經濟部

TAIWAN
Information Security
Key Innovative Industries in Taiwan

| Information Security	Next-Generation Vehicle	Communications Industry	Circular Economy	Green Energy
Biopharmacy Industry	Smart Machinery	Semiconductor Industry	Internet of Things	International Logistics and E-commerce

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Policy Initiatives

1 | Focus of Policy |

Taiwan has adopted strategies and regulations to actively support the development of the information security industry in recent years. In 2018, the Executive Yuan published the "Information Security Industry Development Action Plan (2018-2025)" with the aim of cultivating information security startups, increasing employment in the information security industry, and increasing the output value of the information security industry. Taiwan enacted the "Cyber Security Management Act" to accelerate the development of the ICT security environment. The Act became effective on January 1, 2019.

During her inauguration speech in May 2020, President Tsai Ing-wen included information security as one of the six major core strategic industries. The idea is to develop an information security industry that combines 5G, digital transformation, and national security. The Department of Cyber Security under the Executive Yuan published the "National Strategy for Cybersecurity Development Program (2021-2024)" in February 2021. It sets out three major goals: "make Taiwan become the research and training hub for information security in the Asia-Pacific region," "build a proactive safeguard network," and
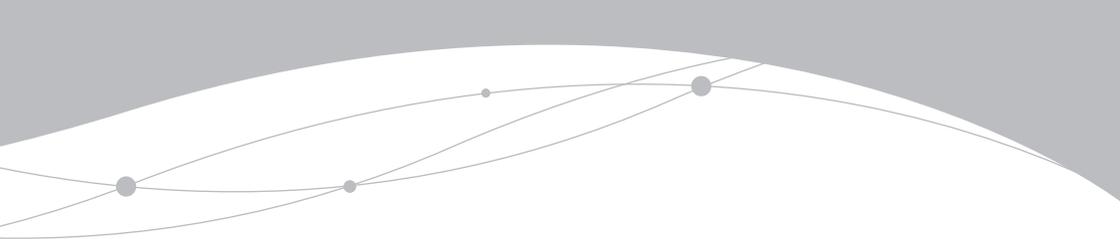
"create a network security environment through collaboration between the public and private sectors." By achieving these goals, Taiwan can become a "smart nation" with robust security. The plan is to focus on the following four strategies: (a) "attract global talent and cultivate capacity for independent innovation and research"; (b) "promote public-private collaborative governance to enhance the resilience of critical facilities"; (c) "leverage smart and advanced technologies to actively ward off potential threats"; and (d) "build secure and smart networks to enhance civil defense." We also plan to cultivate 350 domestic and international professionals with actual experience in information security, achieve more mature information security governance (including objective indicators) at government institutions to bring this governance up to level 3, and complete 12 IoT information security inspection technology guidelines or industry standards within 4 years.

President Tsai announced the launch of the "Cybersecurity is National Security 2.0" strategy in May 2021 and planned the establishment of a ministry of digital development as well as an information and communication security agency to improve the protection of key infrastructure and core databases. Taiwan has trained 2,591 information security professionals, incubated 26 startup companies, and revised 9 IoT industry information security standards. National standards have been set for the information security mechanisms of network cameras, and these standards have been adopted by police departments and National Chung-Shan Institute of Science & Technology.

2 Information Security Industry Promotion Plan of the Industrial Development Bureau

The MOEA Industrial Development Bureau intends to help enhance information security protection for industry and to boost awareness of and demand for information security in industry through "demonstrations of application scenarios," particularly in the fields of smart medicine and smart manufacturing, which are prioritized in Taiwan, to create a secure infrastructure environment for the information security industry. By working with domestic and international information security companies that specialize in network protection, system security, data protection, and information security consultancy, the Bureau has identified various potential information security loopholes in applications, network products, IoT devices, and cloud services. The government in Taiwan has made certain parts of state-run enterprises, such as the CPC Corporation, Taiwan Water Corporation, and TaiPower, available for operators to conduct information security tests and attack-defense drills for key infrastructures.

