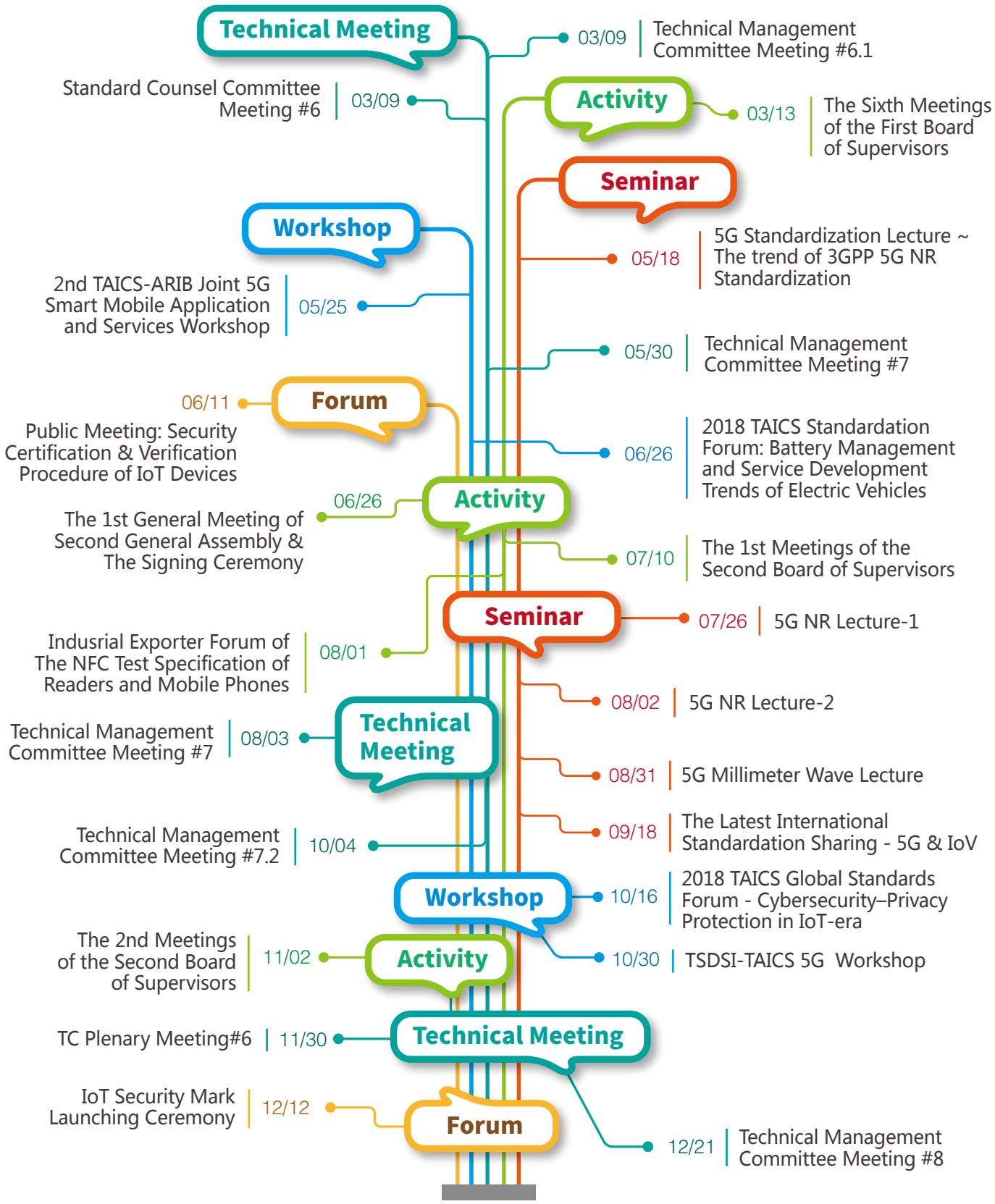
Taiwan Association of Information and Communication Standards

2018

Annual Event



2018 Annual Report

Taiwan Association of Information and Communication Standards

A Message from the Chairman

To help develop domestic information and communication technology standards, Taiwan Association of Information and Communication Standards (TAICS) thrives to promote various industry standardizations, integrate Taiwan industry resources, and combine the strength of over a hundred members to find industry consensuses, aspiring to lead Taiwan industries towards the world to meet the cutting edge of technologies.

In 2018, our seven technical committees worked together to promote industry standardizations, completing the production of 29 information and communication technology standards in total, many of which have been utilized by government agencies as references for subsequent law implementation, deployment subsidies, and procurement regulation. In late 2018, to advance the information security of the Internet of Things (IoT) industry towards new horizons, TAICS effectively helped the Ministry of Economic Affairs (MOEA) and National Communications Commission (NCC) promote the IoT information security certification. Through joint collaboration of several parties, the IoT equipment Video Surveillance System Security Standard was developed, with many other information security standards in progress. So far, four labs have been approved and various products have been certified, creating a comprehensive IoT certification industry ecosystem.

As for international cooperation, continuous collaboration with Japan's Association of Radio Industries and Businesses (ARIB) was the first success. In May, we organized a delegation to attend the Wireless Technology Park (WTP) in Tokyo, and co-hosted an overseas Taiwan-Japan 5G seminar at the show. Secondly, we signed an MoU with Telecommunications Standards Development Society, India (TSDSI) in June, and formed a group to attend the South Asia information show in India for Taiwan-India 5G exchanges and conferences in late October. The third milestone was that the European Telecommunications Standards Institute (ETSI) and we co-hosted an international IoT information security standards forum, in which ETSI and TAICS industry representatives presented and discussed the status quo of current information security standards.

In addition, to promote 5G standards, TAICS and MediaTek co-hosted the 3GPP RAN1-AH-1901 Meeting in Taiwan in January 2019, broadening the overall influence of Taiwan companies over international standards developing organizations, and joining Taiwan businesses in displaying current goals for 5G service development.

TAICS is dedicated to staying at the forefront of information and communication standards, building up an inclusive platform, and encouraging technology exchanges

and common standards to keep pace with international trends. In the coming future, we will make efforts in continuous deepening of collaborations, active participation in international standard establishment, promoting industry upgrade, and increasing industry competitivity.

