MOEA

Continual Evolvement

2012/2013
Introduction to the
Department of Industrial
Technology

DOIT
Ministry of Economic Affairs

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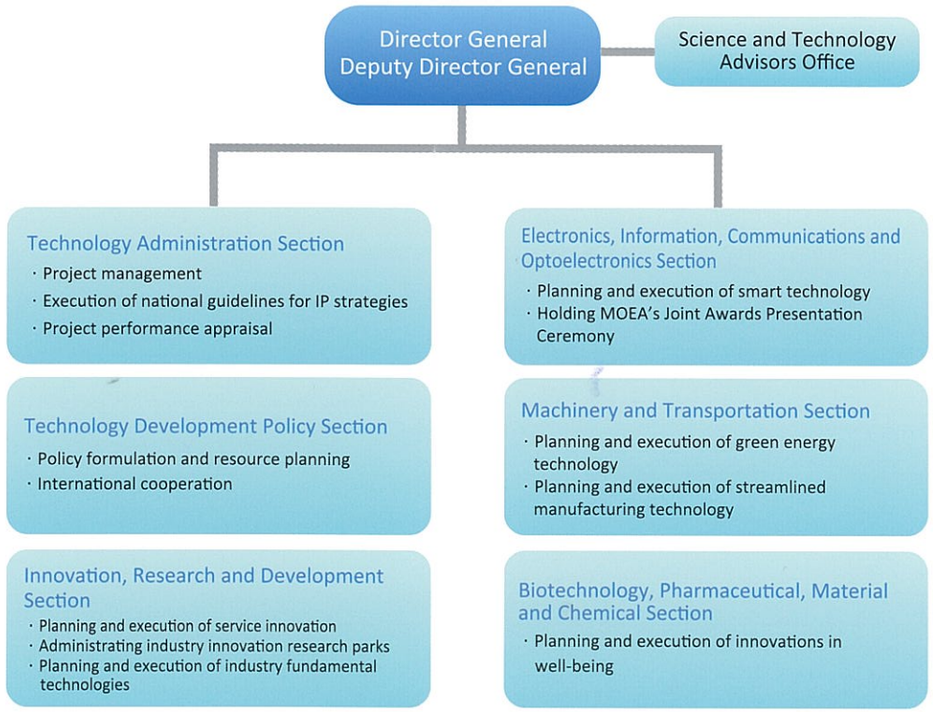
Introduction

Organization

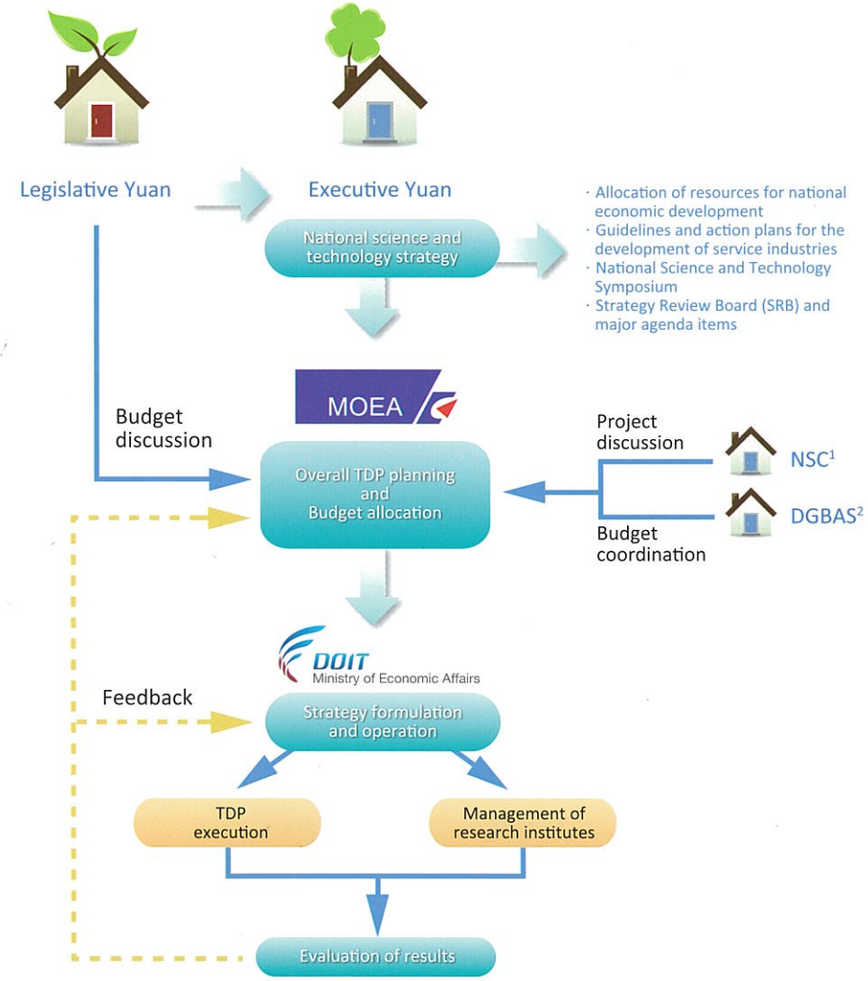
In order to lead technological R&D innovation, break ground on industrial technology development, and reinforce national competitiveness, the Ministry of Economic Affairs (MOEA) established the Science and Technology Advisory Office as per the Science and Technology Development Program in 1979, the predecessor of the present Department of Industrial Technology (DoIT). In 1993, under the stipulation of Article 21 of the MOEA Organization Law, the DoIT as we know it today came into being. The main mission of the DoIT is to leverage the Technology Development Programs (TDPs) to integrate the R&D resources and soft power of research institutes, academia, and the industry. Other than jointly developing advanced and cross-domain technologies, the DoIT also plays a key role to bridge technology innovation of major IT companies in Taiwan, reinforce the R&D capability of the industry, consolidate Taiwan's strength in applied technologies, speed up industry upgrade, and support new value creation in the industry.

Headed by the Director General and assisted by the Deputy Director General, the DoIT establishes the Science and Technology Advisors Office and six sections in charge of different areas of specialty: technology administration; technology development policy; innovation, research and development; electronics, information, communications, and optoelectronics; machinery and transportation; biotechnology, pharmaceutical, materials and chemical sections. Also under the DoIT are several dedicated project offices supporting the implementation of policies and assisting in operational and promotional affairs.



