



Key Innovative Industries in Taiwan

Internet of Things



Information
Security

Next-Generation
Vehicle

Communications
Industry

**Internet
of Things**

Semiconductor
Industry

Biopharmacy
Industry

Smart
Machinery

Circular
Economy

Green
Energy

Service
Industry

CONTENTS

- 02 Policy Initiatives- "Asia Silicon Valley Development Plan"
- 05 Overview of Industrial Development
- 08 Potential Investment and Collaboration Opportunities in Taiwan
- 11 Investment Incentive Measures
- 14 Successful Examples of Foreign Companies

Policy Initiatives —

"Asia Silicon Valley Development Plan"

Taiwan's government began implementing the "Asia Silicon Valley Development Plan" in 2016. The plan has two themes: "promoting IoT innovation and R&D" and "strengthening the innovative entrepreneurial ecosystem." The plan aims to integrated technology R&D capabilities, talents, capital, and markets worldwide to drive the comprehensive transformation and upgrade of Taiwan's industries through the IoT.¹ As for specific promotion strategies, Taiwan has incorporated the R&D capacity of international giants such as Microsoft, Google, Amazon, and Cisco. We created smart demonstration sites, promoted exchanges in the IoT industry, relaxed talent-related regulations, and provided funding support to create a robust innovative entrepreneurial ecosystem for IoT innovation, R&D, and industrial growth.

The government created the "Major League IoT, ASVDP" for promoting cross-disciplinary cooperation and forming industry standards in December 2016. The Major League IoT, ASVDP is led by three major domestic manufacturers including Acer, MediaTek, and Advantech. Mr. Stan Shih, founder of the Acer Group, is the honorary chairperson, and the CEO of ASVDA is the chairperson (the current CEO is Deputy Minister Cheng Chen-Mao of the National Development Council). The Major League IoT, ASVDP addresses industry needs and engages in technology R&D, site verification, and international market exploration. It aims to nurture even more innovative industries by establishing a

¹ ASVDA Action Plan (Approved).

<https://ws.ndc.gov.tw/Download.ashx?u=LzAwMS9hZG1pbmlzdHJhdG9yLzEwL3JlbGZpbGUvMC8xMTcwOC8xYzcvOGJmYy02ODAzLTRjNWYtYTc4My04NzdkMDFjZDU2OGYucGRm&n=MTA2MDMxNuS6nua0ssK355%2b96LC35o6o5YuV5pa55qGI6KGM5YuV6KiI55WrZmluYWVwo5qC45a6aKS5wZGY%3d&icon=..pdf>



platform that will accelerate collaboration between experts, start-ups, and system integrators. The League has created Special Interest Groups (SIGs) in smart transportation, smart logistics, smart manufacturing, smart energy efficiency and environment monitoring, smart commerce, smart home, smart farming, smart healthcare, and IoT information security. It organizes quarterly conferences and actively promotes cross-disciplinary exchanges between the domestic industry, government, and academia on IoT applications. As of August, 2020, the League has accumulated more than 400 members.

**Contact
Information**

Asia Silicon Valley Development Agency (ASVDA)

Website : <https://www.asvda.org/chi/index.aspx>

Telephone : Taoyuan Head Office 03-2871281

Silicon Valley Office +1-408-524-3026

Address : **Taoyuan Head Office:** International Finance Twin Buildings, 3F-1, No. 286,
Sec. 1, Gaotiezhanqian W. Rd., Zhongli District, Taoyuan City

Silicon Valley Office: 440 N. Wolfe Rd., Sunnyvale, CA 94085, Plug and Play
Tech Center, #EL303

