Reinvent the HSP: Sustain the Tangible With the Intangible

Established 37 years ago, the Hsinchu Science Park (HSP) now comprises the Hsinchu, Jhunan, Longtan, Tongluo, and Yilan parks as well as the Hsinchu Biomedical Science Park. Combined, some 500 tenant companies have generated annual revenues of over NT$1 trillion in recent years. A good number of products rank No.1 by production value worldwide. Technology companies that operate in the HSP have not only formed industry clusters not seen anywhere else but also helped drive Taiwan’s industrial upgrading and economic growth. Today, Taiwan’s technology industry commands a solid footing in the world arena precisely because of this unique competitive edge.

The Hsinchu Science Park Bureau (HSPB) has long been committed to promoting innovation. Priority has been given to crafting a well-rounded, quality environment and offering comprehensive services needed for starting and operating businesses, thereby helping the local technology industry move up another rung. And now it is ready to build on tenant companies’ hard-earned strengths in the ICT sector for making inroads to 5G, Internet of Things (IOT), and smart electronics applications. Coupled with the Ministry of Science and Technology’s pooling resources across industry, academia, and research institutions to develop AI technologies, HSP companies are poised to move to the next level in integrating the tangible and intangible and thus outshine themselves on the world stage.

With global competition intensifying and closing in, the HSPB recognizes the need to persist with driving innovation and creating new paradigms. In the near term, emphasis will be placed on fostering innovative startups and software design ventures. In 2018, construction is due to kick off on a software R&D building while outdated, low-capacity standard plants will be renovated. Meanwhile, the HSPB is ready to update its blueprint for industry-academia collaboration with a view to formulating a new technology ecosystem conducive to next-generation innovation. All in all, the HSPB aims to develop an open platform that gathers government agencies, industry members, and academic and research institutions and pools their resources to
build an environment conducive to inspiring innovation and facilitating startups. Another goal is to accelerate the development of Taiwan’s AI industry and training of manpower on this front at a time when the world is about to usher in a new era of AI. It is no understatement to say that software now trumps all. By funneling government resources, the HSPB hopes to help tenant companies sail into a new “blue ocean.”

Over the years the HSPB has considered its mission to place equal emphasis on cultural refinement and environmental sustainability, thereby ensuring that the six HSP parks always remain the top choice for technology companies, even as it seeks to promote both industrial development and economic growth. That is why I have been proactive to promote cooperation across the neighboring cities and counties since assuming office in order to establish a quality environment that offers convenience and amenities in traffic, environmental protection, and daily lives crucial for both residential and industrial considerations. This unwavering push for connecting technology and the humanities, fostering regional cooperation, and building a relationship of reciprocity and mutual prosperity with local communities has consolidated the HSP’s standing as the most locally engaged setting in Taiwan that is not only inspirational to innovative startups but also capable of meeting the needs for quality life and recreation after work.

The HSPB regards 2018 as Year One for reinventing the HSP. Taiwan is never a stranger to innovation nor is it ever lacking in the capacity and skills for solving problems and conducting communication and coordination. It is my belief that in the days ahead the HSP will be the pivot for driving innovation in this part of the country and promoting integration of regional resources for this purpose. It will play a key role in bringing together local governments, industry, academia, and nearby residents to build a quality new environment that integrates the tangible and intangible and usher in a new era of science and technology.

Director-general
Overview
Take Strides Into the Future

Current Status of the Hsinchu Science Park

The Hsinchu Science Park (hereafter the “HSP”) is composed of six parks: the Hsinchu Park covers 653 hectares, the Jhunan Park 123 hectares, the Longtan Park 107 hectares, the Tongluo Park 350 hectares, the Hsinchu Biomedical Science Park 38 hectares, and the Yilan Park 71 hectares.

The world’s economic recovery picked up pace in 2017, in turn fueling demand for mobile devices and consumer electronics. Against this backdrop, the HSP’s tenant companies generated revenues of NT$1.019 trillion. The year also saw the HSP usher in 32 new investment projects amounting to a combined NT$11.48 billion. As of the end of 2017, tenant companies numbered 492 and employed 147,862 persons (not including 4,509 persons employed by business service providers).
Current Status of the HSP’s Six Parks

(1) Hsinchu Park

**Dominant industries include** semiconductor, optoelectronics, precision machinery, computer peripherals, and communications. In 2017, overall revenue was NT$934.7 billion, tenant companies numbered 393, employees totaled 130,670 persons, and 16 companies won approval for new investments. An ecologically sound venue for both work and living, the park has long been known for well-rounded planning, pleasant scenery, and a full range of daily amenities. Its tenant companies have achieved many global glories, all the way from computers and peripherals of the early days to today’s fully self-sufficient cluster of semiconductor ventures. No wonder it is internationally acclaimed as one of the world’s most successful science parks.

(2) Jhunan Park

**Dominant industries include** optoelectronics and biotechnology. In 2017, overall revenue was NT$60.99 billion, tenant firms numbered 50, employees totaled 12,645 persons, and four companies won approval for new investments. Since the park was made available to tenant companies in 2001, it has helped meet the demand for land in the Hsinchu Park and contributed to industrial and commercial development.

