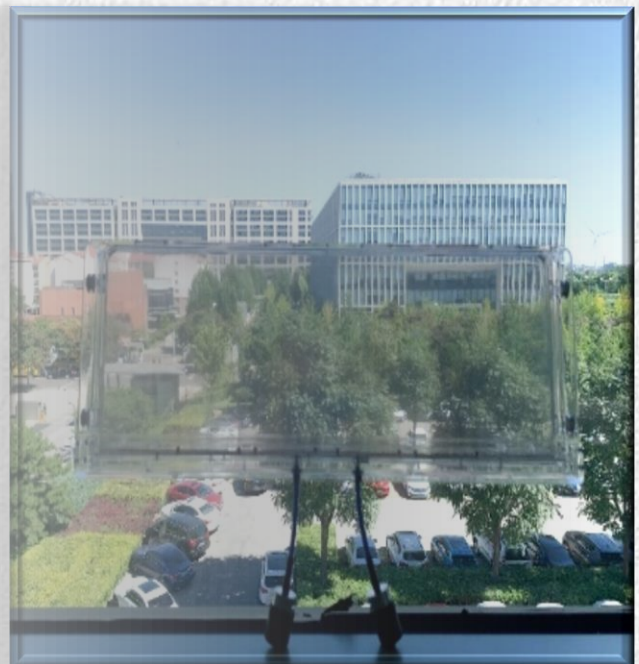
Accelerates Digital and Intelligent Transformation in Industry

At the 2024 "Industrial 5G Day" of 5G-ACIA, Zou Xiangyi, Vice President of Huawei Wireless Network Product Line, delivered a speech and emphasized the important role that 5.5G plays in promoting the digital and intelligent transformation of industry. He also shared Huawei's latest 5.5G industrial solutions and achievements in the development of the industrial private network.

Since its first commercial use in 2019, 5G has a significant impact on the global society, and its application in vertical industries is unprecedented. Currently, there are more than 30,000 5G private networks globally, and it's still growing at a high rate. Meanwhile, industry 4.0 has become an irreversible trend as the manufacturing industry accelerates its pace of digital and intelligent transformation.

Owing to its characteristics of ultra-high speed, ultra-low latency, and ultra-large connections, 5G has become the most important infrastructure to support the development of Industry 4.0. Huawei, as a leading global ICT solution provider, has been committed to promoting the deployment of intelligent industrial private networks with 5G/5.5G technology innovations.

In the digital transformation of industries, the convergence of OT (Operational Technology) and IT (Information Technology) is key to upgrading processes and enabling smart manufacturing. Zou Xiangyi noted that traditional factories often rely on multiple coexisting networks (e.g., fiber, Wi-Fi, LTE), complicating information exchange and increasing operational complexity. 5G technology, with its higher capacity, lower latency, security, and mobility, simplifies deployment and operation.

The evolution to 5.5G allows a single network to support communication, positioning, and IoT, accelerating OT/IT convergence.

Zou highlighted Huawei's innovations in 5.5G industrial networks, including scalable URLLC capabilities for flexible factories and advanced hardware supporting large-scale, low-latency connections. Huawei's 5G positioning technology, with 1-3 meter accuracy and ongoing sub-meter precision tests, enhances industrial applications. The evolution of 5G across frequency bands ensures a single network can meet diverse industrial needs, with IoT support through Redcap, NB-IoT, and Passive IoT technologies.

Zou cited Gree's Smart Factory at Zhuhai Gaolan Port, where Gree deployed a next-gen 5.5G industrial private network, enabling intelligent connectivity across production, quality inspection, and logistics. This innovation has boosted productivity and reduced costs, making Gree's Gaolan factory a leading 5.5G-enabled "lights-out" manufacturing site.

With the global maturation of 5G, Huawei will continue investing in 5.5G and AI to drive technological innovation and industrial upgrades, advancing digital transformation across industries.

AIS and ZTE Complete a Trial of D³-ELAA, Bringing 6G Technology to 5G Advanced Network

ZTE, in collaboration with Thailand's AIS, successfully trialed the Dynamic Distributed and Deterministic Extremely Large Antenna Array (D3-ELAA). This technology introduces the 6G cell-free concept into 5G, improving cell collaboration and providing a uniform user experience, particularly at the cell edges. The trial showed that D3-ELAA improved the user experience at the cell edge by over seven times and ensured stable performance during mobility.

