

Information Security





Information Security	New Generation Automobiles	Communications Industry	Circular Economy	Green Energy
Biopharmacy	Smart Machinery	Semiconductors	Internet of Things	International Logistics and E-commerce

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Policy Initiatives



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

In 2020, the Executive Yuan listed information security as one of the six major core strategic industries, with a mind to incorporating 5G, digital transformation, and national security within the industry. The National Strategy for Cybersecurity Development Program (2021-2024) was published in February 2021 and details three major goals: "make Taiwan [a] 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." These goals will establish Taiwan as a smart nation with robust security.

The plan focuses on 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." Other plans include to cultivate 350 domestic and international professionals with actual experience in information security, achieve greater maturity in information security governance (including objective indicators) up to level 3, and complete 12 guidelines or industry standards for IoT information security inspection technology within 4 years.

The President announced the Cyber Security is National Security 2.0 Strategy in May 2021, and the Legislative Yuan approved the Executive Yuan's proposal of the Act for Adjustment of Functions and Organizations in December 2021. The Executive Yuan also proposed the Excellence and Cultivation of Cybersecurity in Taiwan - The Cybersecurity Center of Excellence Project (2021-2025) and plans to set up the Cyber Security Center of Excellence (CCoE) in 2022 to recruit information security experts, nurture cybersecurity talents for Taiwan, and create a national cyber security team.

The Ministry of Digital Affairs was established in August 2022 and will oversee the Information and Communication Security Agency and National Institute of Cyber Security think tank. The goal of the ministry is to improve protection for key infrastructure and core databases and expand the capacity and scale of the government's information security team.

Information Security Industry Promotion Plan of the Industrial Development Bureau

The Industrial Development Bureau intends to help enhance information security protection within industries and boost awareness and demand thereof through demonstrations of application scenarios 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 loopholes in applications, network products, IoT devices, and cloud services.

The ACW South information security service base was established with the support of the Industrial Development Bureau and inaugurated in December 2021. It will serve as a demonstration venue to promote information security for smart manufacturing, key infrastructure, smart green energy, and automotive applications such as self-driving electric vehicles. 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 for Al applications, data application security, and OT operations, the Bureau uses test sites and integration service platforms to harness the power of the information security community and white hat hackers (ethical hackers that specialize in protecting information security) to conduct information security tests, develop comprehensive solutions, and simultaneously verify actual case studies. Operators can use the aforementioned measures to gather test data and develop information security solutions for all sectors.

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.



Cybersecurity & Smart Technology R&D Building, Ministry of Science and Technology

The Executive Yuan integrated resources from 13 ministries, including the Ministry of Science and Technology (MOST), Ministry of Economic Affairs (MOEA), and National Development Council (NDC), and began construction of the Tainan Shalun Smart Green Energy Science City in November 2016. The MOST oversees construction and operations at Area C of the Shalun Smart Green Energy Science City and focuses on creating a venue for industrial, academic, and research collaboration. Construction of the MOST Cybersecurity & Smart Technology R&D Building was also completed in 2020.

The R&D Building was inaugurated on April 24, 2021 and focuses on information security technologies, smart transportation, smart health, and smart living. The Information Security Talent Academy, Information Security Collaboration Base, Industrial Control System Attack-Defense Drill Base, Smart Transportation Simulation Platform, and Taiwan Tech Arena South (TTA South) are located within the building. Other spaces are reserved for information security and smart technology companies, as well as other related entities, to provide one-stop service for innovative, R&D, and product verification. The MOST aims to create a comprehensive R&D environment, use bigger companies to attract smaller companies, create infrastructure to attract investors, and build a critical information security and smart industry cluster for Taiwan.

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Overview of Industrial Development

1 | Output Value |

The world faces an increasingly challenging information security environment where threats 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 from 2017 to 2020. The output value of Taiwan's information security industry increased to NT\$60.35 billion in 2021 as the number of companies increased to 350, and approximately 9,000 persons were working in the information security sector.

The information security industry in Taiwan is predominantly hardware. The output value of hardware and modules in 2021 was approximately NT\$30.96 billion (51.3%); the output value of the software sector was approximately NT\$5.49 billion (9.1%); and the output value of services (including professional



services and agency services for information security) was approximately NT\$23.9 billion (39.6%).