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### Overview of HSP Industries in 2017

<table>
<thead>
<tr>
<th>Industry</th>
<th>Number of Companies</th>
<th>Number of Employees</th>
<th>Revenues (NT$100 million)</th>
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</thead>
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<tr>
<td>Semiconductor</td>
<td>182</td>
<td>91,382</td>
<td>7,402</td>
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<tr>
<td>Computer &amp; Peripherals</td>
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<td>7,654</td>
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<td>Communications</td>
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<tr>
<td>Biotechnology</td>
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<tr>
<td>Others</td>
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<td>299</td>
<td>67</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>492</strong></td>
<td><strong>147,862</strong></td>
<td><strong>10,189</strong></td>
</tr>
</tbody>
</table>

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MediaTek Inc.’s plant building in the Hsinchu Park

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A standard plant building in the Jhunan Park
and job creation in the Toufen and Jhunan areas of Miaoli County.

(3) Longtan Park
Dominant industries include optoelectronics and semiconductor. In 2017, overall revenue was NT$16.55 billion, tenant firms numbered nine, employees totaled 6,745 persons, and one company won approval for new investments. What was originally a privately developed industrial park was taken over for redevelopment in January 2004. It is now being developed as home to a self-sufficient supply chain of optoelectronics ventures as well as chip packaging and testing operators, thereby pushing local industry up another rung.

(4) Hsinchu Biomedical Science Park
Dominant industries include high-end medical equipment and new drug R&D. In 2017, overall revenue was NT$304 million, tenant companies numbered 29, employees totaled 937 persons, and six companies won approval for new investments. The Hsinchu Biomedical Science Park contains three core facilities, namely the Biomedical Technology and Product R&D Center, Industry and Incubation Center, and National Taiwan University Hospital’s HBSP Branch and Cluster of Specialty Medical Institutions. Various elements needed for developing the biomedical industry—R&D, pilot production, clinical testing, patent licensing, and startup incubation—will be integrated within the park. By ushering in prominent international companies and research units, the park is set to stimulate the development of Taiwan’s biomedical industry.

To provide biomedical companies with more space, the Hsinchu Biomedical Science Park decided to build a second Biotech Building; contracting of the project was completed at the end of 2017. This should be able to further enhance the cluster effect of Hsinchu’s biomedical industry. Given the Hsinchu Park’s leading edge in ICT
To promote the 5+2 Industrial Innovation Plan, integrate all available resources, and hasten the development of a supply chain for biomedicine, the Ministry of Science and Technology inaugurated the Center for Implementing the Biomedical Industry Innovation and Promotion Program in the Hsinchu Biomedical Science Park on January 25, 2017. Another highlight is the World-Class Specialty Medicine Cluster: the Ministry of Health and Welfare is responsible for ushering in medical institutions and the HSBP is charged with management. In 2017, a total of four medical institutions were granted entry.

(5) Tongluo Park
Dominant industries include critical semiconductor materials and equipment, smart machinery, and auto electronics. In 2017, overall revenue was NT$6.21 billion, seven out of 13 previously accepted tenant companies were operating in the park, employees totaled 1,360 persons, and another company won approval for new investments.

The Tongluo Park is being developed in three stages. Companies have been able to occupy sites since completion of the first stage in November 2009, followed by completion and acceptance of second-stage development projects in December 2015. Third-stage development is now under way.

(6) Yilan Park
Dominant industries include communications services, software, digital content, and R&D. In 2017, overall revenue was NT$74 million, four out of 11 previously accepted tenant companies were operating in the park, employees totaled 14 persons, and another four companies won approval for new investments. In July 2017, the park began offering standard plants to tenant companies. As of the end of the same year, standard plants had been allocated to 10 tenants. Emphasis is now placed on accelerating the introduction of relevant industries.
The HSP’s Vision for the Coming Decade

To accommodate ongoing technology industry trends and strengthen HSP development planning, the HSPB hosted the Forum on Developing Taiwan’s Technology Industry and Science Parks on August 16, 2017. Views were canvassed from industry, government, and academia on how to better define the HSP’s future and where Taiwan’s industry should be headed, as well as identify the characteristics of tenant companies that the HSP expects to usher in and the needs of their employees. A summary of the conclusions is as follows:
Industry Innovation
Science parks stand out for their focus on R&D. In the days ahead, the HSP needs not only to build on the strengths accorded by industry clusters but also to incorporate innovation and cross over to AI, IoT, biomedicine, and software applications. The development of AI, for instance, more often than not requires collaboration with medicine, finance, or manufacturing.

Environment Optimization
The HSP’s cluster effect also has a side effect: a decline in land availability. As such, the HSPB is planning to build a Software Building and renovate outdated, low-capacity standard plant buildings. The mid- to long-term goal is to establish an exclusive zone for software companies so that they can create their own cluster effect. In this era of “software is king,” the government is proactive to funnel resources to help software companies sail toward a new “blue ocean.”