This marks a key shift for AIS from a "cell-centric" to a "user-centric" service model, advancing the exploration of 6G. The trial at Suranaree University demonstrated a 2.3x improvement in user experience during mobility and a 7x increase in edge performance, supporting high-bandwidth services like cloud gaming and HD video streaming without interruptions.

D3-ELAA can be rapidly deployed on existing 5G infrastructure, offering enhanced services without requiring terminal upgrades. AIS and ZTE will continue to innovate and optimize services, contributing to the global digital economy.

Brisanet and CICT Reach New Cooperation to Bring 4G/5G to Areas Lacking Coverage

Brisanet and CICT have started their cooperation in wireless network construction. CICT will help the largest ISP in Brazil build a 4/5G wireless network in northern Brazil. The cooperation aims to improve the construction of wireless networks in the most remote and challenging areas of Brazil and provide high-quality Internet at affordable prices.

CICT 4/5G integrated base station products demonstrated its flexibility and customizability, enabling tailored solutions according to customers' specific business scenarios. The All-in-One products support 4G and 5G simultaneously, ensuring network compatibility and smooth evolution. Meanwhile, the All-in-One products significantly reduces deployment and maintenance costs for customers, promoting operational efficiency.

Telkomsel and ZTE Implement Self-Adaptive Feedback Technology to Strengthen Hyper AI for 4G Networks in Makassar and Kendari

Telkomsel, Indonesia's leading digital telecommunications provider, in collaboration with ZTE Corporation, has introduced an AI and Machine Learning (ML) based network solution to enhance the quality of its 4G/LTE services in Makassar and Kendari. Known as the Self-Adaptive Feedback solution, this advanced technology marks the continuation of the two companies' collaboration at Mobile World Congress 2024 in Barcelona, reinforcing Telkomsel's end-to-end AI and ML driven approach (Hyper AI) aimed at delivering customer-centric network excellence.

As the demand for high-speed internet continues to grow, Telkomsel and ZTE have introduced the Self-Adaptive Feedback solution to optimize network performance without requiring additional hardware. This technology enables service providers to automatically adjust network parameters, such as speed and power control, to handle heavy, resource-demanding applications such as video streaming and gaming. Additionally, the solution helps reduce operational costs through energy efficiency.

Wong Soon Nam, Telkomsel's Chief Strategic Planning Officer, stated, "In line with our commitment to continuously improving service quality through the latest technological innovations, Telkomsel and ZTE have reviewed and implemented the Self-Adaptive Feedback solution in Makassar and Kendari to provide a smoother and more efficient internet experience. We hope that the adoption of cutting-edge technology like Self-Adaptive Feedback – as part of Telkomsel's Hyper AI approach – will not only enhance customer satisfaction but also strengthen our position as an industry leader consistently delivering positive impacts and benefits for Indonesia."

Network tests with Self-Adaptive Feedback in Makassar and Kendari have shown a significant improvement in user experience. Video buffering has decreased by 15% while download speed has increased by 11% and webpage loading times have improved by nearly 30%. Gaming latency has also decreased by up to 47%, offering a more responsive gaming experience.

In addition to performance improvements, Self-Adaptive Feedback technology is equipped with energy-saving features that automatically shift base stations to low-power mode during low-traffic periods. Power efficiency has improved by around 15%, while energy consumption has decreased by 8%, contributing to operational cost savings.

Richard Liang, President Director of ZTE Indonesia, stated, "We are proud to collaborate with Telkomsel in delivering innovative solutions that can support user needs. At ZTE, we believe that every innovation brings new hope and opens the door to various opportunities in the future. By integrating artificial intelligence into the network, we not only enhance efficiency but also address the increasing demand for access to high-quality digital content. Through this collaboration, we are committed to improving the quality of digital access in Indonesia and making a positive contribution to society."

To date, Self-Adaptive Feedback technology has been deployed at over 90 Telkomsel sites, benefiting more than 300,000 customers. As part of the Hyper AI approach – particularly within Telkomsel's leading Autonomous Network architecture that leverages AI for faster and more reliable network service automation – the implementation of Native AI will be expanded across the entire Telkomsel-ZTE network in Indonesia. This initiative aims to accelerate digital progress across various sectors, including education, business, and daily life.