As information warfare and network threats intensify, the demand for information security services has continued to grow in Taiwan and foreign countries. This is the main driver of growth within the information security industry, and the output value of the information security industry in Taiwan is expected to exceed NT\$66.9 billion in 2022 (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 is expected to increase from the target NT\$78 billion to NT\$80 billion in 2025.

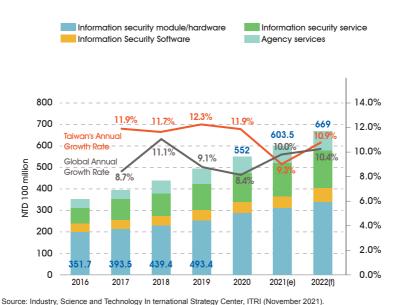


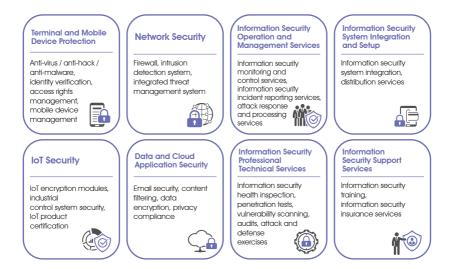
Figure 1 Output Value Forecast of the Information Security Industry in Taiwan

2 | Industry Value Chains |

The ecosystem of Taiwan's information security industry consists of 8 sub-industries: terminal and mobile device protection, data and cloud application security, IoT security, information security operation and management services, information security professional technical services (including information security testing and analysis services, digital forensics services, and information security consulting services), information security system integration and setup (including agency services), and information security support services. The industry also includes 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 2021. They focus mainly on hardware development, with network security and terminal and mobile device protection accounting for a higher percentage of the revenue. They include firewalls, biometrics modules, security chips, public key infrastructure (PKI) applications, and IoT security 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. Software development in Taiwan emphasizes data and cloud databases, email security, and other recognition and protection functions.



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

Figure 2 Ecosystem of the Information Security Industry in Taiwan

Potential Investment and Collaboration Opportunities in Taiwan



Position as Information Security Hub Helps with Development and Testing

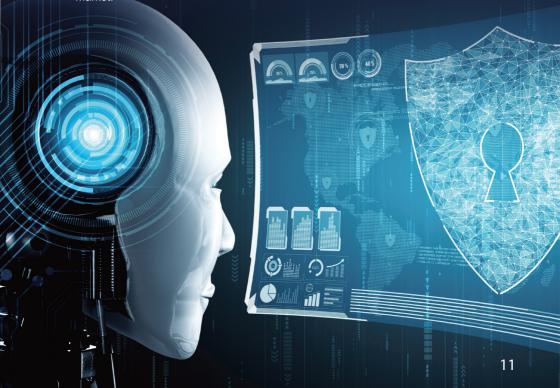
As the network environment and applications gradually gain prominence, new forms of attacks have become increasingly complicated and diverse. We can no longer rely on singular or concentrated protection methods. As monetary losses and business reputation losses caused by information security incidents 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.

Taiwan's unique position in the international community places it at the center of global information security. The pandemic has given rise to new threats and challenges, and remote work is threatened by information security vulnerabilities and risks. Many hackers have honed their skills and learned new methods of attacks. According to data, Taiwan is the target of approximately 300 million scams and 30 million attacks each month. Taiwanese companies are four times more likely to be targeted for cyberattacks than the global average, and we have become a veritable "cyber firing range" for the entire world.

Given the global consensus on building sharing mechanisms for information security intelligence and using regional allied defense strategies to reduce threats, Taiwan's experiences are a source of valuable reference. In particular, Taiwan can provide a wealth of accumulated experience and data on unique attacks, analyses of attack models, and information security defense, which is valuable for developing anti-hacking strategies for the government. These experiences may also help develop solutions such as integrated single-point functions, continuous and uninterrupted monitoring, and real-time big data computing and visualization interfaces by information security companies.

Diversified Industrial Application Scenarios Facilitate Expansion of Business Opportunities

Taiwan's outstanding capacity for manufacturing network communication hardware with sophisticated technologies and increased startup investments in autonomous R&D capacities confer an advantage for Taiwan within the information security industry. The industry has also been growing 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. They are also familiar with the root of their problems because of 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.