Policy Implementation

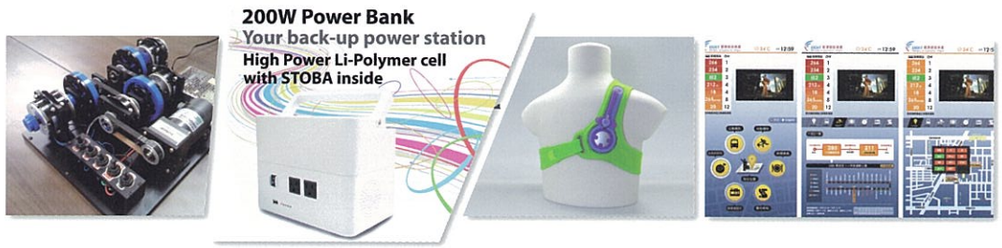
The promotion of TDPs should take into account the trend of industrial development and demand, follow the direction of the President, and the MOEA's national policies for science and technology and industry, in order to map out the R&D focus in line with Taiwan's industrial development upgrading and transformation. The DoIT has set up a performance evaluation system, thereby promoting the effective implementation of TDPs through strategy planning, institution management, performance appraisal, and other feedback mechanisms so as to help increase the benefits of TDPs on industrial upgrading and transformation.



Note:
1.National Science Council(NSC)
2.Directorate General of Budget, Accounting and Statistics(DGBAS)

Technological Innovation in Focal Areas

Due to the rise of knowledge economy, knowledge and R&D capability have become the driving force for a nation's competitiveness. To inspire industrial innovation and activate the innovative system, the DoIT has kept pace with industrial development trends and Taiwan's national technology policy blueprint, while investing in the R&D of several focal areas including smart technology, streamlined manufacturing technology, well-being innovation, green energy technology, and service innovation. These investments are expected to strengthen Taiwanese industries' innovation capabilities and growth potential.



Smart Technology

In line with the policies of the Six Major Emerging Industries, the Four Major Intelligent Industries, and the i-Taiwan 12 Projects: Intelligent Taiwan, the DoIT has been developing advanced IT software and IT-enabled services to construct a service system in support of the implementation of policies such as "smart life", "health/medical care", "cultural creativity", and "intelligent green building". Through the resources of TDPs and with the focus on "low-carbon home", "smart life", "broadband technology", and "networking world", the DoIT has been engaged in developing next-generation mobile communications, WiMAX (Worldwide Interoperability for Microwave Access), medical electronics, intelligent sensor networks, intelligent green/car electronics, telematics technology, flexible electronics, 3D IC, embedded software platforms, advanced graphic and video software, and communications systems under the themes of "Internet of Things", "digital convergence", "smart electronics", "smart network communications", "smart audio and video", and "smart basis technologies". Through the development of commonality technologies and fundamental technologies, the DoIT hopes to promote the cross-domain applications of various technologies, while providing smart life experiences via smart networks, and transforming domestic industries to high value-added, knowledge-based service industries through enhancing service, content, and hardware/software.

Streamlined Manufacturing Technology

Taiwanese industries' growth momentum comes from the manufacturing industry. In the process of product and technology enhancement, Taiwanese industries tend to focus on the materials and components in the upstream industrial chain. In response to the needs of upgrading technologies and industries, attracting investments in Taiwan by overseas Taiwanese enterprises, coping with the aging society, and improving quality of life, Taiwan should quest for high values, precision, intelligence, and systematization with its advantages in metal, electronics, and ship construction technologies to correspond with the global innovation and development trend. It is also important for Taiwan to establish innovative R&D clusters formed by industries with local distinctiveness to create competitive differentiation, while devising new service concepts and business models to provide new service-oriented growth momentum for the manufacturing industries. Covering machine tools, intelligent automation, industrial machinery, the Laser Optics Valley, and regional industries, the domain of streamlined manufacturing focuses on developing metal materials for the green industry, green boats, next-generation intelligent factory control systems, innovative applications of regional industries, high-end manufacturing systems, and semiconductor production processes. In pursuit of a manufacturing-centric industrial chain in which the upstream material drives the development of manufacturing, automation, and services at the downstream, the DoIT has been constructing an intangible economy propelled by technology- and service-oriented policies to enhance Taiwanese manufacturing industry's hardware power.

Well-being Innovation

Fulfilling citizens' livelihood needs and creating a healthy and comfortable living environment have become the goals of living technologies. Hence, in compliance with the national policies such as the Six Major Emerging Industries - Action Plan for Biotechnology Industry, Four Major Emerging Intelligent Industries, Ten Key Service Industries, Energy Saving and Carbon Reduction, and i-Taiwan 12 Projects, the DoIT has set eyes on the development of nano materials and production processes, high-tech textile products, high-tech fibers, target drug research and technology platforms, protein drugs, herbal medicines for liver cancer and anti-inflammatory medicine, alert and diagnostic medical equipment, food and biotechnology production equipment, high-efficiency separation and purification technology, and high-end medical equipment under the themes of "high-value materials chemistry", "high-value textiles", "biopharmaceuticals", "medical equipment", "high-quality food", and "fundamental technologies". With these efforts, the DoIT anticipates to establish an all-round infrastructure for Taiwan's well-being industries, improve the structure of the medical equipment industry, and reinforce and expand the R&D of food and biological resources, thereby improving the quality of life in all aspects in Taiwan, from food to clothing, accommodation, transportation, education, entertainment, and health.