**Contact
Information**

Contact for the Major League IoT, ASVDP

Website : <https://www.asvda.org/chi/internet/about.aspx>

Contact : Ning Chen, Manager

Telephone : 02-25774249 ext. 872

Email address : jenny@mail.tca.org.tw

To effectively promote startups and the IoT industry, the government created a demonstration site in Taoyuan, planned the Asia Silicon Valley Innovation and R&D Center, promoted smart industrial parks, and established the "Hutoushan Innovation Hub". Construction of the Hutoushan Innovation Hub began in October 2018 and covers an area of 4.7 hectares. The hub is located near major industrial parks such as Gueishan and Hwaya, which is the core of Taoyuan with convenient transportation. The hub will serve as a gateway to international innovation centers such as Silicon Valley. Phase 1 of the site was officially inaugurated in June 2019 and it includes two centers for "smart driving vehicle" and "information security IoT". A total of 44 open seats and 6 independent offices were planned and all places have been taken up by foreign companies such as Cisco and Siemens, and Taiwanese companies such as KingwayTek Technology. KingwayTek Technology works with the Automotive Research & Testing Center (ARTC), automobile and ICT companies in building self-driving buses, obtaining the first self-driving car test license plate in Taiwan in January 2020. Tests were officially launched in Lugang, Changhua in March with two months of operations without passengers in phase 1 and the official start of free passenger services on July 15. Phase 2 of the Hub is actively being planned. The Hub plans to work with Chunghwa Telecom to transform the Hutoushan Innovation Hub into a 5G testing ground to attract more startups to set up offices and facilitate the prosperous development of self-driving cars, IoT, and AI industries.

**Contact
Information**

Hutoushan Innovation Hub Operation Office

Website : <https://www.hutoushan-innohub.org.tw/>

Visitor contact : hutoushanihub@gmail.com

Residency inquiries : hutoushan@etatung.com

Address : No. 1, Sec. 3, Chenggong Rd., Taoyuan Dist., Taoyuan City 330023

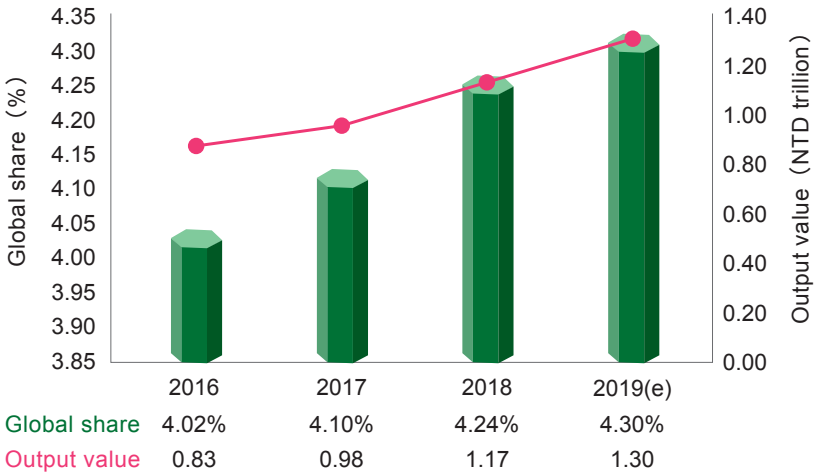
Remarks : Hutoushan Innovation Hub Residency Application Form

<https://www.hutoushan-innohub.org.tw/upload/5f802b14-8c06-47b5-bbad-576fb9e08bb6.pdf>

Overview of Industrial Development

1 | Output Value |

The output value of Taiwan's IoT industry grew from NT\$0.83 trillion in 2016 (accounts for 4.02% of the global output value) to NT\$1.17 trillion in 2018, surpassing the NT\$1 trillion mark for the first time and accounting for 4.24% of the global output value. It is expected to grow to NT\$1.3 trillion in 2019 and account for 4.30% of the global output value (Figure 1).

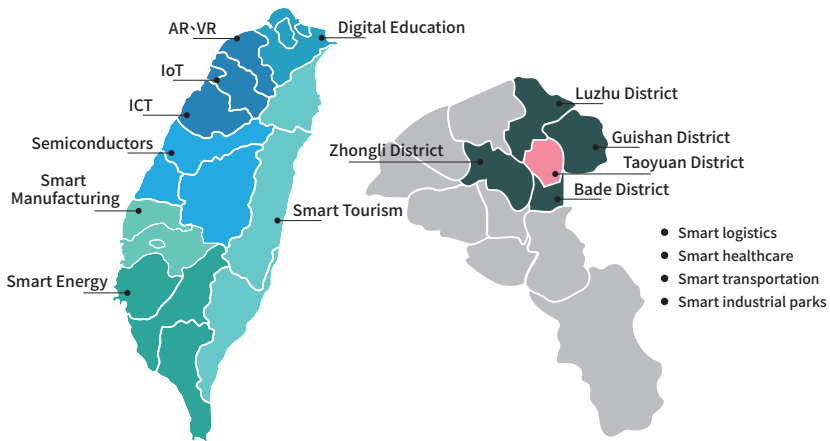


Source: National Development Council "Asia Silicon Valley Development Plan Progress and Results" (2020.04.13).