1 | Tax Incentives |

The income tax rate for profit-seeking enterprises in Taiwan is 20%. To encourage foreign investments Taiwan, support industrial innovation, and promote industry-academia collaboration, Taiwan offers the following preferential taxes to foreign companies (Table 1):

Table 1 Preferential Taxes

Item	Preferential Measures
Research, Development, or Introduction of Technologies	 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.
or Machinery Equipment	 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.
	Companies are exempt from import tariffs for importing any machinery equipment that local manufacturers cannot produce.

Item	Preferential Measures			
Investment in smart machinery / 5G / information	 Smart machinery: Use of big data, AI, and IoT in brand-new hardware, software, technology, or technical services for automatic schedules, flexible, or mixed-model production lines. 			
security	 5G: Investments in new hardware, software, technology, or technical services that are related to 5G communication systems. 			
	 Information security: Companies' investments and purchases of brand-new hardware, software, technology, or technical services for information and communication security products or services are included in the scope of investment offsetting. 			
	 For investments between NT\$1 million and NT\$1 billion, companies can choose from 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 the total spending is spread over three years" may be selected, but the total amount deducted may not exceed 30% of corporate income tax that year. Applicable until December 31st, 2024. 			
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. 			
Special Foreign Professionals	 Special foreign professionals who meet certain criteria are eligible for a 50% deduction of total income tax for amounts exceeding NT\$3 million. 			
Industrial Park Locations	 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 Innovation Partnership Initiatives Program

Foreign companies that complement Taiwan's industries are encouraged to invest in Taiwan's R&D innovation and work with Taiwanese companies to jointly develop forward-looking technologies, key technologies, or integrated technologies beyond our current capacities. Such businesses could exert a key influence on Taiwanese industry by: (a) inspiring 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 the expansion of international markets. Foreign companies successful in endeavors relating to this program will be eligible, upon approval from the MOEA, for subsidies of up to 50% of total R&D expenditures.

2. Pioneers for Innovation Leadership on Technology Program

The program aims to transform Taiwan into a high-tech R&D center and encourage leading international manufacturers to establish cutting-edge R&D bases in Taiwan, empowering their work in forward-looking technologies in Taiwan and connecting with Taiwan's 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. Industrial Upgrading Innovation Platform Guidance Program

To guide industries in Taiwan to develop high-value products and encourage corporations to enter the high-end market to increase the industry's added value, the Industrial Development Bureau, Ministry of Economic Affairs, and the Ministry of Science and Technology are promoting the "Taiwan Industry Innovation Platform Program". The program provides companies that have R&D teams in Taiwan with funding of up to 40%-50% of the project budget for themed R&D projects and funding of up to 40% for projects independently conducted by corporations.

To confer long-term capabilities in information security management and equip businesses with industrial information security readiness evaluation and reporting systems, the Industrial Development Bureau built the smart manufacturing information security demonstration site which promotes investments in information security. Meanwhile, the "Smart Manufacturing Information Security Reinforcement Promotion Themed Subsidy Program" has been set up under the "Industrial Upgrading Innovation Platform Guidance 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 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, 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 21 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 smart 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 addition, Zyxel also enhanced the Nebula Smart Cloud Networking solution in 2022 and launched the Connect & Protect (CNP) designed exclusively for WiFi networks of small enterprises and two brand-new WiFi 6 wireless routers to help small and medium enterprises accelerate digital transformation in response to post-pandemic challenges.

In 2021, Zyxel won "Best Networking Vendor for SMEs" in the Channel Excellence Awards 2021 in Germany and the Channel Awards 2020 in Italy. Zyxel also received the Common Vulnerabilities and Exposures (CVE®) certification and became a CVE Numbering Authority (CNA). It is the first listed information security company in Taiwan and among one of the few network communication companies worldwide with these qualifications3. It has 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 nearly 25 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 2021, Openfind topped the rankings in the evaluations of "Email as a Service (EaaS)", "cloud storage", and "cloud ODF office integration system". It also won top rankings 6 years in a row. 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 Only 177 institutions and companies from 30 countries have been approved for the CNA program.

3 | Supply Chain Information Security |

Onward Security is an international leader in network product information security compliance solutions. It 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.

