5G as Driver of Digital Transformation in Industries

Terence Wong, Head of APAC 5G Industry & IoT Community, GSMA

June 2024

5G Commercialisation: Global Overview

GSMA™ Intelligence

Europe

Albania	Estonia	Jersey	Norway
Andorra	Finland	Kosovo	Poland
Austria	France	Latvia	Portugal
Belgium	Georgia	Liechtenstein	Romania
Bosnia and Herzegovina	Germany	Lithuania	Serbia
Bulgaria	Gibraltar	Luxembourg	Slovakia
Croatia	Greece	Malta	Slovenia
Cyprus	Hungary	Monaco	Spain
Czechia	Iceland	Montenegro	Sweden
Denmark	Ireland	Netherlands	Switzerland
	Italy	North Macedonia	UK

Eurasia

Armenia
Azerbaijan
Kazakhstan
Russia
Tajikistan
Uzbekistan

North America

Bermuda
Canada
Greenland
US

MENA

Bahrain	Libya	Tunisia
Egypt	Mauritania	Türkiye
Iran	Oman	UAE
Israel	Qatar	
Jordan	Saudi Arabia	
Kuwait	Somalia	

Asia Pacific

American Samoa	Malaysia
Australia	Maldives
Bangladesh	Myanmar
Bhutan	Nepal
Brunei Darussalam	New Zealand
Cambodia	Northern Mariana Islands
China	Philippines
Fiji	Singapore
Guam	South Korea
Hong Kong	Sri Lanka
India	Taiwan
Indonesia	Thailand
Japan	Vietnam
Laos	
Macao	

Latin America

Argentina	Guyana
Aruba	Martinique
Bolivia	Mexico
Brazil	Peru
Chile	Puerto Rico
Colombia	Saint Barthelemy
Costa Rica	Saint Martin
Dominican Republic	Suriname
El Salvador	Trinidad and Tobago
French Guiana	Uruguay
Guatemala	US Virgin Islands

Sub-Saharan Africa

Angola	Lesotho	Sierra Leone
Benin	Malawi	South Africa
Botswana	Madagascar	Tanzania
Congo	Mauritius	Togo
Côte d'Ivoire	Mozambique	Uganda
Ethiopia	Nigeria	Zambia
Gambia	Réunion	Zimbabwe
Ghana	Senegal	
Kenya	Seychelles	

Live commercial 5G network

Planned commercial 5G network

End of Q1 2024, 295 operators in 114 markets have launched mobile 5G

20+ APAC market with 5G

By end 2030: 652 operators will launch in 225 markets

Note: Status assigned where an operator has stated a commitment/timeline (planned) or announced a commercial 5G launch (live). Status is defined as live where at least one operator has commercially launched (mobile/fixed) 5G services.

Data correct to 31 March 2024
For updates, see gsmaintelligence.com
Source: GSMA Intelligence

APAC 5G INDUSTRY COMMUNITY

APAC 5G Industry Community

Accelerating the 5G & IoT adoption in industries and enterprises

OUR VISION: Strengthen operator and industry partnerships to accelerate the 5G & cellular IoT

INTEREST INDUSTRY GROUP (2024): Welcome companies, govt/agencies and industry organizations with interest or passionate on 5G to join as community member

Manufacturing	Logistics, Port & Transportation	Healthcare	Energy, Mining & Utility	Smart City & Public Sector

INDUSTRY LEADERSHIP:

Contributor members & Ecosystem partners

Largest 5G Alliance of regional ecosystems and global partnership

APAC National 5G Alliance/Hub in different market

APAC 5G INDUSTRY COMMUNITY
1000+ organization (Govt, MNOs, enterprises and ecosystem) across 80+ market