Figure 1 Production value of Taiwan's IoT industry in 2016-2019

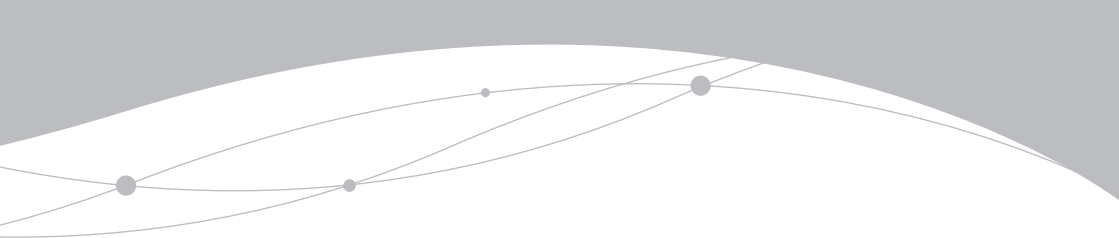
2 | Industrial Clusters |

The IoT industry spans the IT manufacturing industry, equipment manufacturing industry, and software and information service industry, which involves multiple fields of technology, including computers, communications, network, computing, sensors, embedded systems, and microelectronics. Due to the extensive fields involved in the IoT industry, the industry has not formed a specific industrial cluster, but rather exists in the form of test sites developed based on local demand and industrial development (Figure 2).



Source: Asian Silicon Valley Development Plan

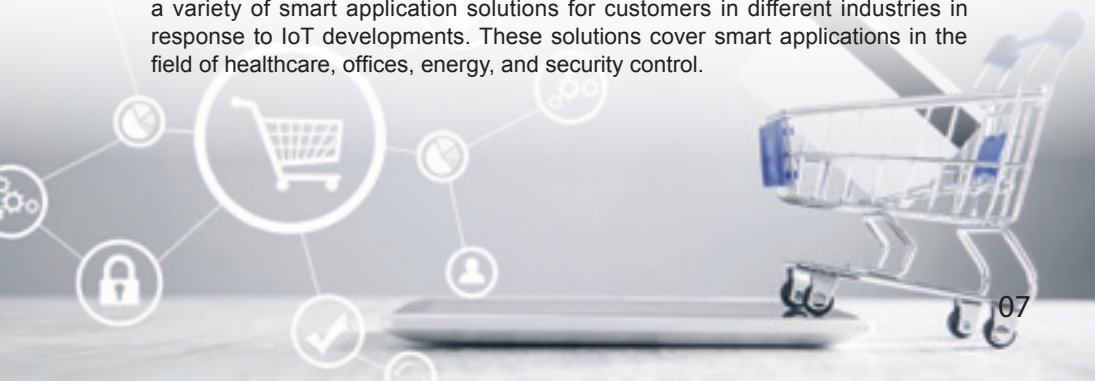
Figure 2 IoT demonstration site in Taiwan



The IoT involves the integration of software and hardware of cross-disciplinary, complex systems, therefore, major telecom operators (such as Chunghwa Telecom and Taiwanmobile) in Taiwan have been actively playing the role of system integrators in recent years, engaging in cross-disciplinary vertical integration and cross-industry alliances (such as Chunghwa Telecom's "IoT Smart Platform" and Taiwanmobile's "IoT Ecosystem"), while searching for domestic and overseas partners to establish a common platform. These system integrators had developed and tested innovative application services and products that are able to satisfy people's demand on greater convenience in life.

In addition to major telecom operators, system equipment manufacturers (such as Advantech and MiTAC) are also actively playing the role of system integrator. For example, Advantech established an IoT and smart city application experience center in Startup Terrace, promoting this model at its overseas locations. Advantech also built a true smart factory in Startup Terrace. MiTAC Information Technology Corp. established and provides the MiOGC platform that complies with Open Geospatial Consortium (OGC) standards to develop a smart city IoT system.

Moreover, software and information service providers are using their IT advantages in the development of cutting-edge technologies and smart applications, providing customers with system integration services. For example, "Acer Being Communication Inc.", a member of the Acer Group, specializes in business IoT solutions, which can be applied to agricultural monitoring stations, water quality monitoring stations, water meter systems, street light applications, residences and communities, and factories. The Syscom Group developed a variety of smart application solutions for customers in different industries in response to IoT developments. These solutions cover smart applications in the field of healthcare, offices, energy, and security control.