Green Energy Technology

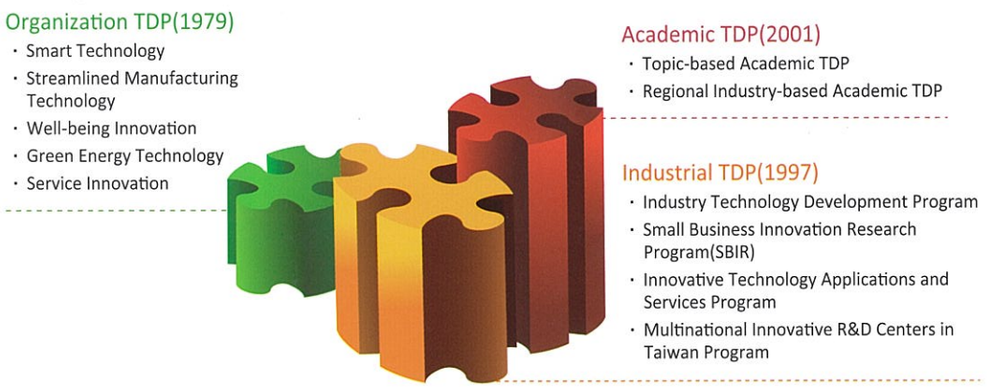
In the face of climate change and the needs of energy saving and carbon reduction, major countries in the world have launched Green New Deal policies. In coordination with the Taiwanese government's Dawning Green Energy Industry Program, the DoIT has put Taiwan's solid technology R&D and manufacturing capabilities to full use, including ICT (Information and Communication Technology), mechanical and electrical, metal, compound materials, and electronic control industries. With the focus on smart electric vehicle, lighting and display, solar power, advanced green energy materials, power storage system, and fundamental technology, the DoIT has developed a variety of green industries including EV (Electric Vehicle) modules, key technologies for intelligent vehicles, next-generation power storage components and systems, touch panel, CIGS-based ($CuInGaSe_2$) solar cell, biomass materials, high-efficiency display and lighting optoelectronic materials, and electric urban transport systems. Through the development of clean energy technology, the use of the niche technologies, and intellectual property in the green industries (Solar Photovoltaics, display and lighting, and intelligent vehicles), the DoIT hopes to help Taiwan become a key technology and system supplier in the global green industries. In addition, by developing key materials, equipment, production processes, products, and verification technologies associated with energy efficiency and carbon reduction, the DoIT expects to strengthen Taiwan's industrial competitiveness and create new opportunities, with an aim to create an energy-efficient society and low-carbon economy.

Service Innovation

The service industry accounts for nearly 70% of Taiwan's economy as well as a large share of Taiwan's employment market; however, its contribution to Taiwan's economic growth is lower than other industries. Since economic development is closely related to an optimal industrial structure, the DoIT has been promoting application services catering to public needs and stimulating the development of the IT-enabled service industry based on Taiwan's ICT strength in accordance with the Intelligent Taiwan policy. To promote the services and future research, the DoIT has launched TDPs and built up test fields. With the focus on value-added cloud services (such as cloud computing systems, software, information security, and applications), smart life technologies (such as smart towns or smart parks), innovative technology services (such as IT-enabled application services, internationalization of the service industry, and system services), and proactive technologies, the DoIT hopes to create a smart life based on the emerging cloud concept and explore new business opportunities for the service industry through leveraging resources in the industrial, academic, and research sectors. DoIT also hopes to improve the service industry's problem-solving and consultation capabilities, encourage IT players' R&D investments, and accelerate creation of international service companies via the establishment of large-scale service system. Promoting service innovation and inciting systematic and converged innovation in the service industry will help Taiwan develop an innovative service-based economy in order to facilitate the export of Taiwan's service systems and to develop new business opportunities.

Promotion and Achievements of the Technology Development Programs (TDPs)

In a bid to keep pace with the trends and the needs of the industries, develop and introduce necessary technologies, and transfer R&D technologies to the industries, the DoIT has established three policy instruments including the organization TDP, industrial TDP, and academic TDP. The organization TDP was first introduced in 1979 when the small and medium enterprises (SMEs) constituted the main force of Taiwan's industrial development and the capital and resources were limited. Therefore, technological research institutes such as Industrial Technology Research Institute (ITRI) and Institute for Information Industry (III) were established to carry out R&D activities with governmental funds, and then transferred their R&D results to enterprises to help them develop industrial technologies. In 1997 the industrial TDP was launched to encourage industrial innovative R&D by providing subsidies and granting intellectual property ownership so as to further boost industries' capability in independent technology innovation. As Taiwanese industries progressed into the innovation-oriented phase, the academic TDP was launched in 2001 to leverage the academic field's fundamental R&D strength. Through encouraging universities and colleges to establish inter-school or departmental R&D centers and incubating R&D teams on the campus, the academic TDP has supported industries in the development of advanced innovative technologies.



Promotion Strategies

Organization TDP

Through eighteen research institutes including ITRI, III, Development Center for Biotechnology (DCB), and the Metal Industries Research and Development Center (MIRDC), the organization TDP is dedicated to the development of key and forward-looking innovative technologies, while constantly improving the environment and infrastructure for R&D. The R&D focus of the organization TDP is on cross-domain integration and development of technologies including smart technology, streamlined manufacturing technology, well-being innovation, green energy technology, service innovation, and industry fundamental technology. Also, the organization TDP aims to promote innovative business models and expand technological applications, so as to help the domestic industry enhance innovation capability and develop steadily.

Next-generation mobile communications, wireless broadband systems and convergence, medical electronics, smart sensor network and services, smart green electronics/automobile electronics, flexible electronics modules and applications, advanced interactive and 3D display systems, 3D IC, embedded software and livelihood service platform, advanced graphic and video software, communications system technology.

Metal materials for green industries, high value-added metal materials, precision equipment for metal components, next-generation smart factory control system, high value-adding applications for traditional industries, development of emerging industries in Southern Taiwan, industrial innovation and feature resources in Eastern Taiwan, high-end manufacturing systems, semiconductor equipment and technology.

Applications of fine chemicals, nano materials and production process, hi-tech textiles, functional textiles, hi-tech fiber materials, target medicine R&D and technology platform, protein medicine, next-generation antibody drugs, herbal medicine for liver cancer and anti-inflammatory purpose, alert and diagnostic medical equipment, advanced dental equipment, biological resources, high-efficiency separation and purification, high-end measurement instruments, high-end medical equipment and technology.

Electronic vehicle system modules, advanced smart vehicle system, next-generation flexible electronics equipment and modules, CIGS solar cells, biomass materials, portable electric and thermoelectric materials for power generation, high-efficiency display and lighting optoelectronic materials, electric urban transport system technology.

Value-added cloud services (such as cloud computing systems, software, and information security, and applications), smart life technologies (such as smart towns and smart parks), innovative technology services (such as IT-enabled application services, internationalization of the service industry, and system services).

Industrial TDP

The industrial TDP, funded in part by government, seeks to improve the willingness of enterprises to invest in technology R&D and strengthen the applications of technological innovation in enterprises. Also, the industrial TDP encourages enterprises, in line with the transformation of industrial structure, to adjust their development strategies from manufacturing to innovative technology applications and services, exploring new services and business models. Moreover, through the establishment of domestic and international R&D centers in Taiwan, the industrial TDP will be able to continue to accumulate R&D capability and innovation momentum for the future development of Taiwan's industry.