ZTE Hosts 5G Summit & User Congress 2024 in Türkiye, Showcasing the Digital Future Under the Theme "Flourish Through Intelligent Innovation"

ZTE hosted its **5G Summit & User Congress 2024** in Istanbul, under the theme "Flourish Through Intelligent Innovation." The two-day event brought together global industry leaders, carriers, and analysts to discuss the latest developments in **5G**, **5G-A**, **AI**, and next-generation networks. ZTE CEO **Xu Ziyang** delivered a keynote titled **"Digital Bridge of Civilization, Link across Carbon & Silicon,"** emphasizing the central role of intelligent innovation in connecting the world and accelerating technological progress. He highlighted four key types of connections that are reshaping industries: the **Data Link** that builds a seamless digital Silk Road, the **Wisdom Link** that redefines computing power and intelligence to transform productivity, the **Symbiotic Link** for ecosystem collaboration between technology and the environment, and the **Civilization Link** that bridges carbon-based life with silicon-based intelligence, fostering collaboration between humans and AI.

At the summit, ZTE showcased its innovations across three key areas: **5G-ready solutions**, such as the **UniSite** platform designed for efficient 4G/5G network deployment; **5G solutions**, focusing on monetization, private 5G networks, and intelligent wireless solutions; and **5G-A solutions**, which feature AI-powered network O&M and 5G-A commercialization through solutions like **10G experiences** and **integrated sensing and communication**. ZTE also unveiled its **first AI-powered full-stack FWA solution**—the **Nebula AI FWA Solution**—along with the **AI-powered G5 series of 5G FWA devices**, which feature advanced AI-driven capabilities like **multi-scenario applications**, **AI QoS management**, and **real-time network optimization**. In addition, ZTE presented a variety of **nubia smartphones** and **IoT devices** designed to enhance the user experience across **sports & health**, **audio & video entertainment**, **business & travel**, **home & education**, and **smart driving**. ZTE's **Full-Scenario Intelligent Ecosystem 3.0** focuses on these five core consumer scenarios, underscoring the company's commitment to AI-driven digital transformation. The event highlighted ZTE's collaboration with over **1,000 global partners**, driving digital progress and innovation across industries. Through continuous foundational innovation, ZTE aims to expand its **digital intelligence infrastructure** and contribute to the **high-quality development of industries worldwide**, reaffirming its role as a key player in driving global **digital transformation** and the **digital economy**.

GTI Breakthroughs and Achievements in 2024

5G

GTI White Paper on IMT System Operating in 6GHz Band Coexistence with Incumbents
This white paper will investigate the coexistence of IMT and existing 6GHz band services, such as FSS/FS, by exploring the models, parameters and technologies based on ITU-R agreement, and timely carry out the relevant simulation to verify the theoretical analysis.

GTI AI-Based Autonomous Security Protection System White Paper
This white paper aims to pave an innovative path for next-generation communication network security protection, providing theoretical guidance for building network security and laying foundation for deepening and expansion of AI technology in diversified application scenarios.

GTI 5G-A Wireless Network Intelligence Evaluation System White Paper
This white paper introduces "1-4-1" architecture, a pioneering framework for evaluating how intelligent a 5G-A wireless network is, and provides evaluation systems for typical scenarios that outshine traditional indicator-based systems.

GTI Metrics and Test Methods Towards AI Device White Paper
This white paper aims to promote the formation of objective and unified AI device evaluation indicators for industry, propose an evaluation system for intelligence capability of 5G-A devices, and provide evaluation scheme examples based on typical applications in some industries.

5G ENS

GTI Passive IoT Typical Scenarios White Paper
This white paper focuses on typical application scenarios of passive IoT, categorizes scenarios based on the characteristics and capability requirements of the full life cycle of the marking object, and elaborates business pain points of each scenario.

GTI Advanced Sensing Technology White Paper
This white paper proposes the advanced sensing technology trends of "Five New and Four Integration", focusing on new mechanisms, new materials, new processes, new structures and new algorithms of sensing frontier technologies, and technical directions of sensor technology.

GTI Orchestration Framework for Secure Access Service Edge (SASE) White Paper
This white paper proposes a solution to achieve the integration of network and security orchestration in the building of SASE orchestration framework, which includes a reference framework diagram, an overview of the main functional modules, and a process description.