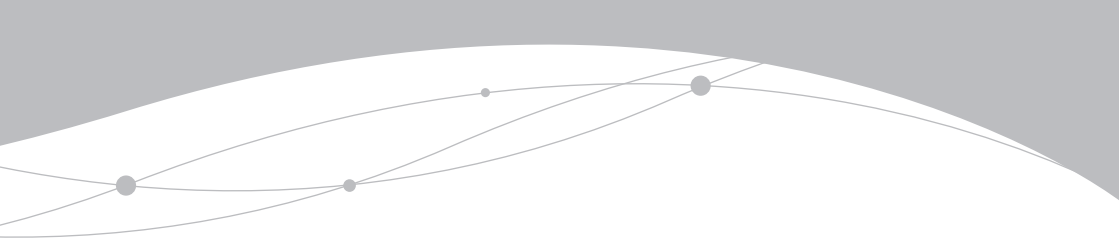


Potential Investment and Collaboration Opportunities in Taiwan

1 Utilizing Taiwan's dominant industries to develop core applications in the IoT industry

Taiwan has a complete semiconductor supply chain, an abundance of engineering talent for R&D and design, and is close to emerging markets in Asia. System application/assembly companies in the ICT industry are recognized by international brands for their manufacturing ability. The companies have recently expanded beyond conventional 3C (computer, communications, consumer electronics) into vertical IoT applications and system integration solutions. Through investing in Taiwan, foreign companies are able to increase the depth of their partnership with Taiwan's semiconductor and ICT industries, implement high-end parts and components/software design and development technologies, and search for module, subsystem, and application developers to work with, then jointly develop the targeted vertical IoT application markets.

To drive the development of the artificial intelligence and IoT industries, the government implemented the "IC Design & Semiconductor Technology R&D and Application Program" from 2018 to 2021. The Program focuses on IoT and integrates the capabilities of the industry, government, academia, and research institutes to develop chip services, semiconductor technologies, sub-systems, and demonstration sites necessary for the development of IoT. It also trains related engineering talents and contributes to the development of "IoT product prototypes" for a pilot run, thus creating a complete ecosystem for Taiwan's IoT industry. Under this Program, the Industrial Technology Research Institute (ITRI) established the "IoT Integrated Service Center (IisC)" to provide one-stop IoT software and hardware design, production, and verification services. It has assisted several companies in the completion of dozens of technical service results. For instance, IisC assisted domestic smart watch developer JCiplus Technology Corp in developing "validation algorithms" and value-added



R&D project such as the "AI smart sports coach". IisC assists mobile network equipment test instrument distributor Eagletek Corp. in the integration of "terminal clouds" and innovation and R&D in the "NB IoT Kit".

2

Bolster incubation resources to strengthen innovation and application capacity

The rise of IoT technologies in recent years has given birth to multiple innovative applications. To accelerate the development of the emerging application markets in the industry, the Industrial Development Bureau of the Ministry of Economic Affairs set up incubation centers in Nangang in Taipei and Qianzhen in Kaohsiung to cultivate teams/companies that specialize in emerging applications in the semiconductor and smart IoT industries. The government used advertisement and promotion campaigns in Taiwan and abroad to attract startup companies/teams with potential to set up offices. It provides incubation resources including space, talents, funding, technical environment and structure, market, and finance/legal counseling necessary in all stages of the growth of companies from start-up, establishment, and expansion to maturity. It helps companies pass operation bottlenecks and strengthen innovative and entrepreneurial capacity. It also fosters cooperation between incubation companies and local operators. It directs the capacity of the incubation teams to power the upgrade and transformation of local industries.

3

Development of key sensor technologies for the IoT in niche markets

The IoT framework consists of a sensor layer, network layer, and application layer. Sensor technologies in the sensor layer play a crucial role, not only involving the integration of hardware sensor components/circuit design and integration, but also software technologies for integrating multiple sensor signals and special algorithms for integrating AI/edge computing. Foreign companies that invest in Taiwan can invest in optical/3D vision sensors, biomedical sensors, or gas sensors for environmental/food safety. They can partner with smart vehicle and smart manufacturing test sites in Taiwan to jointly develop key sensor technologies that meet demands particular to Taiwan/Asia's market.