Chairman, TAICS,
Ching-Jiang Hsieh

TAICS

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1 Overview

1.1 Mission

The TAICS was established with the objective of developing industry standards as well as the internationalization of local standards to enhance the competitiveness of Taiwan's industry. To achieve such goals, the TAICS will perform the following tasks:

1. **Establish a platform:** Establish a platform for technical cooperation and development of information and communication standards. Promote the establishment of Taiwanese industry standards in developing information and communication technologies;
2. **Connect International Standards Organizations:** Represent and act as an intermediary for Taiwan in international standardization affairs. Strengthen the connections between international and regional standards organizations and establish a communication channel for cooperation;
3. **Promote industry standards:** Promote the industry's adoption of Taiwan industry standards, expand regional influence, and actively facilitate adoption of international standards.

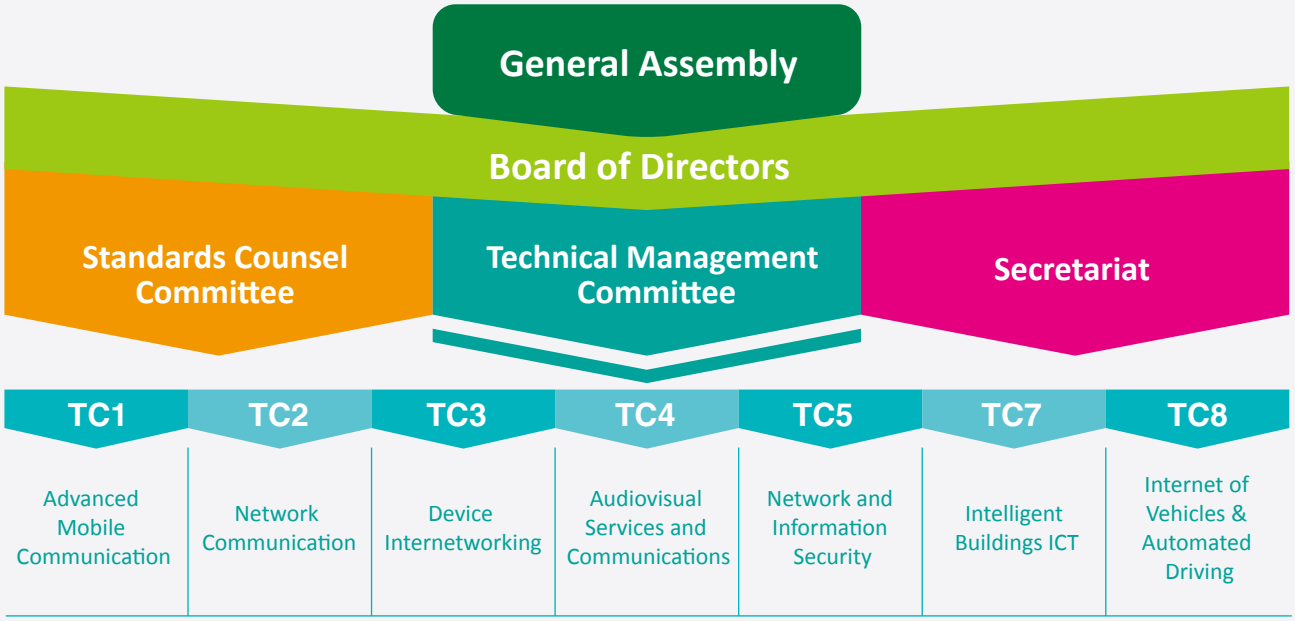
1.2 TAICS Organizational Structure

Three units are established under the Board of Directors: the Technical Management Committee (TMC), the Standard Counsel Committee (SCC), and the Office of the Secretariat.

The Technical Management Committee (TMC), chaired by Albert Chen, Senior Vice President, Inventec Co., is to review the tasks, productivity, personnel appointments, and formation of the technical committees (TC). In addition, the TMC determines horizontal communications among the TCs in the standardization process of the TAICS.

Th Standard Counsel Committee (SCC), chaired by Dr. Shyue-Ching Lu, Honorary Professor of National Chiao Tung University, is to provide concrete recommendations for drafts of standards, standardization plans, and the promotion of standard counseling for TAICS.

The Secretary General of the Office of the Secretariat is Sheng-Lin Chou, Deputy Director of the Information and Communications Research Laboratories at the Industrial Technology Research Institute (ITRI). The Office of the Secretariat handles international affairs, partner relations, promotion of achievements, project management, and other administrative tasks. They also provide support for the operation of the TMC and SCC.



(Note: Due to the needs of the TAICS, TC6 has ceased operations in accordance with the decision of the Board on October 26, 2017. Members of TC6 continue to serve the TAICS as technical staff promoting the testing and certification business.)

Fig. 1 TAICS Organizational Structure

In addition, 7 Technical Committees (TCs) have been established under the TMC in certain fields in Taiwan according to the urgency of the need to develop technical standards. TCs is where the industry come together to develop ICT industry standards in technical fields.

1.2.1 TC1 Advanced Mobile Communication Technical Committee

The primary focus of TC1 is the new generation of key industry technology in wireless communications, including access technology, network technology, the frequency spectrum of the future, and industry applications. The purpose of this Technical Committee is: The TC1 concentrates the research resources of the domestic industry, academia, and research institutes, and build a consensus, all for the purpose of developing of a new generation of wireless communication technologies. TC1 will become the single channel of communication for Taiwan in related international standard development organizations, e.g. 3GPP, and will thereby promote a connection to related international and regional standards as a precursor to establishing core intellectual properties in the future of international mobile communication standards. The organizational structure of the technical committee is shown in Figure 2:

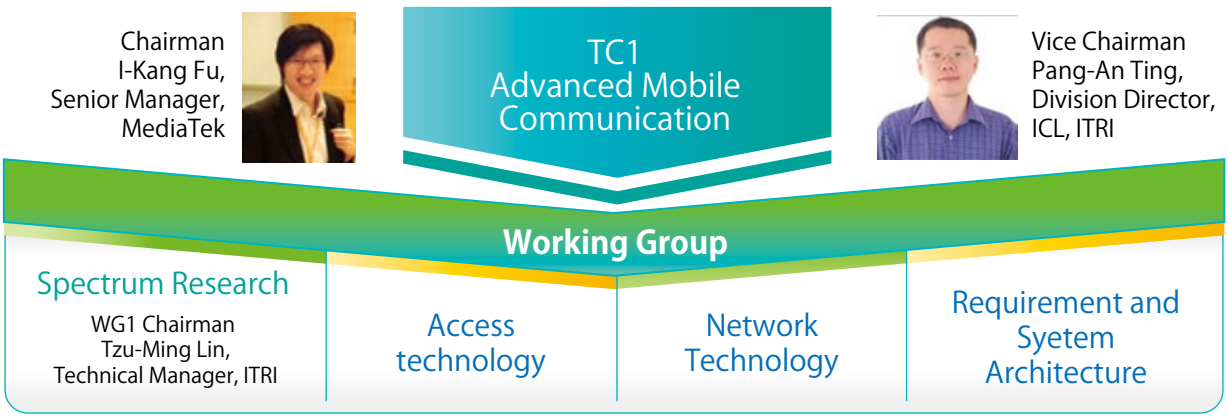


Fig.2 TC1 Organizational Structure

1.2.2 TC2 Network Communications Technical Committee

The primary focus of TC2 is industrial technology for the system integration of the heterogeneous 5G network. This includes the cross-network communications of the next generation heterogeneous networks (5G, 4G, LAN), auto-configuration and performance optimization of network systems, separation of the network control and transmission layers, and network interoperability testing technology. The purpose of this Technical Committee is: To explore heterogeneous 5G network communications technologies, establish technical regulations for cross-network integration, participate in international communication network industry organization activities, and provide technical contributions. The organizational structure of the technical committee is shown in Figure 3:

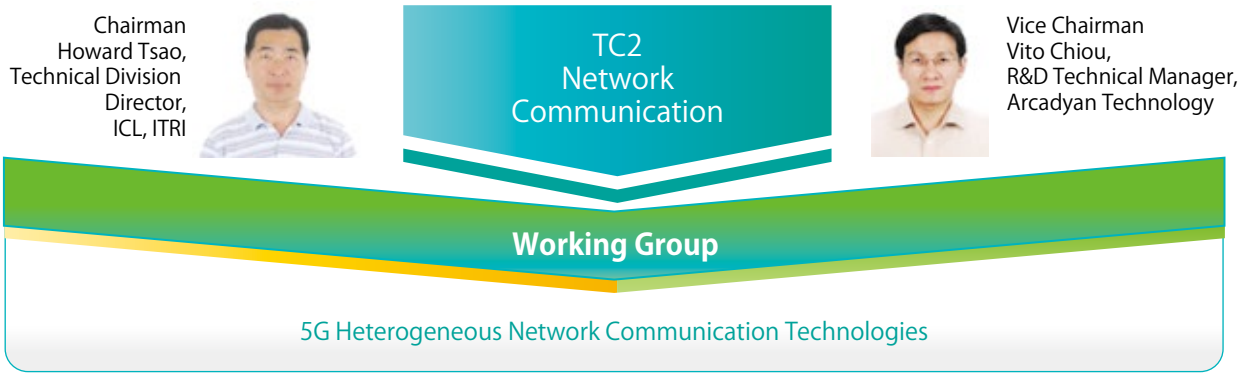


Fig. 3 TC2 Organizational Structure

1.2.3 TC3 Device Internetworking Technical Committee

TC3 has focused on Internet of Things (IoT) applications and selected fields, such as intelligent energy, intelligent environmental protection, intelligent cross-equipment monitoring in manufacturing, wireless charging interface standards, and mobile ticketing terminal equipment to specify industry standards and enhance the competitiveness of Taiwan's industry. The organizational structure of the technical committee is shown in Figure 4:

Fig. 4 TC3 Organizational Structure

1.2.4 TC4 Audiovisual Services and Communications Technical Committee

The goal of TC4 is to consolidate audiovisual services and communications technologies, establish a content-service integration platform, enrich specialty audiovisual channels and content, facilitate development of innovative value-added audiovisual operating and service

modes, and drive the development of Taiwan's digital audiovisual software and hardware industry chain. The organizational structure of the technical committee is shown in Figure 5:

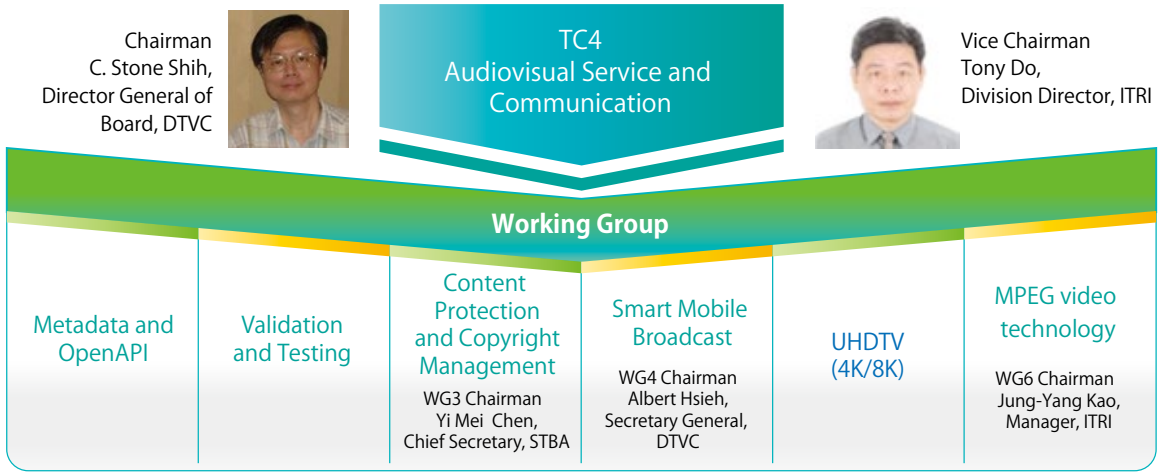


Fig. 5 TC4 Organizational Structure

1.2.5 TC5 Network and Information Security Technical Committee

TC5 promotes the development of industry standards according to the security needs of Taiwan's information communication industry. TC5 keeps track of the latest trends in the region and in the world to promote the development of safe and trustworthy products and services, bolster the influence of Taiwan in international organizations, and facilitate the industry's global market strategy. The organizational structure is shown in Figure 6:

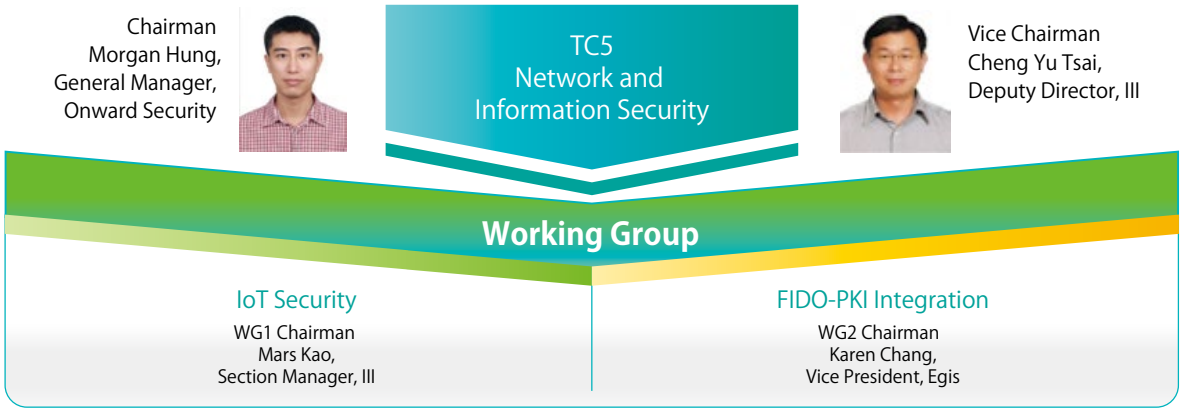


Fig. 6 TC5 Organizational Structure

1.2.6 TC7 Intelligent Buildings ICT Technical Committee

The mission of TC7 is to develop and promote information communication standards for intelligent buildings. The purpose of TC7 is to act as a platform for communication among industry,

government, academia, and research institutions, and for developing and promoting standards with consideration of intelligent buildings information communication standards; to represent Taiwan in activities hosted by the international intelligent building standards alliance and facilitate the development of the intelligent building industry in Taiwan. The organizational structure is shown in Figure 7:

Fig. 7 TC7 Organizational Structure

1.2.7 TC8 Internet of Vehicles (IoV) & Automated Driving Technical Committee

TC8 was established with the purpose to improve industry competitiveness by developing a common industry standard that follows the global trend in next generation intelligent transportation and the development of automated driving and V2X initiated by the IoV. By creating specifications that is on par with international standards, TC8 can provide Taiwanese companies a reference specification when manufacturing and marketing products. The committee will also serve to introduce foreign technologies that can serve as a reference for the industry, government, academia, and research sectors as they formulate their strategy for the future. The organizational structure of the technical committee is shown in Figure 8:

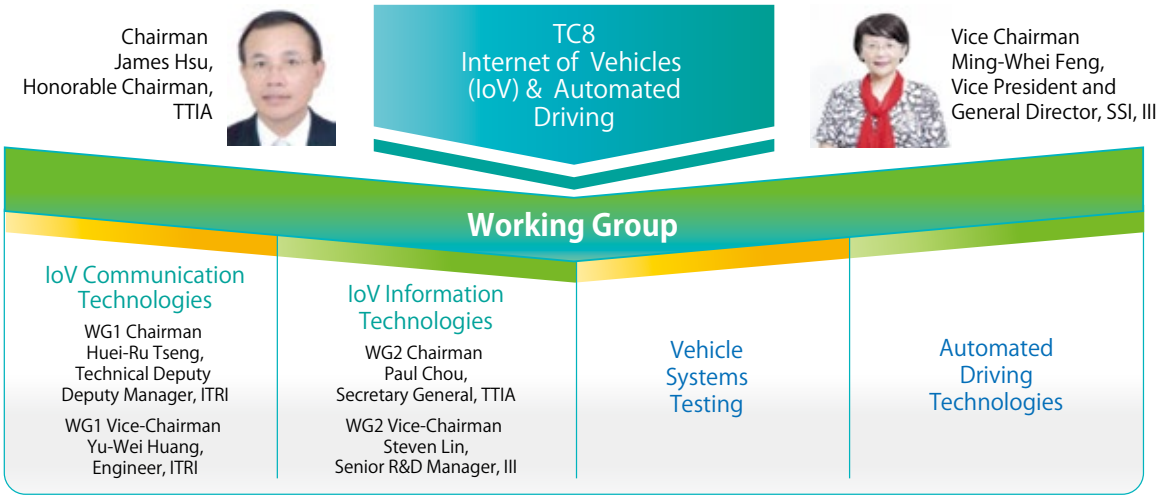


Fig. 8 TC8 Organizational Structure

2 Achievements of the TAICS

2.1 Technical Meetings in Development of Standards

With members' eager participation, in 2018 we reached consensuses in various sectors through our technical committees, establishing industry standards and regulations. Throughout the year, we also held 48 Technical Meetings and 15 industry expert meetings. Professionals involved in the establishing came from 102 companies/corporations, or 1443 person-sessions. The below table summarizes meeting information:

Table: Industry Professional Conferences

No.	Standard establishment plan	Sessions	Dates
1	Verification and Test Specification for Mobile Ticketing Terminal Devices establishment plan	7	5/10, 5/24, 6/7, 6/21, 7/12, 8/1, 12/18
2	IoT information security standards establishment and verification plan	3	4/10, 7/19, 8/29
3	Wireless IoT information security testing regulations verification plan	4	4/10, 7/19, 8/27, 11/26
4	High definition map information standards establishment for National Cheng Kung University	1	10/22

2.2 Standards Development

In 2018, the Association established and published 29 projects in total: 12 Standards, 10 Specification, 1 Technical Guideline, and 6 Technical Reports. The results of these Standards and Specification were also utilized by related government agencies as reference standards for installation grants and procurement. Highlights include:

In Advanced Mobile Communication, the "Spectrum Study for 5G Trial System" report was completed. This is a report on a trial spectrum study for global 5G system application scenarios, requirements, and possible operations technology. It mainly focuses on radio spectrum utilizations and configurations for international mobile telecoms, with specific scope of studies including possible 5G spectrum configurations and utilizations around the world and within the communications industry, providing reference for local and international policy management and industry development.