GTI 5G-A Ambient Power-enabled IoT Positioning Technology White Paper
This white paper starts with typical positioning application scenarios of 6G AIoT, analyzes end-to-end key technologies for AIoT positioning, introduces practical cases of positioning, and provides references and guidelines for the industry to explore 6G AIoT applications.
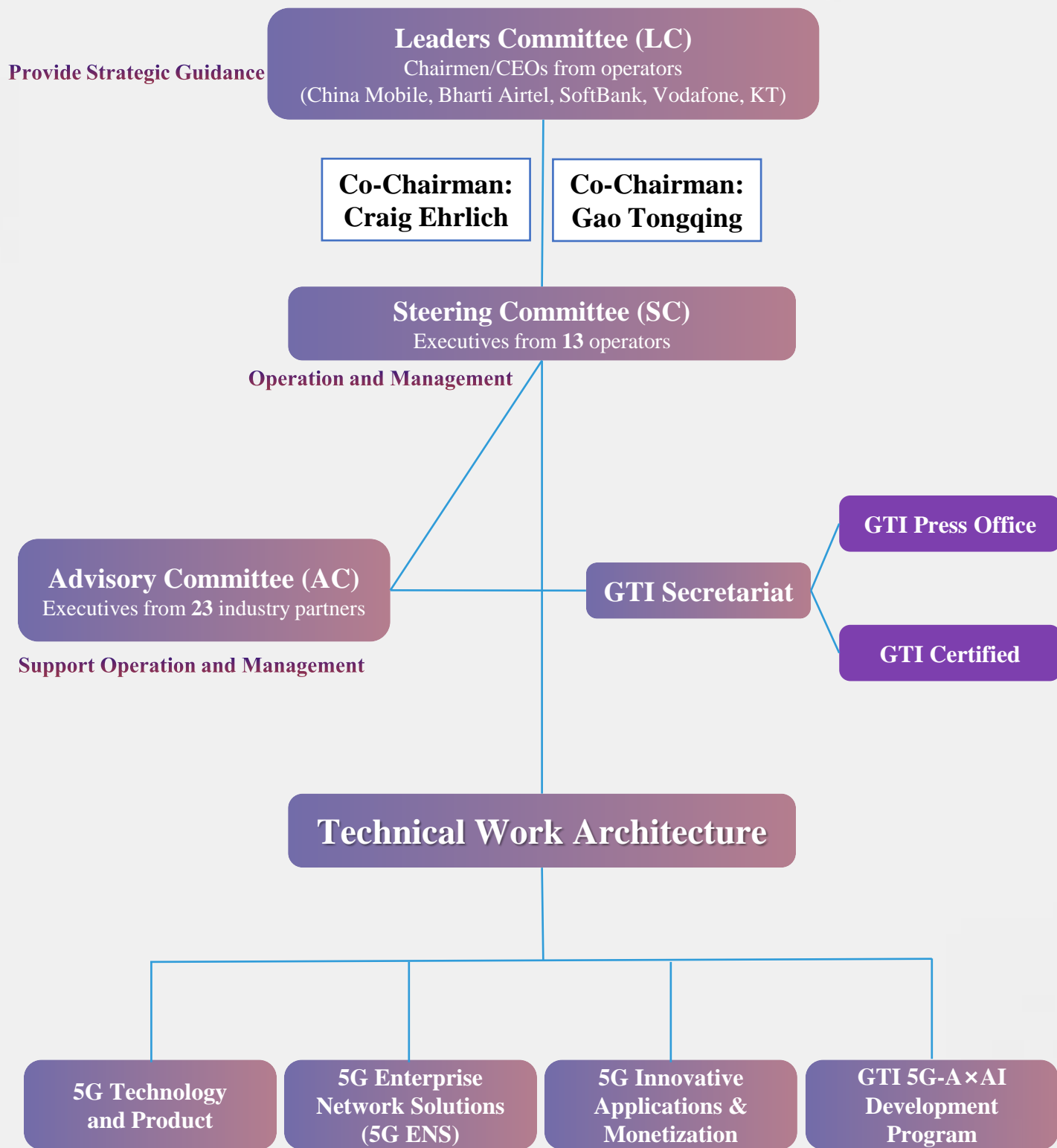
Joint Report

GTI Report - 5G-A x AI: New Era, New Opportunities, New Value
This report focuses on business models and value expansions of 5G in three markets: Individual, Household, and Industrial. It analyzes new opportunities and values brought by the collaborative development between 5G-A and AI.