Secondly, in terms of the "development of information security solutions," which includes the information security of AI applications, data application security, and OT[1] operation information security, the Bureau uses information security test sites and information security integration service platforms to incorporate the capabilities of the information security community and white hat hackers (ethical hackers that specialize in protecting information security) to conduct information security tests, develop overall solutions, and simultaneously verify actual cases. For operators, they can use the aforementioned measures to accumulate test data to develop information security solutions for all sectors. In addition, the Industrial Development Bureau promoted information security enhancements for smart manufacturing sites in 2020. It employed scenarios to help companies understand how to respond before, during, and after an information security incident, and it provides policy tools and support teams to help businesses introduce information security measures to enhance IoT site defense capabilities.

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1 OT stands for "operate-transfer," a model that mainly involves investment and construction by the government, operations by a private institution, and transfer of rights to operations back to the government at the end of the operation period.

Overview of Industrial Development

1 | **Output Value** |

    The world faces an increasingly challenging information security environment where threats to information security continue to rise every day. With demands for the development of cloud applications, artificial intelligence, and the IoT, the information security industry has grown by 11% to 12% each year since 2017. The output value of Taiwan's information security industry increased to NT$55.2 billion in 2020 as the number of companies increased to 340 and the number of persons working in the information security sector increased to approximately 9,000 persons. In terms of industry structure, the information security industry in Taiwan consists mainly of hardware. The output value of hardware and modules in 2020 was approximately NT$28.53 billion (51.7%); the output value of the software sector was approximately NT$5.33 billion (9.7%); the output value of services was approximately NT$21.36 billion (38.7%).

Due to the growth in exports of information security network hardware and domestic demand for information security services, despite the impact of the pandemic, which reduced global growth in 2020, Taiwan's economic growth rate still reached 11.9%, as opposed to the global growth rate of 2.8%.

As information warfare and network threats intensify, the demand for domestic and international information security services has continued to grow. The output value of the industry in Taiwan amounted to NT$59 billion in 2021 and is expected to reach NT$63.3 billion in 2022, NT$67.9 billion in 2023, and NT$72.8 billion in 2024, with an average annual growth rate of more than 7.25%. It will be the main driver of growth for the information security industry in Taiwan (refer to Figure 1). The government has increased its subsidies for the information security industry to enhance protection of new industries and create advanced venues for actual operations, so the output value of the information security industry in Taiwan in 2025 is expected to increase from the target NT$78 billion to NT$80 billion.
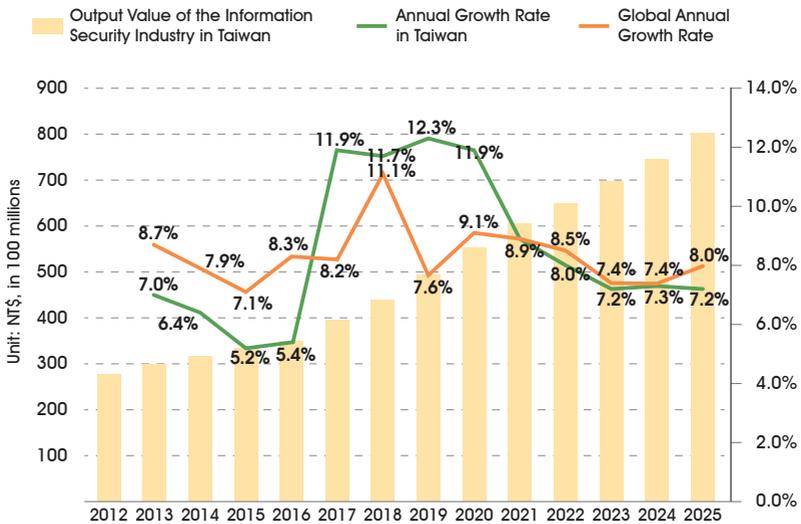

Source: Industry, Science and Technology International Strategy Center, ITRI (Aug 2021).