In Network Communications, Research on Coexistence Transmission and Application Efficiency of Heterogeneous Wireless Networks in Unlicensed Spectrum, Technical Report of LTE Small Cell SON, and Test Specification of Wi-Fi Data Offload were completed. The Research on Coexistence Transmission and Application Efficiency of Heterogeneous Wireless Networks in Unlicensed Spectrum is based on 3GPP TS 32.500, 3GPP RWS-140010, and 3GPP RWS-140018 regulations, testing and studying coexistence transmission efficiency for heterogeneous wireless networks in unlicensed spectrums. It contains (A) LTE-U traffic and Wi-fi traffic coexistence testing and analysis, and (B) LWA (LTE-WLAN aggregation) testing and analysis, offering reference for telecom operators to plan, provision, test and verify coexisting network environments in the future.

In Device Internetworking, "The Test Specification of Readers" and "Mobile Devices for Ticketing and Taiwan Machine Tool Connect Standard" were completed. To popularize domestic mobile payment, TAICS, with support from MOEA, brought together 24 organizations including Taiwan Telecom Industry Development Association (TTIDA), the Industrial Technology Research Institute, the top five telecom businesses in Taiwan (Chunghwa Telecom Co., Ltd., Taiwan Mobile Co., Ltd., Taiwan Star Telecom Corporation Limited, Asia Pacific Telecom Co.,Ltd., and Far EasTone Telecommunications Co., Ltd.), the top four ticketing business (iPASS Corporation, EasyCard Corporation, icash Co., Ltd, and Yuan Hsin Digital Payment Co.,Ltd.), smartphone and card reader manufacturers, and test labs, jointly creating "The Test Specification of Readers and Mobile Devices for Ticketing" on the Association's standard development platform as a basis of interoperability testing between mobile ticketing devices (including card readers and mobile devices).

In Audiovisual Services and Communications, "Audiovisual Live Streaming Open API Standard and Audiovisual Content Metadata – Electronic Program Guide Standard" were completed. The Audiovisual Content Metadata – Electronic Program Guide Standard is based on "Audiovisual Content Metadata Standard v2," indicating channel information by "Electronic Program Guide" and

adding “TV program” publication types to record the program information for different times in a single channel. The various metadata sets established for the Standard are presented in XML and JSON formats for ease of network transmission and data exchange.

In Network and Information Security, two information security standards and testing regulations were completed, the “Video Surveillance System” and “Intelligent Bus Telematics System,” as well as the “Case Study for FIDO and PKI in Taiwan.” The Video Surveillance System Security Standard references international IoT information security standards and regulations to ensure the security of video surveillance systems through five security aspects: physical security, system security, communications security, identification and authorization method security, and privacy protection. The Standard has successfully launched the IoT information security certification mark, issuing to 4 approved labs and 2 verified IP Cameras. Governmental departments are expected to incorporate it into their joint supply contract procurement regulations in 2019.

For Intelligent Buildings, the Device Internet Working Technical Committee and the Intelligent Green Buildings ICT Technical Committee collaborated to complete “ONVIF Profile S and Data Format Standards for Intelligent Building Energy Management System.” The Data Format Standards for Intelligent Building Energy Management System integrates and monitors seven integrated surveillance systems, including electrical, air conditioning, illumination, plumbing, environment data, power, and renewable energy. Data that is regulated include device type, device ID, data entry ID, data type and form, and default units. Data entries with higher interoperability such as identification data, as well as device-specific entries with lower interoperability, are each listed. By implementing this Standard, energy management systems built in buildings like houses, offices, factories, schools and institutes may consolidate subsystems more easily for efficient energy data analysis, storage, surveillance, and control. Also the purpose of energy conservation is achieved.

For Internet of Vehicles (IoV) & Automated Driving, “A Survey of Internet-of-Vehicles (IoV) Information Standards, Connected Vehicle Communication Interface Standard Research Report,” “OBD Device Standard for UBI,” and “HD Maps Operation Guidelines” were completed. To resolve the lacking of standards in the current high definition mapping industry and to improve the precision requirements for autopilot maps, the “HD Maps Operation Guidelines” are especially established as a basis for high definition mapping operations in the mapping sector. By implementing these Guidelines to ensure accuracy, definition, and precision of the map results, environmental change requirements can be accommodated while supporting Taiwan’s traffic culture of heterogeneous vehicle types to guarantee high definition map production quality and to effectively connect to autopilot needs.

2.3 TAICS Standards Adoption

Initiation of the IoT information security certification mark

As IoT development thrives, it is estimated that by 2020 the number of IoT devices globally will reach 75 billion. With increased information communications equipment connected to the network, accompanying information security issues will be more important than ever. Since 2015, many information security attacks have occurred around the world. One often hears of "distributed denial-of-service attacks" (DDoSs) using IoT devices as a springboard.

Video surveillance is the most widely utilized data capturing tool in IoT applications. Taiwan's video surveillance industry has strong expertise and a comprehensive eco-system, and leads the development of various applied services. With the unceasing advance in technology, total global video surveillance market value is expected to grow to US$ 40 billion by 2020. The MOEA Industrial Development Bureau (IDB) and NCC supported TAICS in completing a series of IoT information security standards and impartial third-party verification methods, creating a holistic certification industry eco-system, and helping the industry develop differentiated information security capacity verification products.

The MOEA and NCC co-hosted the "IoT Security Mark Launching Ceremony" on December 12, 2018. Chairman Ching Jiang Hsieh was the industry representative and gave the opening speech, while major representatives such as Kung Ming-hsin, Deputy Minister of Economic Affairs; Lin Chin-rong, Taipei City Deputy Mayor; and Shu Hwang Liaw, head of the National Security Council's Information Security Office, launched the IoT information security certification mark. Approved certifications were issued for the first time and verified products were exhibited during the same event, showing that Taiwan's IoT information security quality has advanced to a new milestone.

▲ (From left) Chung-Lin Wang, president of Taiwan Accreditation Foundation; Shu Hwang Liaw, head of the National Security Council's Information Security Office; Kung Ming-hsin, Deputy Minister of Economic Affairs; Ching Jiang Hsieh, TAICS chairman; Lin Chin-rong, Taipei City Deputy Mayor; and Section Chief Lin Chin-Chin from the Industrial Development Bureau (IDB) launch the IoT information security certification mark together.