Scan to download

GTI Organization

Provide Strategic Guidance

Leaders Committee (LC)
Chairmen/CEOs from operators
(China Mobile, Bharti Airtel, SoftBank, Vodafone, KT)

**Co-Chairman:
Craig Ehrlich**

**Co-Chairman:
Gao Tongqing**

Steering Committee (SC)
Executives from **13** operators

Operation and Management

Advisory Committee (AC)
Executives from **23** industry partners

Support Operation and Management

GTI Secretariat

GTI Press Office

GTI Certified

Technical Work Architecture

**5G Technology
and Product**

**5G Enterprise
Network Solutions
(5G ENS)**

**5G Innovative
Applications &
Monetization**

**GTI 5G-A×AI
Development
Program**

More details about the technical work, please **Click Here**.

GTI Key Moments
—Look Back to Our Historical Story (1/2)

GTI

2011
Kick-off of GTI by China Mobile, SoftBank, Vodafone and other operators

2012
Release of world's first TDD/FDD Multimode chips

2013
Release of world's first MMMB smart phone

2014
World's first TD-LTE VoLTE phone call was made

2015
Release of 5-Mode Low Cost Device Solutions

2015
Release of Native RCS Devices

2016
Launch of **GTI 2.0** by China Mobile, Bharti Airtel, KT, SoftBank and Vodafone to promote 5G development and cross-industry innovation

2016
Release of HPUE on Band 41 to promote Massive MIMO commercialization and improve systematic performance

2018
Release of GTI 5G S-Module Industrial Cooperation Plan to promote wide application of 5G devices and expand the scale of application

2018
Joint release of *5G in China-the Enterprise Story* by China Mobile, GTI and GSMA

GTI Key Moments
—Look Back to Our Historical Story (2/2)

GTI

2019
Debut of 5G 2.6GHz End-to-end Products to accelerate maturity of 2.6GHz industry chain and promote 5G commercial process

2020
Release of *Supportive Policies for a Sustainable Mobile Industry in the 5G Era* with GSMA to promote sustainable mobile industry

Release of GTI 5G Global Device Initiative to promote maturity of multi-mode, multi-band and multi-form devices

2021
Unveil the joint "2.3GHz Band Industry Statement" to promote efficient use of TDD 2.3GHz spectrum and accelerate commercial launch by global operators

2023
GTI 3.0 was launched to promote continued global cooperation, accelerate 5G-A tech and products, foster integration of DICT, and empower 5G monetization to create greater value

2023
Release of *Unleashing New Value with New 5G Technology*, to develop and strengthen 5G industry, and stimulate 5G-enabled economic and social transformation

2024
Release of *GTI Report – 5G-A × AI: New Era, New Opportunities, New Value* to promote full potential of 5G A^2, and create a much broader value space for the entire industry

Launch of GTI *5G-A ×AI Development Program* to promote integration of 5G and AI in technology, business, ecology, and commerce, and two-way empowerment
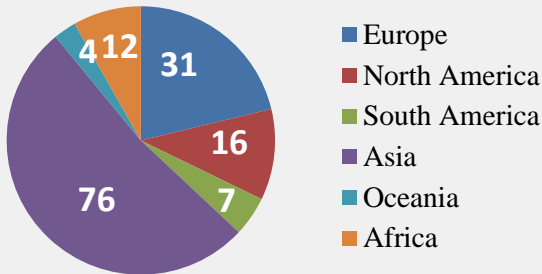

2024
GTI and GSMA signed cooperation agreement on 5G-A×AI to jointly explore potential collaboration opportunities and drive innovative integration in 5G-A and AI.
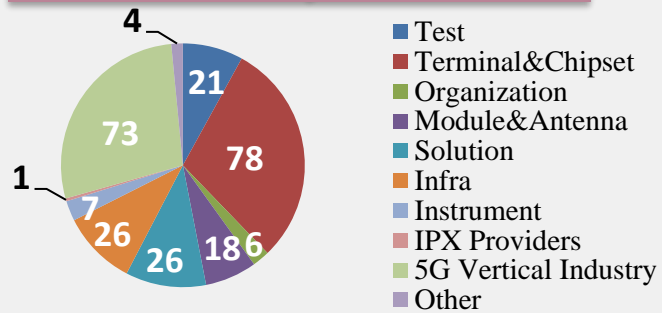
GTI Members Updates and 5G-A×AI Development Program