Industrial Technology Development Program

Also known as the "Great Enterprise Project," funded in part by government, this program seeks to reduce the risk and costs of innovative R&D by the enterprises and to encourage their investments in industrial technology R&D, and all the R&D results will belong to the enterprises. Since the launch in 1997, this program has been met with enthusiastic response and has covered the areas of communications and optoelectronics, machinery and transportation, materials and chemical engineering, as well as biotechnology and pharmaceuticals.

Small Business Innovation Research Program (SBIR)

To encourage SMEs to engage in the innovative R&D of industrial technologies, products and services, the government has started promoting the "Small Business Innovation Research Program" (MOEA SBIR) in February 1999. In 2008, the "Promotion of Innovative R&D for Local Industries Program" (Local SBIR) was implemented, marking the start of the government's active involvement in the R&D of industries with local characteristics. In response to fast industrial changes, the program will regularly and properly review funds allocated for promoting the innovative R&D projects by local industries to ensure that funds are catering to the R&D demand of SMEs to help SMEs grow stronger, upgrade and transform.

Innovative Technology Applications and Services Program

This program encourages enterprises to explore the trend of innovative demand in the aspect of industry, society, and life. Moreover, through the integration and application of technologies, this program seeks to accelerate the servitization of manufacturing industries, manufacturing and service integration, service innovation, technology-based service industries, and development of emerging applications and services.

Multinational Innovative R&D Centers in Taiwan Program

To push Taiwan's industry to progress from manufacturing towards innovation, R&D, and service, and in line with the national policy of transforming Taiwan into a global center of innovation, the DoIT encourages domestic and multinational enterprises to establish R&D centers in Taiwan, in hope of achieving definitive and complementary effects on Taiwan's industry through the introduction of global innovation resources.

Academic TDP

Through full subsidization, the academic TDP is designed to encourage the universities to utilize their R&D facilities and resources to develop advanced and innovative industrial technologies, so as to spawn leading technologies for use in the industry. Furthermore, leveraging the R&D capability of the academia, the academic TDP aims to boost the value of existing industrial technologies while consolidating the cooperation of R&D teams between the industry and the academia, so as to assist in the further development of the local industries.

Topic-based Academic TDP

The "Academic Development of Industrial Technologies" program was launched in 2001 to encourage the establishment of topic-based R&D centers in the universities for long-term, stable and in-depth development of advanced and innovative industrial technologies, while encouraging the cooperation mechanism among industry, academia, and research institutes to facilitate the transfer of R&D results.

Regional Industry-based Academic TDP

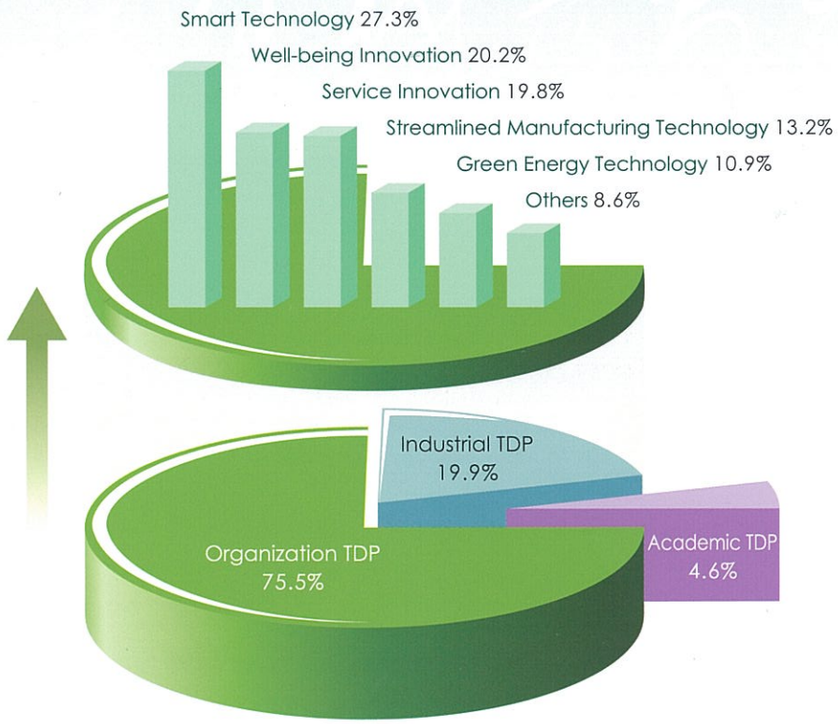
Launched in 2007, the "Value-adding Academic TDP for Regional Industry" program targets the technology R&D of specific industries or regional industrial development, seeking to stimulate the development of local industries.

Budget Allocation

In order to accelerate industrial technology development and creation of value, the TDPs join the forces of research institutes, industry, and academia while deepening the cultivation of industrial technological R&D and innovation activities through continuous investment of scientific research funding on an annual basis. Of the overall budget, the organization TDP accounts for a share of approximately 70%, which indicates the significant role played by the organization TDP in complementing the R&D activities of the industry and transferring the R&D results to the private sector. The industrial TDP accounts for around 20% and are designed mainly to encourage and assist the innovation R&D activities by enterprises. The academic TDP accounts for about 4% of the overall budget, and is designed for the introduction of fundamental R&D strength in order to develop advanced and innovative technologies.

DoIT TDP Budget, 2007 ~ 2012 (NT$ 1 billion)

DoIT TDP Budget Allocation by TDP Type, 2012



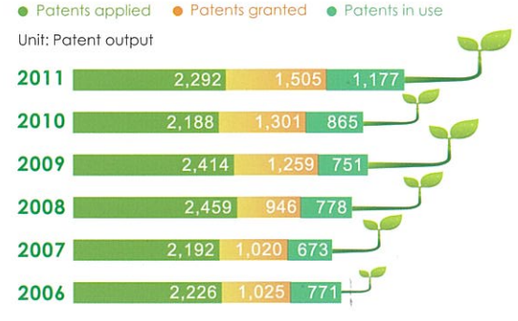
Accomplishments

Organization TDP

The organization TDP aims to cultivate industrial technologies and enrich technological capabilities. Thus far, organization TDP has seen fruitful results in technology and patent development. Moreover, via the value-adding of R&D results and the mechanism of diffusion, the DoIT has succeeded in optimizing the effects of R&D application, which in turn has driven the corporate investments in R&D and spawning new industrial value.