Figure 1 Estimate of the Output Value of Taiwan's Information Security Industry in 2025

2 | Industry Value Chains |

The ecosystem of Taiwan's information security industry consists of different businesses such as information security software manufacturers, distributors/resellers, system integrators, information security consultants, information security service providers/operators, and telecommunications operators (refer to Figure 2).

Taiwan had more than 300 information security businesses in 2020. They focus mainly on hardware development including firewalls, fingerprint recognition chips, trusted platform modules, and IoT gateways. They have driven growth in the production of cloud and high-speed exclusive network security equipment to meet the growing demand for cloud-based applications and services. In terms of software, most companies in Taiwan focus on the development of software for data and cloud databases, email security, and other recognition and protection functions.

Terminal and Mobile Device Protection

Anti-virus / anti-hack / anti-malware, identity verification, access rights management, mobile device management

Network Security

Firewall, intrusion detection system, integrated threat management system

Information Security Operation and Management Services

Information security monitoring and control services, information security incident reporting services, attack response and processing services

Information Security System Integration and Setup

Information security system integration, distribution services

IoT Security

IoT encryption modules, industrial control system security, IoT product certification

Data and Cloud Application Security

Email security, content filtering, data encryption, privacy compliance

Information Security Professional Technical Services

Information security health inspection, penetration tests, vulnerability scanning, audits, attack and defense exercises

Information Security Support Services

Information security training, information security insurance services

Source: Industry, Science and Technology International Strategy Center, ITRI (Aug 2021).

Figure 2 ICT Security Products and Services in Taiwan in 2020

Potential Investment and Collaboration Opportunities in Taiwan

① Position as Information Security Hub Helps with Development and Testing

As the network environment and applications gradually gain prominence, new forms of attacks have become increasingly complicated and diverse. We can no longer rely on singular or concentrated protection methods to respond to these threats. As monetary losses and business reputation losses caused by information security incidents continue to increase, the tasks of increasing information security protection and seeking specific and effective information security solutions have become matters of key importance for all sectors, all around the globe. Major international information security firms have also shifted the development of information security solutions to meet demands for "integrated single-point functions," "continuous and uninterrupted monitoring," and "real-time big data computing and visualization interfaces."

Taiwan has a unique international position and therefore occupies a key position in global information security. The COVID-19 pandemic has given rise to new threats and conditions, and remote work conducted by businesses may be threatened by information security vulnerabilities and risks. Many hackers have honed their skills in new types of attacks or learned new methods of attacks here. According to data, Taiwanese companies are four times more likely to be targeted for attacks than the global average and we have become a veritable "cybersecurity firing range" for the world. Given that building information security intelligence sharing mechanisms and using regional allied defense strategies to reduce threats are the global trend in the field of information security nowadays, Taiwan's experiences are a source of valuable reference. In particular, unique attacks, analyses of attack models, and a wealth of information security defense experiences and data accumulated in Taiwan have become valuable for the development of anti-hacking strategies by governments or solutions by information security companies.

2 Diversified Industrial Application Scenarios Facilitate Expansion of Business Opportunities

The advantages of Taiwan's information security industry are based on Taiwan's outstanding capacity for manufacturing of network communication hardware equipment with sophisticated technologies, and the fact that autonomous R&D capacities have increased with investments from startups. The information security service industry has also grown rapidly. Although information security service providers in Taiwan remain small, they are familiar with the demands of small and medium enterprises in different industries for information security protection and the root of problems because of their extensive experiences in the local market. Foreign companies can target individual industries and jointly develop innovative solutions with Taiwanese companies, and then seize opportunities on the global market.