Global 5G Alliances across sectors and market beyond APAC

11 cities in Guangdong, Hong Kong and Macau
5G Alliance (Thailand)
5G Alliance (Malaysia)
5Gnow.id (Indonesia)
5G innovation (Singapore}
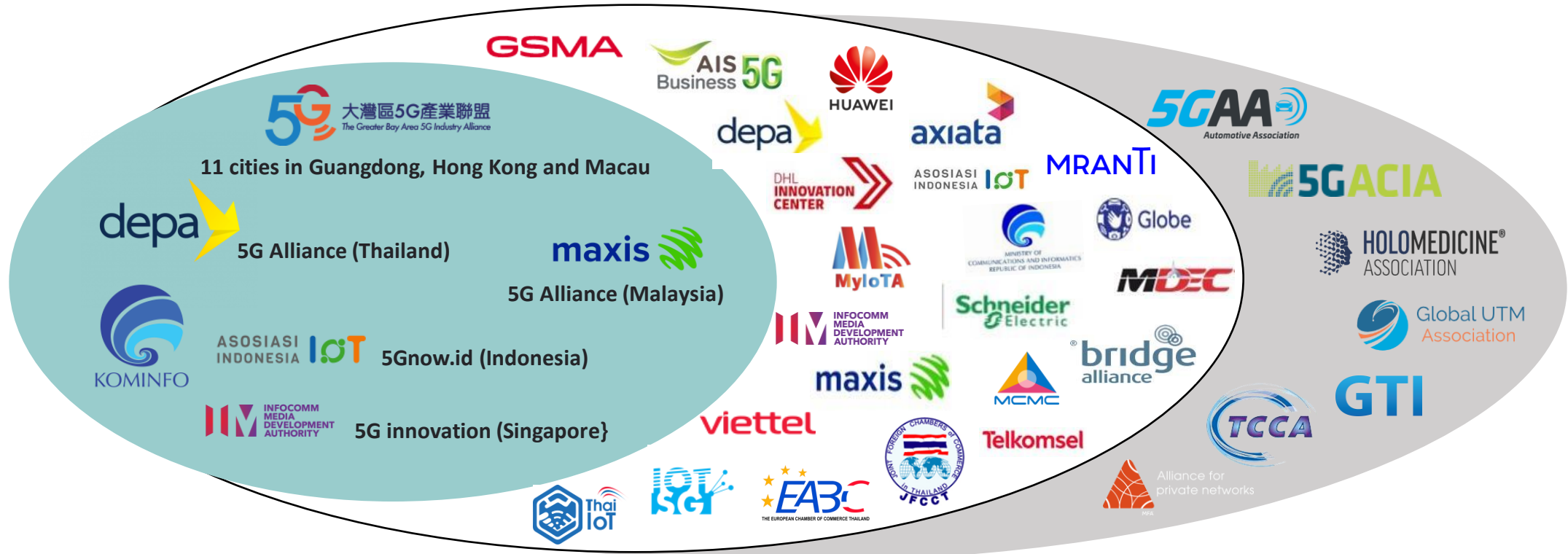
Digital pioneers across market and sectors

Phupa Akavipat
Acting Chief Enterprise Business Officer, Advanced Info Services Plc. (AIS)

Feby Sallyanto
Chief Enterprise Officer, XL Axiata

Widiya Kumoro
Head of ICT & Digitalization Mining Industry, Indonesia

M Feizal M Ghazali
Custodian (Head Instrument & Control), Group Technical Solution/GTS, Petronas (Malaysia Oil & Gas enterprise)

Lily Lai
Chief Information Officer, Airport Authority Hong Kong

Andy C. Bien
Chief Digital Officer, Global Aviation of Huawei Technologies

Dr Cherdchai
Deputy Dean for Service Innovation and Organization Value Sririraj Hospital, Thailand

Dr. Gao
Assistant Group CTO, NUHS, Singapore

Willis Sim
Chief Corporate Sales & Solutions Officer, M1

Wai Kiat Kwok
Vice President, Enterprise Product Management & Development, Telkomsel

Mr ST Liew
Vice President and President of Taiwan, SEA, Australia & New Zealand Qualcomm Technologies

Takehiro Nakamura
Board member of 5G-ACIA and Chief Standardization Officer, NTT DOCOMO

Hakim Achouri
GSMA Digital Industries Co-chair at GSMA, Airbus

Sim Soon Huat
Head of IT Infrastructure, PSA Singapore

Prof Song Jianping
Professor of Neurosurgery Huashan Hospital, China

Prof Cha Wonchul
Chief Medical Informatics Officer Samsung Medical Center, South Korea

Deep-dive APAC workshops and case studies across sectors from pioneers

APAC 5G Industry Case Studies

Past activities on demand

GSMA™

How 5G is Transforming APAC

Ten case studies highlighting the utility and versatility of 5G technologies

September 2023

AIS - 5G Catalysing for Digital Revolution in the Cement Industry

AIS - Changing Wi-Fi to 5G in the Manufacturing Industry

China Mobile Hong Kong - 5G Network Solutions for Airport Operations

Hong Kong Telecom - Field Service Augmented by VR and Drone Using 5G with Edge for Reliable Performance

LG Uplus – Revolutionising the LG Uplus Smart Factory Industry in South Korea with 5G

M1 - 5G AR/VR Smart Glass Solution

PETRONAS & Telekom Malaysia Berhad -The Private 5G Network for the Oil and Gas Industry

ST Engineering - 5G-Enabled factory of the future

Singtel - Enabling seamless connectivity at large-scale consumer events with Singtel standalone 5G network

True - 5G Delivers Smoother Travel in Bangkok

APAC 5G
INDUSTRY COMMUNITY

Example manufacturing applications and enhancements 5G can offer

Automated guided vehicles (AGVs/AMRs)

- 5G enhances coverage and reliability, enabling AGVs to remain continuously connected to supervisory systems.