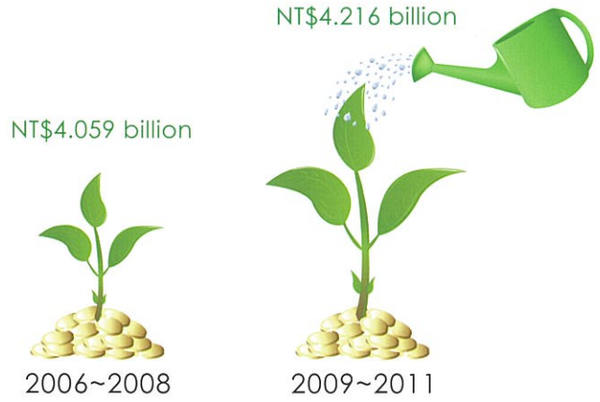
1. Patent Output

The organization TDP has concentrated on the strategy of patent deployment addressing both quality and quantity in recent years, in a bid to optimizing the TDP results. On average, the annual number of patents granted rose from 1,025 in 2006 to 1,505 in 2011and the annual number of patents in use grew from 771 in 2006 to 1,177 in 2011, with an average annual growth rate of nearly 10%, thereby enhancing the technological competitiveness of Taiwan's industry.



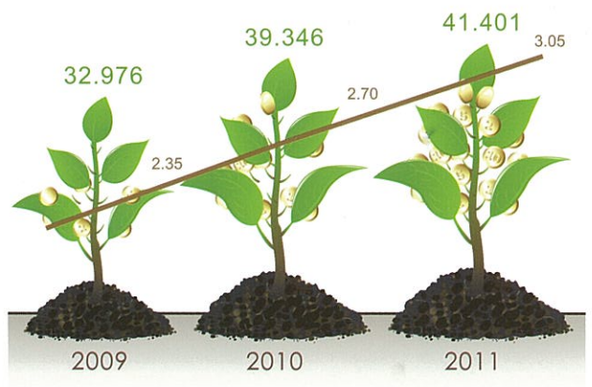
2. Advantages Derived from Technology and Patent Transfers

To encourage the enterprises to continuously invest in technology R&D and corresponding applications, the organization TDP has provided a flexible approach for technology transfer, which is designed to meet the needs of the industry and economic development. From 2009 to 2011, despite the threats of global financial crisis, the revenue derived from technology and patent transfers of the organization TDP amounted to more than NT$4.2 billion, recording 3.8% growth compared with the period 2006 to 2008. In the long term, it is expected that organization TDP will effectively close the gap between the demand and supply of industrial technologies.



3. Private-sector Investments Stimulated by Organization TDP

In recent years, the government has actively encouraged the investments from international businesses and the Economic Cooperation Framework Agreement (ECFA) has been made effective. For the period 2009 to 2011, the organization TDP has stimulated corporate investments, with the investment amount totaling to approximately NT$113.7 billion; on average, the effect of investment created per NT$ 1 organization TDP funding grew from 2.35-fold in 2009 to 3.05-fold in 2011. In addition to stimulating the corporate investments, the organization TDP has succeeded in sustaining the growth of Taiwanese industries.



Industrial TDP

By means of government subsidization, the industrial TDP is able to enhance the enterprises' willingness to engage in technology R&D that is forward-looking but high-risk, and make a long-term R&D deployment in advance. In addition to inducing the industry to engage in R&D activities, the industrial TDP also encourages the enterprises to increase and accumulate the value of intellectual properties, cultivate and promulgate R&D personnel, start up new business units or new companies, and engage in innovative product development and services, which all serve to boost the competitiveness of the enterprises.

Industrial Technology Development Program

As of the end of August 2012, 882 projects had been approved, with 1,402 enterprises participated in, and approximately NT$45.3 billion had been invested by the enterprises, with nearly 17,000 R&D professionals involved therein. On average, a production value of NT$11.34 was created per NT$1 funded by the government.

Small Business Innovation Research Program (SBIR)

As of the end of August 2012, the Small Business Innovation Research Program (MOEA SBIR) had approved 4,662 innovative research projects, and encouraged SMEs to invest NT$16.9 billion in R&D, with more than 43,000 people directly engaged in the program. The Promotion of Innovative R&D for Local Industries Program (Local SBIR) had approved the funding for 996 projects submitted by 14 counties and cities such as Taipei City, New Taipei City, and Miaoli County as of the end of December 2011, leading to a total investment of more than NT$1.1 billion by SMEs and gradually increasing R&D capability of local industrial clusters. In 2012, there were a total of 17 counties and cities applied for funding through Local SBIR such as Taoyuan County, I-lan County, and Taitung County. Corresponding funding allocated by individual cities/counties totaled around NT$114 million while corresponding funding allocated by MOEA totaled to around NT$239 million.

Innovative Technology Applications and Services Program

Since February 1999 through the end of August 2012, this program had approved the funding for a total of 416 projects, prompting the enterprises to raise and invest approximately NT$12.4 billion, with more than 7,800 R&D professionals directly engaged in the program. The industries covered include both manufacturing and service areas.

Multinational Innovative R&D Centers in Taiwan Program

Accumulated from 2002 to the end of August 2012, this program had contributed to the establishment of 150 R&D centers by domestic enterprises and 54 R&D centers by 38 multinational companies in Taiwan, expected to conduct over 890 R&D cooperation projects in Taiwan and involve a total R&D investment of more than NT$50.0 billion.

Academic TDP

By means of financial funding, the academic TDP has assisted Taiwanese universities in setting up topic-based R&D centers and utilizing the existing fundamental R&D capacity and facilities to deploy in long-term R&D of advanced and innovative technologies. This program has made considerable contributions to technology upgrades of Taiwan's industry and the creation of new high-tech industries.

Topic-based Academic TDP

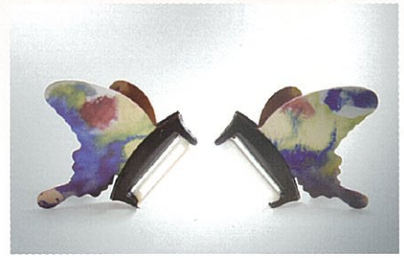
This program aims to help the establishment of topic-based R&D centers for advanced and innovative technologies, prompting academia and industry to set up a more closely bonded mid-term collaboration model. As of the end of August 2012, 29 universities established 98 topic-based advanced and innovative industrial technology R&D centers, resulting in 3,269 patents applied, 780 patents granted, 267 international cooperation projects, 413 cooperation projects among industry, academia, and research institutes, 874 technology transfers (representing a value of approximately NT$400 million), 1,905 transferrable industrial technologies, and 782 commissioned projects (valued at about NT$700 million).