Investment Incentive Measures

1 | Tax Incentives |

Taiwan's profit-seeking enterprise income tax rate is 20%. To encourage foreign companies to invest in Taiwan, support industrial innovation, and promote industry-academia collaboration, foreign companies are eligible for the following preferential taxes (Table 1):

Table 1 Preferential Taxes

Item	Preferential tax(es)
R&D and introduction of technology or mechanical equipment	● Up to 15% of the company's R&D expenditures may be deducted from its profit-seeking enterprise income tax for current year; or up to 10% of such expenditures may be credited over three years against the profit-seeking enterprise income tax payable by the company. ● Royalty payments to foreign companies for imported new production technologies or products that use patents, copyrights, or other special rights owned by foreign companies is, with the approval of the Industrial Development Bureau, MOEA, exempt from the corporate income tax. ● Imported machinery which local manufacturers cannot produce are eligible for duty-free treatment.

Item	Preferential tax(es)
Investment in smart machinery / 5G / information security	● Smart machinery: Automatically scheduled, flexible, or mixed-model production lines that utilize big data, AI, and IoT. ● 5G: Related investment projects include 5G communication systems, and new hardware, software, technology, or technical services. ● Information security: Companies' investments and purchases of information and communication security hardware, software, technology, or technical services are included in the scope of investment offsetting. ● For investments of no less than NT$1 million and no more than NT$1 billion, either "5% of investment spending deducted from profit-seeking enterprise income tax (current FY)" or "3% of investment spending deducted from profit-seeking enterprise income tax, if total spending spread over three years" may be selected, but the total amount deducted may not exceed 30% of corporate income tax that year. ● The applicable periods are January 1, 2019 through December 31, 2021 (smart machinery) and January 1, 2019 through December 31, 2022 (5G).
Employee stock compensation	● A company employee who has obtained stock compensation worth a combined total of less than NT$5 million and continuously held the stock while remaining in the company's employ for at least two years may choose to be taxed on the market price of the stock at either the time the stock was obtained or the time the stock is sold, whichever is lower.
Foreign special professionals	● Foreign special professionals who meet criteria are eligible for a 50% deduction of total income tax for amounts exceeding NT$3 million.
Setting up operations in industry parks	● Companies that set up operations in export processing zones, science industrial parks, or free trade ports are eligible for exemptions on import duties, commodity tax, and business tax for the import of machinery and equipment, ingredients, fuel, materials, and semi-finished products for their own use.
Others	● Companies that use undistributed earnings to engage in substantive investments may exclude the amount when calculating their profit-seeking enterprise income tax.

2 | Subsidies |

### 1. Global R&D Innovation Partner Program

Some foreign companies have a high degree of complementarity with Taiwan's industries, so we encourage them to come to Taiwan to plan and develop forward-looking technologies more advanced than those that Taiwanese firms currently possess, as well as key technologies or integrated technologies. By engaging in R&D work on such technologies in cooperation with Taiwanese firms, they could exert a key influence on Taiwanese industry by: (a) spurring R&D work on industrial technologies as well as the establishment and development of supply chains; (b) improving R&D efficiency; (c) accelerating the timetable from R&D to production; and (d) contributing actively to expansion of international markets. Foreign companies that achieve such things, after gaining approval from the MOEA, will be eligible for subsidies of up to 50% of total R&D expenditures.

2. Program for the Development of Pioneering Companies

The purpose of this program is to build Taiwan into a high-tech R&D center and encourage leading international manufacturers to establish cutting-edge R&D bases in Taiwan so that they can work here on forward-looking technologies and link up with the Taiwan supply chain, thereby creating a division of labor in the areas of research, co-creation, and development, with an eye to strengthening the technological competitiveness of Taiwan's leading industries and accelerating the formation of clusters in emerging industries. Program funding of up to 50% of total expenditures may be granted for any project that has been approved by the Ministry of Economic Affairs.