Another information security service provider, DEVCORE, overturned existing notions on how to respond to information security. It adopted the "hacker mindset" to simulate infiltration attacks on companies and help companies learn how to defend themselves in the process. It also provides regular penetration tests, red teaming, information security training, and online and telephone consulting services to improve the information security standards of developers and managers, and thereby enhance the information security of the entire company.

DEVCORE is an aggressive information security company with customers including governments, financial industries, e-commerce operators, semiconductor operators, and medical services. Its research in the field of information security has global influence and it has won the Pwnie Awards, the Oscars of the field of information security, in 2019 and 2021, becoming the only information security team from Taiwan to win the Awards.















4 | Information Security Startups |

Taiwan CyberSecurity Foundry Company has received long-term support from MOEA and the Institute for Information Industry of Taiwan and was officially established through technology transfer in December 2021. The company focuses on the creation of information technology (IT), operational technology (OT), and 5G supply chain information security monitoring platforms for hospitals, semiconductors, industrial control, e-commerce platforms, and financial institutions. It uses artificial intelligence to quickly detect the occurrence and response to information security incidents and make up for the information security manpower shortfall of the government and industries.

CyberSecurity Foundry's "cross-sector information security monitoring platform" was evaluated by the renowned American information security research institution MITRE in 2021. It has the capacity to detect malicious conduct and attacks and is able to adequately monitor the information security environment for the industrial control system. It received recognition in the annual international hacker event "Black Hat Briefings" and was recommended to the global information security industry and hackers. CyberSecurity Foundry has world-leading information security technologies and is currently working with a Japanese 5G information security core network client. A venture capital company from the Silicon Valley in the United States has also expressed interest in investment.

TeamT5 was founded in 2017 and provides products and services for cyber espionage threat intelligence analysis and professional threat identification to help companies combat cyber espionage. 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, forensic data, machine learning, deep learning, adversarial networks, and composite models to duplicate the brains of experts through data. They also train AI to conduct unmanned investigations. The technology can actively identify and track anonymous, 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 also performed well in the MITRE ATT&CK Evaluations of the National Institute of Standards and Technology (NIST) of the United States. Cycarrier Technology became the only AI information security startup selected by the international market research institute Garner in 2021. In addition, although Cycarrier Technology has been established for less than five years, it has expanded overseas to Japan, Singapore, and the United States, and continues to be committed to market 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. A staggering 90 of the Fortune 100 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.

In response to the policies of the Taiwanese government and the companies' demand for Chief Information Security Officers (CISO), Microsoft will help local companies train professional information security talents, organize information security training for the CISO community, and expand the development of the information security ecosystem in Taiwan in 2022.

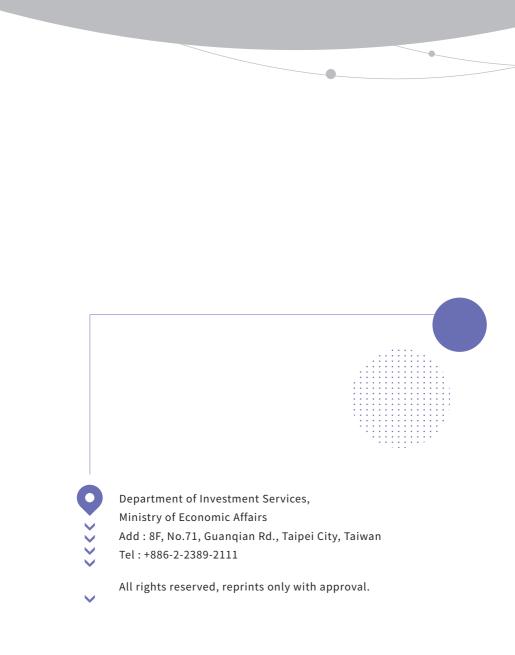
2 | International Cooperation |

The American Institute in Taiwan (AIT) organized the first Cyber Offensive and Defensive Exercises with Taiwan in November 2019. The two sides are planning to establish an International Cybersecurity Center of Excellence in Taiwan to facilitate collaboration in information security among the public and private sectors, and throughout the Indo-Pacific region in fields such as network security, 5G, and emerging information security standards. In November 2021, the two sides jointly organized the 2021 US-Taiwan Cybersecurity Cooperation Strategy Forum to jointly create collective defense mechanisms for information security with the US-Taiwan information security defense strategy as the core.

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 also 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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