Regional Industry-based Academic TDP

In order to tighten industry-academia collaboration across various fields and schools as well as to facilitate the implementation of R&D results, this project aims to help academia apply their existing technologies to industry R&D and strengthen the collaboration and interaction between industry and academia. As of the end of August 2012, a total of 66 schools applied for 195 projects, of which 79 completed the signing of contracts, six are undergoing detailed plan review. This project has supported 44 universities with 79 R&D centers featuring specific local characteristics, which serve to provide references for regional industrial technology consultation and cooperation.

2012 Year in Review: Transformation and Transcendence

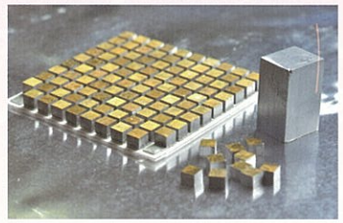
Evolution of DoIT



In the 1970s, the development of Taiwanese industries had just progressed into the efficiency-driven stage. Recognizing the importance of technology improvement on industrial competitiveness, the government established the Science and Technology Advisory Office at the Ministry of Education, the Ministry of Economic Affairs, the Ministry of Transportation, and the Ministry of National Defense in 1979. The DoIT was derived from the Science and Technology Advisors Office. To help Taiwanese industries with technology development, the DoIT launched the government-funded organization TDP to assist the development of key industrial technologies and infrastructure, and then transferred the R&D results to enterprises to encourage their involvement in R&D. After enterprises having accumulated R&D capability, the DoIT initiated the industrial TDP to help improve enterprises' R&D strength in line with the organization TDP's innovative projects. Afterwards, the academic TDP was launched to help enterprises develop proactive and innovative technologies, set up R&D centers, construct innovative R&D sites, and improve fundamental technologies. The DoIT also carried out projects on innovative technology applications and services to increase industries' added value. By encouraging domestic industries' participation through policies, the DoIT hopes to spark more industrial innovation. Over the past 30 years, we have constantly adjusted industrial technology development policies, making sure the policies or measures conform to the development status of the industries, so that the TDPs can lead Taiwanese industries towards a knowledge-based, innovation-oriented economy from the labor-intensive and production-oriented stage. Our efforts have successfully pushed Taiwanese expertise to the international stage, laying a solid foundation for Taiwan's industrial development. In the future, the DoIT will continue to drive industrial technology development and innovation through TDPs, integrate cross-industry resources, construct a cooperative innovation platform, and develop diversified innovation models to constantly revive Taiwan's innovation systems, consolidate industries' core competitiveness, and boost momentum for Taiwan's industrial development and economic growth.

Fundamental Technology Consolidation and Industry Innovation Stimulation

Innovation capability and command of key technologies have become essential tools for companies to compete in the ever-changing global market. They are also the foundation of an optimized industrial structure. To improve Taiwan's R&D and innovation ability as well as independent development of key materials and components, the DoIT



has been consolidating industry fundamental technologies and constructing regional innovation networks in recent years. Through converged resources from the industrial, academic, and research sectors and the assistance of regional innovation sites, the DoIT hopes to make up Taiwanese industries' development weaknesses, and achieve technology optimization and innovation, thereby accelerating Taiwanese industries' improvement in the ongoing process of innovation and perfection.

The Executive Yuan approved a project of strengthening the development of industry fundamental technologies on July 19, 2012, to help Taiwanese industries enhance their fundamental technologies and develop high-end, high value-adding products. The project will integrate resources from the MOEA, National Science Council, and Ministry of Education to provide full support for industry, academia, and research institutes in the development of fundamental technologies and personnel training, while encouraging them to strengthen technology development to improve Taiwanese industries' added value to the ultimate perfection. To assist the implementation of the said project, the DoIT launched a series of programs successively. The industrial TDP places a high priority on projects proposed by materials, chemical, chemical engineering, textile, and machinery industries. The academic TDP effectively connects colleges and universities with industries' labs or research centers to carry out research on international cases. The organization TDP proposes projects conforming to published requirements in a bid to compensate Taiwanese industries' weaknesses in fundamental technologies through the development strategies of chemical engineering materials, machinery, electronics and software. Through the synergy of the TDPs which encourages industry, academia, and research institutes to jointly develop key technologies and provide personnel training, the DoIT helps industries overcome R&D bottlenecks, transforming Taiwan into a high-end manufacturing country. The fundamental technologies not only increase the added value of products, but also strengthen Taiwan's global competitiveness.

To converge and stimulate domestic industries' innovation momentum, create cluster effect, encourage regional developments based on their characteristics and advantages, and enhance industries' capabilities and values, the DoIT has made various achievements in accordance with regional industries' features and demands, as well as the industrial innovation corridor policies of the government's i-Taiwan 12 Projects. The achievements include establishing distinctive industrial R&D bases or parks, Southern Taiwan Innovation and Research Park, the south branch of the ITRI, the Yuanlin branch of Taiwan Textile Research Institute (TTRI), Eastern Industrial and Technological Service Center (EITSC), Eastern Taiwan Deep See Water Innovation & Research Center, and Chiayi Industry Innovation and Research Center. Currently, the DoIT is constructing an innovation park in Central Taiwan to increase industrial R&D capability in this region. The development of high-value metal, petrochemistry, and chemical engineering industries as well as the Laser Optics Valley has also been underway to provide new development momentum for Southern Taiwan. Through related policies and projects and a close tie with local industries, the DoIT hopes to boost regional development via industrial clusters and stimulate emerging industries. Meanwhile, the DoIT has continued to roll out innovative R&D projects for traditional industries to help all industries utilize the technology power and platform resources accumulated from the organization TDP. With the popularization of the TDP achievements, regional economy and industrial innovation capability will enhance significantly.

Service Innovation Planning and Promotion

Amid the fast global economic changes, Taiwan's economy and industries must develop new business models, and service innovation is an important focus for Taiwan's economic transformation in the future. Hence, enacting service innovation policies in compliance with social transition and lifestyle changes, rather than focusing on production, has become MOEA's focal tasks in recent years.