3. Taiwan Industry Innovation Platform Program

The Industrial Development Bureau and the Ministry of Science and Technology are jointly running the "Taiwan Industry Innovation Platform Program" to guide industries to develop towards greater value, and encourage
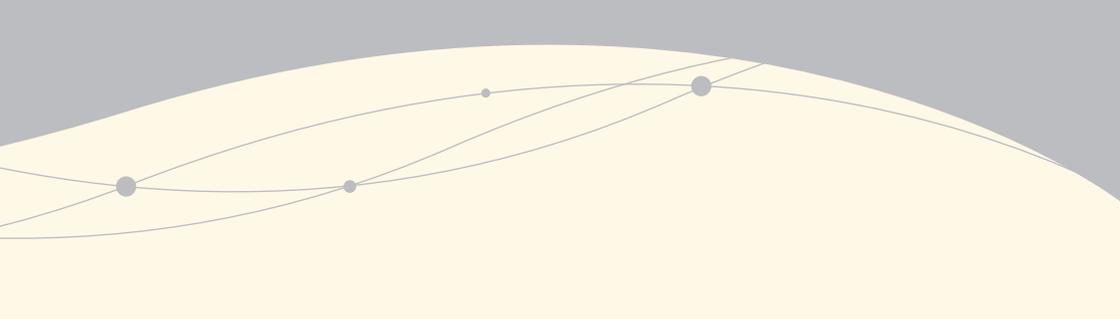
companies to enter high-end product application markets to increase the industry's overall added value. The program provides companies with R&D teams in Taiwan with 40-50% of funding required for theme-based R&D projects, and up to 40% of funding for R&D projects proposed by companies.

In order for industry to be capable of information security management over the long term and to be equipped with industrial information security readiness evaluation and reporting systems, the Industrial Development Bureau built the smart manufacturing information security demonstration site that helps promote investments in information security. Meanwhile, the "Smart Manufacturing Information Security Reinforcement Promotion Themed Subsidy Program" has been set up under the "Taiwan Industry Innovation Platform Program" to encourage smart manufacturers in Taiwan that have machine-to-machine networks to incorporate them into their production lines in order to improve cybersecurity products and solutions at their smart manufacturing sites.

3 | Measures Taken by Local Governments |

To support the development of startup companies, local governments have also provided resources such as "investing in or sponsoring" review or contest mechanisms, setting up the "incubation or acceleration programs," training professionals, and providing free or fairly priced office space, to help venture companies achieve strong growth. This also applies to the information security software industry.

Leading Taiwanese Companies

Nearly 80% of network security hardware platforms around the world are from Taiwan. As the testing ratios of information and communication products and application programs increase, the demand for daily operation monitoring is growing significantly. Information security tests, identification, and consulting services are prioritized for development. Taiwan's leading companies in the information security industry include the following:

1 | Information Security Equipment |

Zyxel, a brand of the Unizyx Holding Group and the best-known company in the field of network security equipment, is the only major network communication equipment manufacturer in Taiwan that has passed the Common Criteria (the ICSA information security product certification) for 20 consecutive years, and won the "Taiwan Excellence Award" for 16 consecutive years. It is also the only leading brand in Taiwan that integrates network security, artificial intelligence, and cloud management solutions. The company's ZyWALL USG information security platform is equipped with high-security and high-reliability information transmission equipment that prevents the intrusion of viruses to protect the transaction data of customers and provide more secure information security defense lines for customers.

In 2021, Zyxel won the "Best Networking Vendor for SMEs" in the "Channel Excellence Awards 2021" in Germany and the "Channel Awards 2020" in Italy. It also entered the supply chain of Telenor, Norway's largest telecommunications operator, to create the world's fastest and largest 5G fixed wireless access (FWA) network.

2 | **Information Security Software** |

Openfind was founded more than 23 years ago and has always been committed to the research and development of information and email security technologies. It has mainly focused on smart communication, information security, and cloud security in recent years. Openfind has integrated artificial intelligence into information security protection and launched the Openfind Secure cloud information security services to help businesses that use branded mail services such as Office 365 and G Suite make use of reliable and affordable information security services which meet Taiwan's regulations.