4


Expand business opportunities in innovative IoT applications to respond to the contactless economy

The COVID-19 epidemic has tremendous impact on the world. The "contactless economy" has emerged as a new trend as people seek to suppress the spread of the epidemic. The demand for working from home, online meetings, digital courses, telemedicine, video and audio entertainment streaming, and digital financial payments has increased dramatically. There is also potential for growth in the smart manufacturing, robotic warehousing, and service robot market. Taiwan's performance in countering the epidemic has received international recognition. Its National Health Insurance system, rapid development of a management system for face masks used for disease prevention, and face mask vending machines demonstrate Taiwan's strong ICT prowess and cross-disciplinary integration capacity. Foreign companies invest in Taiwan or work with Taiwanese businesses in exploring business opportunities in the "contactless economy". They use Taiwan's ICT, machinery, and medical equipment industries and testing grounds to develop innovative IoT applications.

5

Reducing the risks and costs derived from changes in the global environment

Network information security and government control policy are important factors that will affect the development of the IoT industry at the place where the investment is made. Taiwan is deeply trusted by international corporations due to complete regulations that fully protecting their intellectual property rights and information security. Next, the Taiwanese government and companies are fully aware of trends in the global industry, and flexibly adjust their supply chains based on changes in the international economic and trade situation. Foreign companies that invest in Taiwan or partner with Taiwanese companies will be able to reduce the risks and costs brought by the U.S.-China trade and technology conflicts or global pandemics.





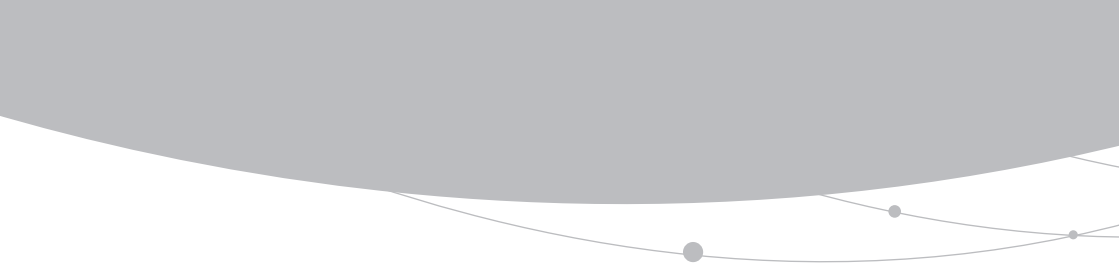
Investment Incentive Measures

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	Incentives
R&D and introduction of technology or mechanical equipment	<ul style="list-style-type: none">● Up to 15% of the company's R&D expenditures may be deducted from its profit-seeking enterprise income tax for current year.● 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.
Technology investment / Stock-based employee compensation	<ul style="list-style-type: none">● The worth of shares acquired through technology investment/stock-based employee compensation can be excluded from the taxable income for that year (up to NT\$5 million). In addition, those that meet related criteria are eligible for reduced taxes based on "acquisition price" or "transfer price," whichever is lower.



Item	Incentives
Investment in smart machinery / 5G	<ul style="list-style-type: none"> ● 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. ● 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).
Foreign Special Professionals	<ul style="list-style-type: none"> ● 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	<ul style="list-style-type: none"> ● 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	<ul style="list-style-type: none"> ● 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. The Global R&D Innovation Partner Program

Some foreign companies have a high degree of complementarity with Taiwan's industries. To encourage them to engage in R&D and innovation activities in Taiwan, such companies, after gaining approval from the MOEA, will be eligible for subsidies of up to 50% of total R&D expenditures if they: (1) have technologies that are not yet mature in Taiwan or overseas, and could create strategic products, services, or industries over the course of future industrial development; (2) have potential to help Taiwan produce leading technologies or significantly enhance the competitiveness and increase the added value of important industries; or (3) engage in key and common technology R&D, vertical or horizontal technology integration, and can create an industrial value chain.

2. Integrated R&D Program

Companies, once approved by the MOEA, will be eligible for subsidies of no less than 40% but no more than 50% of total project funding if they: (1) engage in key and common technology R&D, vertical or horizontal technology integration, and can create an industrial value chain; (2) establish industry standards, protocols, or platforms; or (3) establish applications, services, and innovative business and marketing models with technological content, and increase industry's added value.