To reinforce the integration of existing and new R&D innovation values, create new industrial development models and structures, stay close to people's lives, and address social development needs, the DoIT has consistently transformed research institutes' technological strength to drive innovation in the service industry, promoted IT-enabled services with sales potential in Taiwan and overseas, and carried out case studies on service-oriented manufacturing industries or IT-enabled service industries. Under the guidance of the industrial TDP and the concept of service system integration, industries are encouraged to initiate R&D on service innovation, such as user demand analysis, market survey, business model innovation and service system development. With the focus on smart life services, health care, and cloud computing, Taiwanese service industries are expected to explore new business opportunities. With strengthening the connection of academic research power and industrial development trends in mind, the DoIT rolled out the Innovation and Development Program for Strategic Service Industries and the Construction and Development of Platform of Industrial Innovation Capability under the academic TDP, which aim at attracting the academic community to take part in research on the business models and technology applications of service industries. DoIT has also aggressively combined governmental and civil resources to create a comprehensive verification environment for commercial business models and systems. By putting innovation into effect and consolidating new innovation services to help the enforcement of the "Three Industries, Four Reformations" policy, which focus on developing a service-oriented manufacturing industry, an internationalized and high-tech service industry, and a distinctive traditional industry, the DoIT has successfully accelerated upgrading and transformation of the service-based economy.

Annual Awards

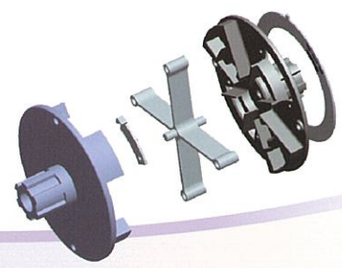
Besides actively enhancing key technology R&D, the DoIT has also placed a high value on both the quality and quantity of TDP results. The introduction of "Dechnology", a combined concept of design and technology for value adding, has significantly boosted the value of TDP results and Taiwan's technology capabilities. Following the international awards in 2011, several R&D achievements have won international recognition in 2012, dramatically enhancing the international presence of Taiwan's industrial technologies and innovative design.

- Lignoxy - LBP (Lignin-based Polymer Technology), 2012 R&D 100 Awards
- TEMM (Thermoelectric Material and Module Technology), 2012 R&D 100 Awards
- ae Plasma - Atmospheric Environment Plasma Coating Technology, 2012 R&D 100 Awards
- Sidelighter - Optical Microstructure-based Concentrator Photovoltaic Technology, 2012 R&D 100 Awards
- Light & Light - A19 LED Light Bulb Technology, 2012 R&D 100 Awards
- RFID-mf - Metal-friendly RFID Technology for Metallic Objects, 2012 R&D 100 Awards

- UV Handrail, 2012 iF Product Design Awards 2012
- Green Gap Power System, iF Product Design Awards 2012
- S.A.M (Smart Asthma Monitor), iF Product Design Awards 2012
- Ozone Float, iF Product Design Awards 2012
- Color Changing Splint, iF Product Design Awards 2012
- Cocoon Shoe, iF Product Design Awards 2012
- inMedia Kiosk, iF Product Design Awards 2012
- Glare Shade, iF Product Design Awards 2012

- Integrated Beam-type Torque Sensor, Gold Medal, 2012 International Exhibition of Inventions in Geneva
- Moving Object Detection System, Silver Medal, 2012 International Exhibition of Inventions in Geneva
- Navigation System for Myoma Resection Surgery, Gold Medal, 2012 International Exhibition of Inventions in Geneva
- Less Invasive Stabilization System for Dorsal Distal Radius, Silver Medal, 2012 International Exhibition of Inventions in Geneva
- Auxiliary Apparatus for Transmission, Gold Medal, 2012 Pittsburgh International Invention Show
- Coplanar Three-axis Positioning Device, Silver Medal, 2012 Pittsburgh International Invention Show

※Award information for 2012 as of August 2012



Future Outlook

Since their launch in 1979, the TDPs have been endowed with the mission to inherit the past and create the future in light with economic environmental changes during industrial technology development. Over the past few years, the world is challenged with recessing economy, industrial structure changes, and the issues of sustainable resources and intellectual property disputes. Therefore, the DoIT will continue to adhere to the government's key policies and the principle of "Innovative Economy, LOHAS Taiwan" to develop a service-oriented manufacturing industry, an internationalized and high-tech service industry, and a distinctive traditional industry. In conformance with social context and economic development requirements, the DoIT will continue to promote TDPs to enhance regional R&D capability, encourage joint innovation activities among industry, academia, and research institutes, and prompt internationalization of innovation and R&D to revive Taiwan's creativity. In addition, the DoIT will set up new measures to support industrial R&D, devise national intellectual property strategies to enhance industrial competitiveness, and strengthen strategic planning for advanced technologies and value-added R&D, while guiding industries to develop fundamental technologies, emerging technologies, service innovation and system integration. With these efforts, the DoIT aims to optimize industrial structure, create new values, and increase international competitiveness, thereby fulfilling the vision of an innovative economy.

Support new industrial R&D measures

- Enhance industrialization of R&D results
- Fund enterprises' value-added application R&D
- Diversify SMEs' innovative R&D
- Support enterprises in upgrade and transformation in response to trade liberation
- Promote national guidelines for intellectual property strategies

Strengthen R&D strategy planning

- Common fundamental technology planning
- Advanced technology promotion strategy planning
- Value-added industrial technology strategy planning

Pioneer key industrial R&D

- Deepening fundamental industrial technologies
- Emerging industrial technology R&D
- Service innovation and system integration application

Enhance regional innovation capability

- Chung Hsing New Village Higher-Level Research Park
- Chiayi Innovation Industry Research and Development Center
- Promotion of innovated R&D capability in Southern Taiwan(Laser Optics Valley, development of high-value metal, petrochemistry and chemical engineering industries, Southern Taiwan Innovation & Research Park)
- Eastern Taiwan Industrial Technology Service Center
- Eastern Taiwan Deep Sea Water Research and Development Center

Innovation linkup between industry, academia, and research institutes

- Support local industry innovation
- Assist innovation alliances of traditional industries
- Support academic involvement in SME technological development

Encourage international innovative R&D

- Encourage establishment of R&D centers in Taiwan
- Push overseas R&D of research institutes
- Promote cross-strait industrial and technological cooperation

Taiwan's Technological R&D Competitiveness

Technology and innovation are the key driving forces for a nation's economic growth and global competitiveness. Over the years, the DoIT has been assisting industries to build up R&D capability with the implementation of TDPs, and has made abundant technological achievements. Taiwanese industries' technology development has also won international recognition. Taiwan's outstanding ranking in the reports released by the International Institute for Management Development (IMD) and the World Economic Forum (WEF) in recent years has proved its stunning technology development and innovation capability among other leading countries.