In the tendering process for the government's inter-entity supply contract for cloud services in 2020, Openfind topped the rankings in the evaluations of Email as a Service (EaaS), cloud storage, and cloud office productivity. After winning 5 consecutive number one rankings, Openfind became the only cloud service provider to receive approval from the evaluation committee members. Openfind has passed ISO 27001 certification and signed service level agreements (SLAs) with more than 99.95% of its customers. Its systems have been adopted by hundreds of government institutions in Taiwan.

3 ｜**Supply Chain Information Security**｜

Onward Security is an international leader in network product information security compliance solutions. It was established in 2014 and has established laboratories that meet international standards to help tech companies and equipment manufacturers obtain information security certification so that their network products can meet security requirements for market entry. Onward Security has become the only information security test laboratory for Amazon Alexa and Prime Video, and the only information security test laboratory in Asia with CTIA licensing. In addition, Onward Security has developed automatic AI information security compliance products, obtained patents from different countries, and won many international awards. It provides government agencies, IoT/IIoT equipment suppliers, and customers in the finance, telecommunications, and network industries with information security certification. It also uncovers potential information security threats and vulnerabilities, protects important information and product security, and meets information security regulations and industry standards. Onward Security has won consecutive "Cybersecurity Excellence Awards" and "Global Excellence Awards" as well as the "Best Cybersecurity Company – Asia Gold Winner" and "Risk and Policy Management Solution - Gold Winner" in 2021. It is also the only ioXt Authorized Test Lab in Asia for cybersecurity, and provides customers with comprehensive IoT information security compliance and international certification services.
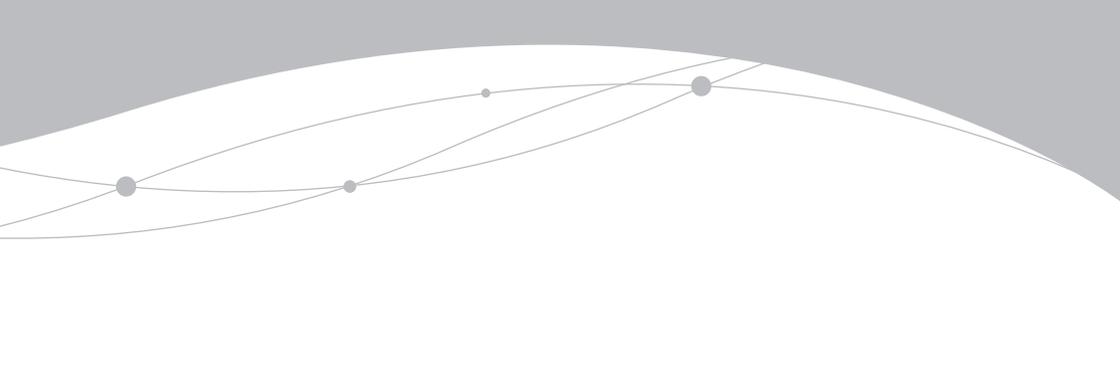
4 | Information Security Startups |

TeamT5 was founded in 2014 and provides products and services for cyber espionage threat intelligence analysis and professional threat identification to help companies combat cyber espionage threats. The results of the team's information security research are used to provide customers with advanced and continuous solutions for countering threats. Members often publish the latest and most advanced research in the world's top information security seminars including Syscan, Code Gate, Black Hat, Code Blue, VXCON, and Troopers. The company has gained a leading position in global threat intelligence research and advanced information security technology. TeamT5 specializes in behavioral analysis and tracking for malicious online intrusion and is the current top cyber threat intelligence research institution in Taiwan. With extensive experience in cybersecurity intelligence and a world-class R&D team, TeamT5 is committed to developing endpoint protection solutions, providing the ThreatSonar threat identification and analysis platform with advanced machine learning and artificial intelligence (AI), and providing services for processing and investigating information security incidents.