The IoT information security certification mark system was created jointly by MOEA and NCC, who collaborated in the development of information security standards

and technical guidelines such as those for IoT video surveillance systems, intelligent bus telematics systems, and radio frequency communications equipment. With cooperative efforts from all sides, 4 approved labs (Telecom Technology Center, Onward Security, Electronics Testing Center Taiwan and Deloitte) and 2 verified products (from GeoVision) helped the industry be seen in the aggressive international red ocean market.

2.4 International exchange programs

TAICS Japan standards and business cooperation delegation (2018.05.21 - 25)

The 2018 TAICS Japan standards and business cooperation delegation made their visit to Japan between May 21 to May 25. The leader was Prof. Shyue Ching Lu, chairman of TAICS's Standard Counsel Committee (SCC) and former chairman of Chunghwa Telecom; Dr. Albert Yea Ping Chen, chairman of TAICS's Technical Management Committee (TMC) and senior vice president at Inventec, was deputy leader, and business, government, and academic representatives from MOEA Department of Industrial Technology (DoIT), Chunghwa Telecom, Kdan Mobile Software Ltd., and Industrial Technology Research Institute (ITRI) were invited to join. The delegation visited Japan's Ministry of Internal Affairs and Communications; Ministry of Economy, Trade and Industry (METI); ARIB; NTT Musashino R&D Center; NHK Science & Technology Research Laboratories; and Mitsubishi Research Institute (MRI), as well as 5G field trial sites, for further understanding of Japan's planning and current conditions on 5G and in search of collaboration opportunities between Taiwan's national 5G team and those of Japan.

▲ Group photo of TAICS Japan standards and business cooperation delegation when visiting ARIB.

▲ At the TAICS-ARIB 5G smartphone application service seminar.

The delegation also attended Wireless Technology Park 2018 (WTP 2018) to learn about

the latest 5G technology developments and exhibitions, which helped Taiwan 5G companies understand trends in the international business and related standards. They also interacted with and learned from Japanese companies and sought opportunities for business collaborations.

What's more, together with TAICS's Japanese partner ARIB, the delegation hosted the second "TAICS-ARIB 5G smartphone application service seminar" at Wireless Technology Park 2018 (WTP 2018) on May 24. The two parties exchanged current 5G achievements. Learning about Japan's possible new business modes for 5G helps facilitate Taiwan's future 5G and the industry developments and innovations that it brings about. Around 120 people attended this seminar.

Signing Collaborating MoU with TSDSI of India (2018.06.26)

The second Taiwan Association of Information and Communication Standards (TAICS) held their first member conference on June 26 at NTUH International Convention Center. Ms. Pamela Kumar, Director General of India's semiofficial standards organization Telecommunications Standards Development Society, India (TSDSI) was invited to the conference in Taiwan to make a keynote speech. At the same time, with MOEA DoIT Deputy Director General Lin Te-sheng and India Taipei Association Deputy Director General Mr. Gince Mattam as witnesses, TAICS and TSDSI signed an MoU to collaborate through 5G and IoT technology test points in the future.

▲TAICS and TSDSI sign MoU for exchanges and collaboration.

SINOCON Cross-strait 5G Standards Forum (2018.09.27)

To promote cross-strait 5G business and technology standards collaboration, SINOCON Industrial Standards Foundation (SINOCON), TAICS, China Communications Standards Association (CCSA), and Telecommunication Development Industry Alliance (TDIA) organized a 5G mobile communications professional technology committee, gathering organizations from the communication business, operators, and academic institutes in Taiwan and China. TAICS Secretary General Sheng-Lin Chou and TDIA Secretary General Yang Hua are co-chairs of the 5G mobile communications professional technology committee, which

▲TAICS chairman Ching Jiang Hsieh was invited at the 2018 15th "Cross strait information industry and technology standards forum" to give keynote speech.

generates standardization conferences and exchanges on mobile IoT and 5G precommercial development.

The 2018 15th Cross-strait Information Industry and Technology Standards Forum was grandly held in Hefei City, Anhui Province, in which our chairman Ching Jiang Hsieh gave a keynote speech titled "AIoT - Developing the connection of artificial intelligence and internet of things." As the AI age approaches, combining AI+ IoT+ Connectivity = AIoT in addition to "Edge Cloud" help integrate AI into people's lives increasingly. From photography, entertainment, home, to automotive, all aspects become more diverse and convenient.

▲ Group photo with guests.

During the forum, TAICS also co-hosted a mobile communications subforum with CCSA and TDIA which focused on collaborations on issues like 5G, NB-IoT, and mmWAVE small base stations. 5G mmWAVE front-end module interfaces and OTA testing were some of the topics for speeches and exchanges, which looked for potential in cross strait cooperation and discussion for jointly established standards in mmWAVE front-end module interfaces.

2018 TAICS Global Standards Forum, Cybersecurity : Privacy Protection in IoT-era (2018.10.16)

In the age when all things are connected, various applications are developing rapidly. Security threats associated with IoT device information security vulnerabilities will also become greater, so IoT information security is seen as the primary issue in IoT promotion. Therefore, to raise people's awareness to the threats of information security, TAICS and ETSI co-hosted TAICS Global Standards Forum (TGSF) at NTUH International Convention Center's 301 meeting room, at 10a.m. October 16 with the main subject "Cybersecurity : Privacy Protection in IoT-

▲ TAICS's 2018 Taiwan Association of Information and Communication Standards (TGSF) invited professionals in Taiwan and from overseas to discuss IoT information security privacy protection.

era." Business, government, and academic representatives were invited to participate, presenting government IoT policies, IoT information security requirements, and application examples, and discussing how to protect important business and personal information in the age of internet of all things. This event was organized with assistance from ITRI and the Institute for Information Industry (III), and sponsored by Tatung Company, EgisTec, Authentrend, GeoVision, GCOM TECHNOLOGIES, and TTIDA.

Board of Science and Technology adjunct researcher Jen Fu-Wang and ETSI technology standards specialist Sonia Compans started the event with a look at policies, sharing current statuses of Taiwan's IoT information security promotion policies and EU information security regulation policies and standards. ETSI technology standards specialists Enrico Scarrone and Niels Peter Skov Andersen also gave talks about IoT information security requirements and examples. In addition, Onward Security's General Manager Morgan Hung, EgisTec's Vice President Karen Chang, and Authentrend's Vice President Zake Huang spoke about current developments on how information security standards can be used to protect IoT equipment and identification. III Cybersecurity Technology Institute Deputy Director Joseph Tsai presented updates on Video Surveillance System Security Standard - IP Camera and testing and certification.