In the WEF Global Competitiveness Report 2012-2013, Taiwan was ranked 13th out of the 144 economies worldwide and the 4th in Asia. Besides a significant increase in the competitiveness ranking, Taiwan was ranked 1st in the world under the State of Cluster Development category. In IMD's 2012 World Competitiveness Yearbook (WCY), Taiwan demonstrated excellent achievements in science and technology infrastructure with the 7th ranking among the 59 economies covered by the WCY, and the 3rd ranking in Asia. In terms of Patents per One Million Population, Taiwan has continued to stay at the top, indicating our diligent effort in encouraging innovation has paid off.

Despite the unstable economy worldwide, Taiwan has managed to maintain strong competitiveness and demonstrated great tenacity and enthusiasm in developing competitive technologies. The long-term investment has laid a solid foundation for Taiwan's technology innovation. In the future, the DoIT will continue to lead innovation by reinforcing integration of domestic resources, developing core industrial technologies, and building a platform for cooperative innovation among industry, academia, and research institutes. The transformation of technological resources to economic value will continuously boost Taiwan's competitive edges.

IMD Scientific and Technological Subindex

Technological Infrastructure		Scientific Infrastructure	
1st	Hong Kong	1st	United States
2nd	United States	2nd	Japan
3rd	Singapore	3rd	Germany
4th	Taiwan	4th	Israel
5th	Israel	5th	Korea
13th	Germany	7th	Taiwan
14th	Korea	8th	China
24th	Japan	13th	Singapore
26th	China	21st	Hong Kong

WEF Innovation and Sophistication Factors

Innovation and Business Sophistication	
1st	Switzerland
2nd	Japan
3rd	Finland
4th	Germany
7th	United States
14th	Taiwan
17th	Korea
22nd	Hong Kong
34th	China

Source: The World Competitiveness Yearbook 2012 (IMD), The Global Competitiveness Report 2012-2013 (WEF)

R&D Service Teams

Research Institutes Participating in TDP Execution

The DoIT integrates the resources of various research institutes in Taiwan for joint promotion of TDPs on R&D of advanced technologies in diverse areas of specialization.

Institute of Nuclear Energy Research, Atomic Energy Council, Executive Yuan	www.iner.gov.tw
Chung-shan institute of Science and Technology, Armaments Bureau, Ministry of National Defense	www.csistdup.org.tw
Industrial Technology Research Institute	www.itri.org.tw
Animal Technology Institute Taiwan	www.atit.org.tw
Development Center for Biotechnology	www.dcb.org.tw
Stone & Resource Industry R&D Center	www.srdc.org.tw
Printing Technology Research Institute	www.ptri.org.tw
Cycling & Health Tech Industry R&D Center	www.tbnet.org.tw
Automotive Research & Testing Center	www.artc.org.tw
Metal Industries Research & Development Centre	www.mirdc.org.tw
Food Industry Research and Development Institute	www.firdi.org.tw
Taiwan Textile Research Institute	www.ttri.org.tw
Commerce Development Research Institute	www.cdri.org.tw
National Health Research Institutes	www.nhri.org.tw
Ship and Ocean Industries R&D Center	www.soic.org.tw
Plastics Industry Development Center	www.pidc.org.tw
Institute for Information Industry	www.iii.org.tw
Precision Machinery Research & Development Center	www.pmc.org.tw
Footwear & Recreation Technology Research Institute	www.bestmotion.com
Medical and Pharmaceutical Industry Technology and Development Center	www.pitdc.org.tw
Center for Drug Evaluation, Taiwan	www.cde.org.tw

TDP R&D Funding

In order to assist the enterprises in applying for R&D funding and provide industrial technology information and market analysis, the DoIT has set up several dedicated project promotion offices.

Multinational Innovative R&D Centers in Taiwan Program	http://innovation5.tdp.org.tw
Industry & Technology Intelligence Services (ITIS) Project Office	http://www.itis.org.tw

Fabric Garden

High-tech industries have been the support for Taiwan's national power. Due to industrial innovation and market changes, technology development has shifted from manufacturing-oriented to creating products that touch consumers' hearts, and deriving innovation based on people's lives. Taking the responsibilities of improving Taiwanese industries' technologies, the DoIT of the Ministry of Economic Affairs lanunched several TDPs in recent years. By blending the technologies of TDPs into design, the DoIT hopes to connect technology and design through innoative policies, and integrate the two elements as the core of Taiwan's soft power, while increasing the value of TDP results to accelerate development and introduction of new products and new markets, creating new business opportunties. With joint effort from different fields, the synergy of technology and design has achieved significant results. In recent years, despite dozens of TDP achievements having won Germany's iF Design Award, Fabric Garden broke the TDP record with the first gold medal. The award is an evidence that this innovative product featuring a combination of creative technologies, eco-friendly ideas, and user demands has won international recognition.

Fabric Garden is a product generated from the collaboration of Taiwan Textile Research Institute (TTRI) and Gixia Group under the Ministry of Economic Affairs' TDPs. Fabric Garden is a light, compact, tenacious, and soft plantation system consisting of fabric cloths made from PET bottles and fabric stuffing. It can replace soil and develop into various sizes. Whether spread out or hung up, it allows plants to grow on both sides of the fabric, forming an eye-catching artificial landscape or used in green construction.

Such vertical gardening not only creates new green space and fulfils the idea of "planting trees in the ground (reduce global warming), and planting flowers on textiles (increase greening)", but also extends the possiblities of an aesthetic life. This unprecedented product has been used outside the Pavilion of Dreams building at the 2010 Taipei International Flora Exposition and in Jimmy the illustrator's "Hiding in the Corners of the World" animated puppet show at Dream Theater. Having been commercalized, Fabric Garden is now available at Taiwan's B&Q stores. The Fabric Garden is a sign that Taiwanese industries are progressing from contract manufacturing-centric to independent design and development-centric, thereby ushering a new era of innovation for Taiwanese industries.