Cycarrier Technology, another information security startup, focuses on information security protection with artificial intelligence. Its information security scientists use behavioral studies, actual experience, and forensic data and leveraged machine learning, deep learning, and adversarial networks, and composite models to duplicate the brains of experts through data and train AI to conduct unmanned investigations. The technology can actively identify and track anonymous and high-level hackers, implement 24/7 monitoring, and significantly reduce investigation and response time. Cycarrier Technology is a leading brand in the AI information security and next-generation EDR in the Taiwanese market. It has won the recognition of dozens of A-level government institutions and leading companies in different sectors. It was also selected for the MITRE ATT&CK Evaluations of the National Institute of Standards and Technology (NIST) of the United States. Cycarrier Technology has also set up a branch company in Japan and appointed overseas distributors in regions such as Southeast Asia to promote its products across the world.
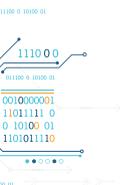
Examples of Successes Achieved by Foreign Companies

1 | Technology Cooperation |

Microsoft has helped 400,000 customers ranging from small and medium-sized businesses to large corporations in 120 countries around the world maintain their security. Among the Fortune 100, fully 90 have adopted more than four of Microsoft's security, compliance, identification, and management solutions. In 2020, Microsoft established its sixth global cloud data center in Taiwan, thus expanding partnerships, strengthening information security services, and consolidating Taiwan's position as a digital transformation hub in Asia. It has also made investments to help Taiwanese manufacturers to improve their information security technologies and capabilities.
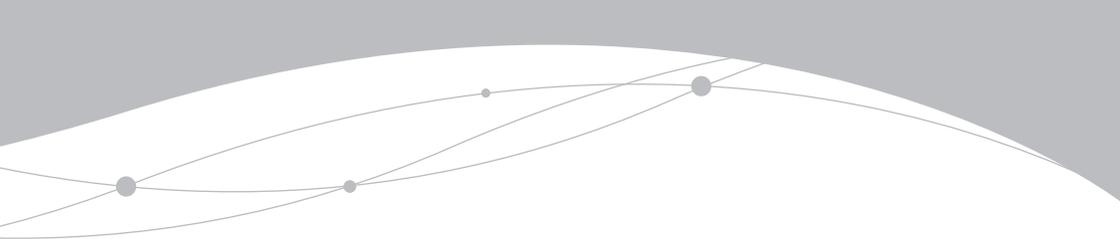
2 | International Cooperation |

The American Institute in Taiwan (AIT) and Taiwan jointly organized the first "Cyber Offensive and Defensive Exercises," and the two sides are planning the establishment of an International Cybersecurity Center of Excellence in Taiwan to facilitate collaboration in information security among the public and private sectors in Taiwan and throughout the Indo-Pacific region in fields such as network security, 5G, and emerging information security standards.

Given its robust information and communication capabilities, outstanding talent, and optimal information security industrial environment, Taiwan's information security environment has become important for the United States and Japan, and it has gradually become a preferred international partner in this field. Japan's Rakuten Group, for example, formed its information security "Tiger Team" in Taiwan in 2019. The team will work with Rakuten teams in India, Japan, Europe, and elsewhere in the future.

3 | Cultivation of Information Security Talent |

Cisco and Taiwan's Ausenior Information established the "Cisco DevNet information security talent training center" in March 2021 to train international information security talent and support information security startup industries. The Cisco DevNet platform and ecosystem has so far developed more than 1,500 solutions and hundreds of program codes that can be immediately used. The platform can help companies upgrade their online hardware management to include capacity for integrating software with product development. Moving forward, the Cisco DevNet platform will develop a capacity for training persons seeking international certifications, thereby helping to expand the cultivation of information security talent.