146 Operators and 262 Industry Partners Joined GTI

146 Operators

- Europe — 31
- North America — 16
- South America — 7
- Asia — 76
- Oceania — 4
- Africa — 12

262 Industry Partners

- Test — 21
- Terminal&Chipset — 78
- Organization — 6
- Module&Antenna — 18
- Solution — 26
- Infra — 26
- Instrument — 7
- IPX Providers — 1
- 5G Vertical Industry — 73
- Other — 4

International Cooperation

GSMA ITU 3GPP A GLOBAL INITIATIVE NGMN GCF Global Certification Forum 5GAA Automotive Association 5G ACIA 5G Alliance for Connected Industries and Automation KHRONOS GROUP ......

GTI 5G-A×AI Development Program

Objectives Build industry consensus, gather industry taskforce, and promote integrated innovation of 5G and AI, support digital intelligence in economy and society, and create new revenue space for industrial development

➢ 3 Core Tasks

Build Open Labs: Building open labs around the world, which helps conduct technical tests for verification;

Build an Open Collaborative Innovation Community : Establishing an open platform for knowledge sharing and supply & demand matching;

Explore Innovative Use Cases: Providing 5G and AI integration solutions to promote commerical applications.

➢ 4 Technical Projects

Network Intelligence	**Digtal Twin Network Intelligence**	**Application Intelligence**	**Sustainable Intelligence**
Improving the wireless and core network capabilities with AI intelligence	Building a network digital twin that reflects the real network state	Building an AI-based open new calling ecosystem	Exploring intelligent ways to promote the sustainable development of 5G systems

➢ Latest Progress

• **GTI 5G-A×AI Open-Lab**

➢ **GTI-China Mobile OpenLab (Beijing)**
➢ **GTI-Huawei OpenLab (Shanghai)**
➢ **GTI-ZTE OpenLab (Shanghai)**
➢ **GTI-Ericsson OpenLab (Stockholm)**
➢ **GTI-Intel OpenLab (Chandler (U.S.), New Mexico, Beijing, Taipei, Penang)**

• **Innovation Community**

➢ **The New Calling Challenge**
Opened in October 2024
Winners to be announced: June 2025

➢ **Wireless Network Intelligence Challenge**
Opened in November 2024
Winners to be announced: September 2025
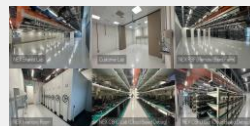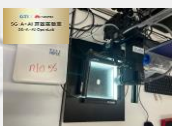
If you are interested in this program, please Click Here to register.

Welcome to Join GTI 3.0

*GTI is an international platform for industry cooperation. It was kicked off in 2011 by China Mobile, SoftBank, Vodafone and other operators. After years of joint efforts, GTI has developed **146** operator members and **262** industry partners. In 2016, GTI 2.0 was officially launched, aiming to further promote 4G evolution, 5G development and cross-industry innovation. In 2023, GTI 3.0 was launched to promote continued global cooperation, accelerate 5G-A tech and products, foster integration of DICT, and empower 5G monetization to create greater value.*

How to Join GTI

Join as GTI Operators (with TDD Spectrum)

1. **Click Here** to download and fill out the Application Form, then return it to GTI Secretariat: **admin@gtigroup.org**;

2. Sign the GTI Letter of Intent (LOI) documents and mail the signed hard copies 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 Observers (without TDD Spectrum)

1. **Click Here** and fill out the Application Form, then return it to GTI Secretariat: **admin@gtigroup.org**;

2. Sign the Declaration Form and mail the hard copy to GTI;

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. **Click Here** and fill out the Application Form, then return it 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, and suggestions regarding 5G/5G-A or general enquiries regarding GTI, please contact: **admin@gtigroup.org**

Welcome to Join GTI 3.0

Continued Global Cooperation on 5G-ADV[i] Toward Greater Commercial Success

GTI White Papers and Reports

GTI Website

GTI WeChat

GTI WhatsApp Group

GTI X (Twitter)

GTI YouTube

GTI LinkedIn

✉ **admin@gtigroup.org**