- 5G's increased bandwidth enables additional camera views to be relayed, while lower latency and higher resolution allow better decision-making for traffic co-ordination and safety.

Mobile robots/co-bots

- 5G supports higher density of robots and reliable factory-floor mobility for moving robots/co-bots.

- 5G's low latency allows for actions to be monitored in near-real-time. Co-bots can adjust their actions rapidly in response to a human co-worker and the surrounding environment.

AI/Machine vision

- 5G enables an increased density of higher resolution CCTV to be deployed, improving the range and accuracy of machine vision applications.

- If image analytics are conducted on the edge, low-latency alerts and remedial commands can be generated when issues are identified.

Digital Twin

- Low latency and improved bandwidth facilitate the collection of real-time datasets that can be analysed against historic data to identify patterns, improve processes and increase production efficiency.

Connected tools

- 5G improvements, in terms of coverage and reliability, facilitate remote connection of sensors.

- Massive IoT supports easy installation/retrofitting of battery-powered devices.

- 5G networks offer support for high device density with quality-of-service assurance.

Labour augmentation

- 5G and AI-powered industrial AR enable workforce training, support and skills development.

- Latency is critical to AR/VR to ensure the synchronisation of the virtual and real worlds.

Hyundai taps Singtel's 5G network in electric vehicle manufacturing

Being a Smart and Advance Factory

- 5G connectivity, cloud and edge computing as key enabler
- Use Automation, Robotics and AI
- Modular production line with robots moving part around, without conveyor belts
- 300 Sensors per module that capture large amount of data for Control System and Digital Twin
- On the fly configuration for testing new production methods, market research and building new vehicles
- Rooftop testing track and Automatic hydroponics farm
- Customization and delivery via automatic delivery system

Key pillars of Smart Port

Efficiency
- Optimizing port and terminal processes through digitalization and automation.
- Use of Big Data, Artificial Intelligence, Internet of Things, blockchain technology, and a 5G network

Resilience
- Able to adapt to changing circumstances and recover quickly from disruptions.
- Dealing with increasing ship sizes, geographically limited growth opportunities, and increasing pressure on the productivity of seaports

Collaboration
- The interconnectivity of all actors in the maritime supply chain through the automated transmission of mobile data in real time is a crucial aspect of the Smart Port concept.
- This increased connectivity among the individual actors improves performance

Sustainability
- With increasing demands to reduce emissions along the entire supply chain, Smart Ports are focusing on environmental aspects and sustainability, safety

Source: Jahn, C. and Nellen, N. (2022). Smart Port Concept: Strategic Development, Best Practices, Perspectives of Development. *Contributions to management science*, [online]

5G enable Smart port around the world

APAC

- Hong Kong (#8) – Hutchison Port Holdings Trust Implements 5G Technology
- Korea (#6) - Busan Port Authority to integrate 5G-enabled computing into yard operations
- Singapore (#2) - PSA enhancing Port's Connectivity with 5G for innovative use cases
- Sri Lanka (#25) - ZPMC contributes to build a green terminal for the Colombo International Container Terminal
- Thailand (#20) – Hutchison Ports ready to transform Laem Chabang into ASEAN smart port hub

China mainland

- Guangzhou (#5) - Guangzhou Port accelerates 5G intelligent port construction
- Ningbo-Zhoushan (#3) - Port with unmanned, automated, and intelligent operation
- Qingdao (#7) - 5G smart harbor at the Port of Qingdao
- Shanghai (#1) – Shanghai Port Group Goes Smart with Centralized Remote Control Project
- Shenzhen (#4) - YANTIAN Becomes the First Port in South China to Equip Its Remote-Controlled RTGCs with 5G
- Tianjin (#9) – Digital Twin Project for Tianjin Port

America, Europe and Middle East

- America (#17) – Transforming Port Efficiency: Private Networks Unleash Order in Los Angles port
- Greece (#28) – Vodafone Greece delivers private mobile network to Piraeus Port
- Netherland (#10) – 5G makes intelligence port of Rotterdam
- Belgium (#14) – Network-as-a-Service technology to develop new maritime use cases at Port of Antwerp
- UAE (#11) - 5G to lead reform of global smart port sector including ABU DHABI Port