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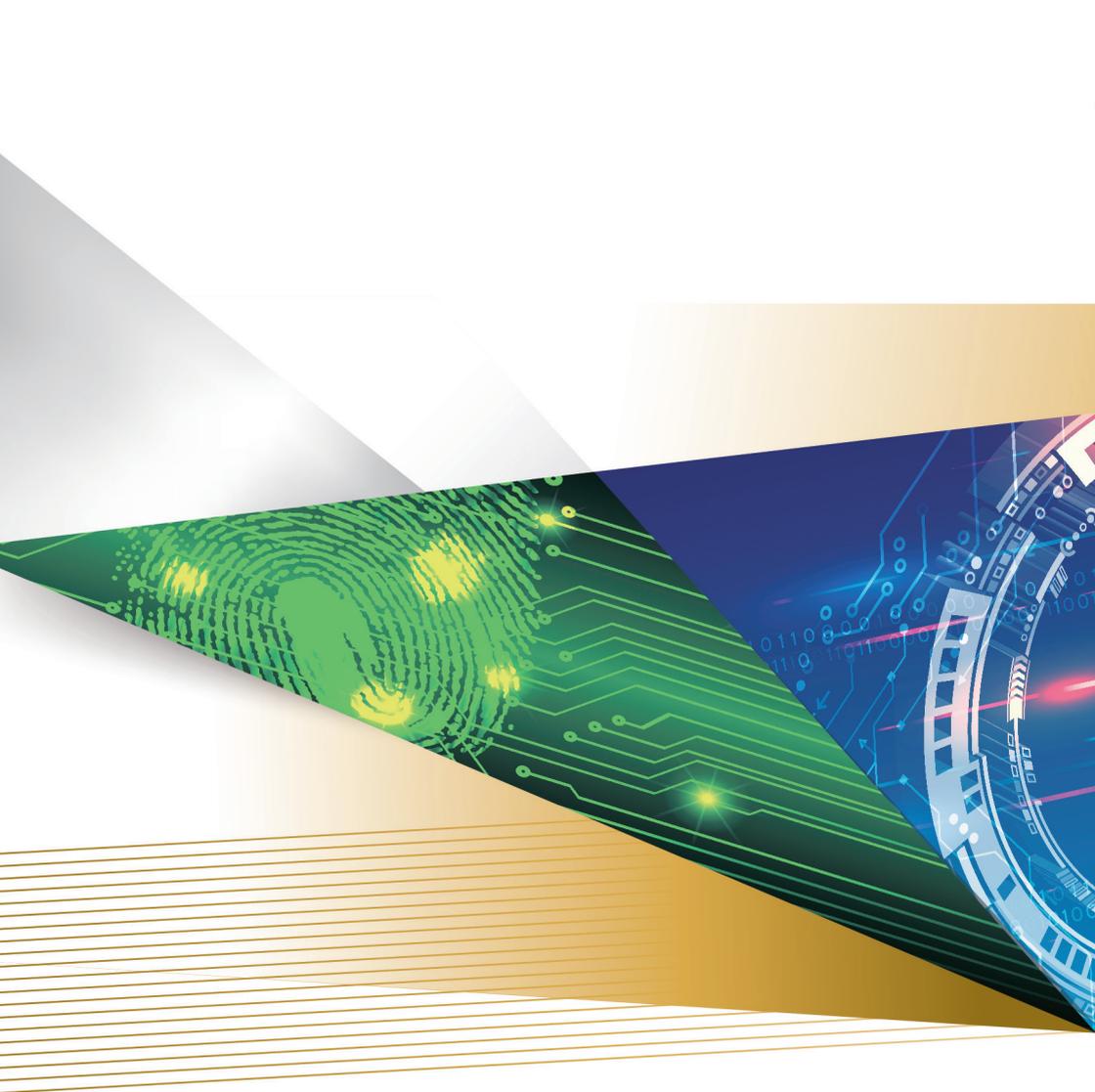
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