On top of these talks, an inspiring panel discussion was hosted to raise IoT information security awareness, with III Cybersecurity Technology Institute Product Director Shu-Min Chuang as the moderator. Panel members including, among others, GeoVision Assistant VP Vincent Chen gave important advice from government, corporation, and standardization aspects on how to ensure personal privacy and provide the highest level of security in the IoT age.

2018 TAICS India Delegation (2018.10.25 - 10.31)

After signing the MoU with TSDSI on June 26, TAICS organized the "2018 TAICS India Delegation" to reinforce connections between TSDSI and the India information and communication industry. Chairman Ching Jiang Hsieh led the group to New Delhi, India from October 25 to 31 to attend the largest mobile communications show in South Asia, the second India Mobile Congress(IMC). IMC 2018 was a large-scale event at New Delhi's Aerocity, with over 300 companies from 20 countries

▲ TAICS delegation and TSDSI member representatives meet in New Delhi for exchanges. (2018.10.27)

participating in this major occasion in the Asia-Pacific region. Current 4G, 5G developments and IoT applications were displayed on site, and the India government gave great support to the event.

What's more, the delegation met and discussed collaborations with representatives from India's Department of Telecommunications (DOT), as well as businesses such as TSDSI, Tata Consultancy Services Limited (TCS), and Reliance Jio Infocomm. The representatives from DOT exchanged 5G developments and future plans with the Taiwan delegation, and welcomed Taiwan companies to send teams to India and test the 5G environment while sharing the results with India. They also looked to TAICS to help more Taiwan information and communication companies utilize India's abundant labor and establish plants in the country, thus promoting 5G IoT application development both in Taiwan and in India.

Besides a co-hosted 5G Workshop at IISc-Bangalore presenting 5G standards developments, TAICS and TSDSI's joint efforts were further discussed for future partnerships in 5G standards, reinforcing technology collaborations on IoT and telecom equipment.

2.5 Additional Activities

2018 TAICS Standards Forum: Battery Management and Service Development Trends of Electric Vehicles (2018.06.26)

TAICS organized the 2018 TAICS Standards Forum on June 26 with "Battery Management and Service development Trends of Electric Vehicles" as the topic. The event was co-hosted with the Industrial Technology Research Institute, assisted by Taiwan Telematics Industry Association (TTIA), and sponsored by Keysight Technologies, Tatung Company, Wonder Instrument, and TTIDA. It covered all challenges and standardization issues of electric vehicle business development opportunities and charging equipment and service applications.

Global automotive industry is developing towards electrification. It is expected that by 2030, 55% new cars will be electric, while conventional gas engines will gradually fade out of the market. Development of battery management (charging and battery exchange technology) and charge stations will be one of the key issues of car and motorcycle electrification. TAICS Secretary General Sheng-Lin Chou stated that the capacity of automobile batteries have made significant breakthroughs in recent years, but besides continuous advancement in battery capacity and related technology, IT must be introduced to create proper battery management systems that effectively control battery charge/recharge and operate safely, further improving battery efficiency. Moreover, unlike getting gas, electric vehicles are not done charging in ten minutes. Even a fast-charging

battery takes half an hour, so the standardization of battery charging and offered services for electric cars shall also be an important point in the electric vehicle industry development. These various issues will also impact the conventional automotive manufacturing industry while revolutionizing business and business modes in related industries.

As the main link between Taiwan and international standards, TAICS has proactively integrated the business, government, and academic parties for 3 years to create information and communication standards. Every year we discuss major issues that may be standardized, and this year principal organizations from Taiwan and overseas were invited to study the hot issue of electric vehicles from critical aspects such as government policies, charging technology, and charging environment. The establishment of related standards, future requirements, business model creation and application, industry input and experiences were all thoroughly revealed in the forum, generating deep resonance from attending businesses.

▲ TAICS Secretary General Sheng-Lin Chou (3rd left) with speakers and guests.

Appendix： Membership

NO	COMPANY	WEBSITE
1	MEDIATEK INC.	http://www.mediatek.com/zh-TW/
2	WISTRON NEWEB CORPORATION	http://www.wnc.com.tw/index.php?lang=tw
3	ACER INCORPORATED	http://www.acer.com.tw/ac/zh/TW/content/home/
4	HON HAI PRECISION IND. CO., LTD.	http://www.foxconn.com.tw/
5	ARCADYAN TECHNOLOGY CORPORATION	http://www.arcadyan.com/home.aspx
6	ASUSTEK COMPUTER INC.	https://www.asus.com/tw/
7	CHUNGHWA TELECOM CO., LTD.	http://www.cht.com.tw/
8	KEYSIGHT TECHNOLOGIES INC.	http://www.keysight.com/main/home.jspx?cc=TW&lc=cht
9	BUREAU VERITAS CONSUMER PRODUCTS SERVICES (HONG KONG) LIMITED, TAOYUAN BRANCH	http://www.bureauveritas-adt.com/
10	WHA YU INDUSTRIAL CO.,LTD.	http://www.whayu.com/index_e.aspx
11	AUDEN TECHNO CORP.	http://www.auden.com.tw/
12	INVENTEC CORPORATION	http://www.inventec.com/
13	NATIONAL CHUNG-SHAN INSTITUTE OF SCIENCE AND TECHNOLOGY	http://www.ncsist.org.tw/csistdup/main/Default.aspx
14	D-LINK CORPORATION	http://www.dlinktw.com.tw/
15	ACCTON TECHNOLOGY CORP.	http://www.accton.com.tw/
16	GEMTEK TECHNOLOGY CO., LTD.	http://www.gemtek.com.tw/