(#) Ranking source: https://www.worldshipping.org/top-50-ports

APAC 5G
INDUSTRY COMMUNITY

Real Case Study on a Smart Port in Thailand

Challenges
- Increase demand for efficiency and productivity in handling cargo and vessels
- The need to improve safety and security
- The needs to enhance overall performance in Port Terminals

APAC 5G Industry Community tentative activities (2024)

Activities	Date	Content
MWC Barcelona (Relevant for all interest group)	26 -29 Feb 2024	Physical conference and on-demand content. Speaking and show case in Industry City (Manufacturing Summit on 26 Feb, Smart Mobility Summit on 27 Feb and Manufacturing round-table on 26 Feb) Global 5G Alliances Summit on 29 Feb, networking and speaking opportunities 5G-ACIA, 5GAA, ETSI, GSMAi, GTI, Holomedicine Association, TCCA, MDES, Kominfo, AIS, Telkomsel, Petronas, Tech Mahindra, etc
Connected Industries for Digital Transformation @Singapore	3 April 2024	Physical event and networking GTI, HPE, Holomedicine Association & NUHS, IoTSG & AllThingsConnected, Quectel, Robocore, SGTech & Acronis, etc
Logistic, Port & Transportation	25 Apr 2024	Virtual Workshop with Q&A - Paving the way in Digitalisation and Sustainability for A Smarter and Greener Port AIS & Hutchison, Celcomdigi, ChangeMaker, China Mobile, eSix, GTI, Huawei, etc
MWC Shanghai (Relevant for all interest group)	25, 26-28 June 2024	5G tour to China (25 June). Physical conference and networking, 5G business roundtables.
Joint TCCA and APAC5GIC community	14 Aug 2024 (t.b.c)	Virtual Workshop with Q&A – Advancing Public Safety Critical Communication: From Voice-Centric to Data-Driven Solutions
Digital Nation Summit for Manufacturing, Mining, Oil & Gas @Jakarta	Sep 2024 (t.b.c)	Physical event and networking
5G Summit or Smart City @Bangkok (Relevant for manufacturing, Logistic, Port & Transportation, Healthcare, Public sector and Smart City)	2H 2024 (t.b.c)	Physical event and networking
Mobile360 APAC @Seoul (Relevant for Smart Mobility, Healthcare)	1-2 Oct 2024	Physical conference with exhibition Case studies and PR Speaking and show case opportunities
India Mobile Congress	15-19 Oct 2024	t.b.c
Manufacturing/Energy and sustainability	Nov 2024	Virtual Workshop with Q&A

GSMA Digital Nations Summit for Manufacturing, Mining, Oil & Gas

JAKARTA

Early Sept 24

5G RedCap Case Studies

5G RedCap Case Studies

Smart Grid | Smart City | Smart Manufacturing

GSMA

Welcome to join the community with benefits

Register here to join the community

Receive regular newsletter with latest 5G Industry development and insights

Access to the Industry Interest Group activities

Raise interest and support request to the contributor members i.e. Proof of Concept

Speaking and show case chances in GSMA 5G activities including webinar, conference and 5G tour, etc

Business matching opportunities for innovators, SI, enterprises and mobile operators

Potentially contribute to 5G industry report and case study

Application the Global Mobile Award (GLOMO) and Asia Mobile Award (AMO)
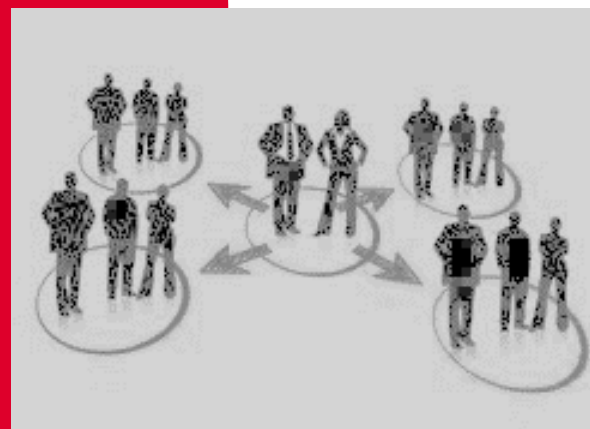
Terence Wong
Head of APAC 5G Industry & IoT Community - an ecosystem with govt & a...

Thank you,
5G IoT Summit
Sponsor

Platinum Sponsor

See you all at MWC25!

GSMA™

与会员携手，让连接惠及所有人

- 引领连接的未来
- 提升产业地位
- 及时满足政策和规范要求
- 支持全球生态系统
- 提供行业服务、资讯及培训

访问 GSMA Pavilion N3.B70

gsma.com/membership

扫码了解更多