3. Taiwan Industry Innovation Platform Program

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

4. Promotion Plan for Smart Commercial Services in the Asian Silicon Valley Project

The Ministry of Economic Affairs (MOEA) provides subsidies to assist the innovation and development of Taiwan's commercial service industry, strengthening its growth momentum and enhancing its competitiveness. The subsidies encourage companies to develop new commercial service models and expand the scope of services through smart technology and mobile technology applications, developing innovative services that are smarter and more convenient. Subsidies were provided to the retail industry and integrated service industry in 2020. For qualified applicants, the subsidies may not exceed 50% of the total budget of each proposal (includes subsidies and self-raised funds). Applicant may only file applications for projects within their own systems and the maximum subsidy is limited to NT\$3 million. For "large companies supporting small companies" or "cross-industry alliances", the maximum subsidy is limited to NT\$5 million. Furthermore, the self-raised funds portion may not be higher than the company's paid-in capital.

Successful Examples of Foreign Companies

1 | Development of smart applications |

The cloud computing service platform of Amazon – Amazon Web Services (AWS) entered a partnership with the Small and Medium Enterprise Administration, Ministry of Economic Affairs for the establishment of the "AWS Joint Innovation Center, Startup Terrace" in March 2019. It also announced in the same year that the first AWS IoT Lab in Greater China will be established in Taipei, and AWS Partner Network (APN) will help customers accelerate the design and deployment of IoT applications. Current partners include the Industrial Technology Research Institute, SoftChef, QNAP Systems, CEC, LiteOn, and Sinomos.



Microsoft teamed up with startups in Taiwan and its partners in the industry in the development of smart city applications, such as working with Taiwan's Osense Technology, and Thailand's BTS Group, to make stations a destination for tourists and citizens through precision positioning and AR technology. In addition, Microsoft also joined the "AI on Chip Taiwan Alliance (AITA)" which uses Microsoft's Azure Sphere platform to provide maximum-security AI development capabilities to provide comprehensive protection for AI IP developed by companies.

2 | Cooperation on testing facility |

Dassault Systèmes established an R&D center in Taiwan and formed an alliance with the Fair Friend Group to seize business opportunities of smart factories. It also signed a MOU with Taichung City Government to collaborate in projects relating to IoT, startup ecosystem, and innovation and R&D hubs. Cisco values Taiwan's innovation capabilities, digital talent, and complete industrial chain, and thus signed a MOU with Taoyuan City Government to utilize Cisco Technology in jointly promoting AI, IoT, and 5G demonstration applications and a verification platform.

Siemens is working with Taichung City Government in building a site for smart manufacturing trial operations, and established a digital experience and R&D center. Siemens will also move into the Hutoushan Innovation Hub in 2019. It also established the IoT user organization MindSphere World to collaborate with experts from the industry, government, and academia in creating an ecosystem for the IoT industry.

3 | Cooperation on talent development |

Microsoft established the "AI R&D Center" in Taiwan in 2018 and brought new R&D capabilities into Taiwan. It further moved into "Startup Terrace" in 2019, and has made plans to actively invest resources into Taiwan's excellent startup teams through Microsoft's startup accelerator. Google launched its AI talent training program in Taiwan in March 2018, and continued to implement "Intelligent Taiwan" in 2019 to develop talent, economy, and ecosystem. Google plans to activate the "Digital Talent Exploration Plan" in 2020 to provide free digital training services. It is expected to train 8,000 digital transformation talents.



Department of Investment Services,
Ministry of Economic Affairs

Add : 8F, No.71, Guanqian Rd., Taipei City, Taiwan
Tel : +886-2-2389-2111

All rights reserved, reprints only with approval.



TAIWAN



InvesTaiwan

Add : 8F., No.1, Xiangyang Rd.,
Zhongzheng Dist., Taipei City, Taiwan
Tel : +886-2-2311-2031
Fax : +886-2-2311-1949
Website : <https://investtaiwan.nat.gov.tw>
E-mail : service@invest.org.tw

**Department of Investment Services,
Ministry of Economic Affairs**

Add : 8F, No.71, Guanqian Rd., Taipei City, Taiwan
Tel : +886-2-2389-2111
Fax : +886-2-2382-0497
Website : <https://investtaiwan.nat.gov.tw>
E-mail : dois@moea.gov.tw