NO	COMPANY	WEBSITE
17	ROHDE&SCHWARZ	http://www.rohde-schwarz.com.tw/PrecompiledWeb/Index.aspx
18	TATUNG CO.	http://www.tatung.com.tw/b5/index.asp
19	ACBEL POLYTECH INC.	http://www.acbel.com.tw/index.aspx
20	UNITECH ELECTRONICS CO., LTD.	http://tw.ute.com/index.php?rbu=2
21	HWACOM SYSTEMS INC.	http://www.hwacom.com/
22	KBRO CO. LTD.	http://www.kbro.com.tw/mso_index.aspx?B=1
23	SATELLITE TELEVISION BROADACSTING ASSOCIATION R.O.C	http://www.stba.org.tw/
24	TAIWAN DIGITAL TELEVISION COMMITTEE	http://www.dtvc.org.tw/index.aspx
25	TREND MICRO INC.	http://www.trendmicro.tw/tw/index.html
26	ONWARD SECURITY CORPORATION	http://www.onwardsecurity.com/
27	SPORTON INTERNATION INC.	http://www.sporton.com.tw/
28	DEKRA CO.	http://www.dekra.com.tw/index.aspx
29	INDUSTRIAL TECHNOLOGY RESEARCH INSTITUTE	https://www.itri.org.tw/
30	INSTITUTE FOR INFORMATION INDUSTRY	http://www.iii.org.tw/Default.aspx
31	TELEVISION BROADCASTS SATELLITE	http://www.tvbs.com.tw/
32	TAIWAN MOBILE CO., LTD.	https://www.taiwanmobile.com/index.html
33	CGC INC. MOBILE COMMUNICATIONS LAB.	http://www.cgctw.com/CGCWebsite/
34	TONNET INTERNATIONAL TELECOMMUNICATION GROUP	http://www.tonnet.com.tw/index.asp
35	TAIWAN INTELLIGENT BUILDIN G ASSOCIATION	http://www.tiba.org.tw/
36	PEGATRON CORP.	http://cht.pegatroncorp.com/
37	ZYXEL COMMUNICATIONS CORP.	http://www.zyxel.com/tw/zh/homepage.shtml
38	CHENG UEI PRECISION INDUSTRY CO., LTD.	http://www.foxlink.com.tw/index_c.php
39	HUA YAN MEDIA LTD.	N/A
40	SERCOMM CORPORATION	http://www.sercomm.com/home.aspx
41	NATIONAL CHIAO TUNG UNIVERSITY	http://www.nctu.edu.tw/
42	TAIWAN SECOM CO. , LTD.	http://www.secom.com.tw/
43	HTC CORPORATION	http://www.htc.com/tw/
44	NATIONAL CHUNG CHENG UNIVERSITY	http://www.ccu.edu.tw/
45	INFORMATION SERVICE INDUSTRY ASSOCIATION OF R.O.C	http://www.cisanet.org.tw/
46	ELECTRONICS TESTING CENTER, TAIWAN	http://www.etc.org.tw/default.aspx
47	WEEMA	http://www.weema.com.tw/
48	ANRITSU COMPANY INC.	http://www.anritsu.com/zh-TW/Home.aspx
49	ECS	http://www.ecs.com.tw/ECSWebSite/Index.aspx?MenuID=0&LanID=1
50	KCA	http://www.kca.com.tw/tw/

NO	COMPANY	WEBSITE
51	GCOM	http://www.gcomtw.com/index.php
52	TAIWAN INSTITUTE OF ECONOMIC RESEARCH	http://www.tier.org.tw/
53	FAREASTONE	http://www.fetnet.net/cs/Satellite/Corporate/coHome
54	TELECOM TECHNOLOGY CENTER	http://www.ttc.org.tw
55	NATIONAL INSTRUMENTS	http://www.ni.com/zh-tw.html
56	TAIWAN BROADBAND COMMUNICATIONS	http://www.tbc.net.tw/AboutUs
57	NATIONAL TAIWAN UNIVERSITY	http://www.ntu.edu.tw/
58	NATIONAL CHENG KUNG UNIVERSITY	http://web.ncku.edu.tw/bin/home.php
59	ASIA PACIFIC TELECOM CO., LTD.	http://www.aptg.com.tw/my/index.htm
60	TAIWAN TELEMATICS INDUSTRY ASSOCIATION	http://www.ttia-tw.org/
61	PANASONIC TAIWAN	http://www.panasonic.com/tw/
62	TAIWAN ELECTRICAL AND ELECTRONIC MANUFACTURERS' ASSOCIATION	http://www.teema.org.tw/index.aspx
63	SENAO NETWORKS, INC.	http://www.senao.com/Taiwan/
64	NATIONAL CENTRAL UNIVERSITY	http://www.ncu.edu.tw/
65	ALPHA NETWORKS INC.	http://www.alphanetworks.com/
66	DIGICENTRE	http://www.digicentre.com.tw/about.html
67	NAN YA PLASTICS	http://www.npc.com.tw/j2npc/zhtw/company_highlights.jsp
68	EGIS TECHNOLOGY INC.	https://www.egistec.com/zh-hant/
69	TWCA	https://www.twca.com.tw/Portal/Portal.aspx
70	SYNOLOGY INC.	https://www.synology.com/zh-tw
71	GAPERTISE INC.	http://www.gapertise.com/
72	TAIWAN TELECOM INDUSTRY DEVELOPMENT ASSOCIATION	http://www.ttida.org.tw/
73	ICP DAS	http://www.icpdas.com.tw/index_tc.php
74	TAIPEI COMPUTER ASSOCIATION	http://www.tca.org.tw/
75	ARCRAN INFORMATION TECHNOLOGY INC.	http://www.arcran.com/tw/
76	NATIONAL TAIPEI UNIVERSITY	https://www.ntpu.edu.tw/chinese/
77	ALLION LABS, INC.	http://tw.allion.com/
78	NATIONAL DONG HWA UNIVERSITY	https://www.ndhu.edu.tw/bin/home.php
79	SGS FAR EAST LTD., TAIWAN BRANCH.	https://www.sgs.com.tw/zh-tw/our-company/about-sgs/sgs-in-brief/sgs-in-taiwan
80	TÜV RHEINLAND TAIWAN LTD.	https://www.tuv.com/taiwan/tw/
81	CHICONY POWER TECHNOLOGY	http://www.chiconypower.com.tw/zh-tw/home/about
82	AUTOMOTIVE RESEARCH & TESTING CENTER	https://www.artc.org.tw/index.aspx
83	TAIWAN POWER RESEARCH INSITUTE	http://tpri.taipower.com.tw/

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