Driving Regional Innovation
People hold the key to industrial development. Attracting competent people means the need for offering well-rounded daily amenities and incorporating elements of culture and the arts. That is, the HSP needs to make possible a way of life both technologically and culturally appealing and capable of providing the functions and services required to make a fitting environment for industrial transformation and innovation.

Software Building
As the ICT industry is increasingly moving toward the IoT and going smart, it is urgent that the HSP combines its strengths (semiconductor/IC design, smart machinery, and biomedicine) with emerging technologies (AI, big data, and IoT). To accommodate industrial transformation, the HSP also needs to assist technology companies in integrating resources available at academic and research institutions to bolster their R&D endeavors. In tandem with the government push for industrial innovation, it is equally vital to cultivate competent people needed for innovative R&D to provide the driving force for Taiwan’s next-generation industries.

Committed to making a bellwether park for innovative startups, the HSPB decided to build the aforesaid Software Building, thereby creating a superior investment environment that can take advantage of innovation momentum in the international community needed for developing AI applications and bringing AI technologies to market. Emphasis will be placed on integrating resources available at academic and research institutions into the HSP’s cluster effect as it undertakes training of cross-sector professionals crucial to developing critical next-generation technologies. After meticulous deliberation and assessment, the HSPB is now scheduled to construct a new steel structure building consisting of seven stories above ground and three levels below, with a total floor area of 18,305 m². With completion slated for 2021, the NT$681 million project is expected to offer 48 units.

Next-Generation Standard Plant Buildings
As the HSP was inaugurated in 1982, most of its existing standard plant buildings are already in use for more than 30 years. Coupled with the low land use efficiency of such buildings, it is of utmost urgency to renovate them and thus make more efficient use of the land they occupy. But such renovation needs to be preceded by construction of new plants for the relocation of tenant companies. Reconstruction cannot proceed until the old plants are vacated. After meticulous deliberation and assessment, the HSPB plans to construct a new steel structure building consisting of six stories above ground and three
levels below, with a total floor area of 22,569 m². With completion slated for 2021, the NT$848 million project is expected to offer 18 units.

**Innovation-Centered Government Services**

**One-Stop Services**

A unique one-stop service approach allows the HSPB to handle such matters as investment applications, plant construction applications, company and factory registration, import/export certification, labor matters, and factory inspections. Many relevant government agencies have also established branches in the HSP to provide highly effective administrative services.

**e-Environment**

1. The HSPB makes it a point to continue improving the Common Information Service System for HSP Companies that offers such services as automatic debiting for tenant companies paying management fees and inquiries with regard to making adjustment to statistical charts.

2. In response to mounting information security threats, the HSPB organized explanatory presentations in 2017 to familiarize tenant companies with the Ministry of Science and Technology’s Science Park Information Sharing and Analysis Center (SP-ISAC) initiative. The center is due to be made available to tenant companies in the first quarter of 2018.

3. In 2017, the HSPB completed strengthening its email services. Email security is boosted as an upgraded filtering mechanism is now in place to block dubious incoming emails; an email backup mechanism is also introduced to enhance reliability.

4. In 2017, the HSPB also completed installation of next-generation firewalls to bolster server farm capability for monitoring and guarding information security. Internet and intranet security mechanisms are also strengthened to make possible a duplicate equipment and hot spare system.

**An Environment Conducive to Industrial Development**

**Stable Power and Water Supplies**

At present, the Hsinchu, Jhunan, Longtan and Tongluo, and Yilan parks as well as the Hsinchu Biomedical Science Park are designed to have peak power loads of 1.4451 MW, 213,000 kW, 166,300 kW and 19,900 kW, 100 kW, and 5,100 kW respectively. However, these loads are expected to
ultimately grow to 1.59 million kW, 406,800 kW, 599,200 kW, 174,700 kW, 72,000 kW, and 29,300 kW. To ensure the stability of the power supply system throughout all the parks, the HSPB has commissioned scholars and experts, Taiwan Power Co. (Taipower), and representatives from the Association of Industries in Science Parks to form the HSP Power Safety Advisory Team. In 2017, the team conducted 10 power safety checks and assistance visits during which it provided counseling and assistance concerning power safety, power supply, and management systems. Separately, the team convenes quarterly meetings on power safety and quality improvement during which Taipower officials are invited to report on power supply to the HSP and status of ongoing transformer and power supply cable projects.

(2) Water Supply and Allocation

In 2017, the Hsinchu, Jhunan, Longtan and Tongluo parks as well as the Hsinchu Biomedical Science Park consumed about 140,900 tons, 22,300 tons, 18,900 tons, 1,200 tons, and 400 tons of water respectively each day. The Hsinchu Park and Hsinchu Biomedical Science Park obtain their water supply from the Baoshan Reservoir, the Baoshan No. 2 Reservoir, and the Longen Weir on the Touqian River. For their part, the Jhunan, Longtan, and Tongluo parks draw water from the Yongheshan, Shihmen, and Liyutan reservoirs respectively.

(3) Renewable Energy

As of 2017, the HSPB had assisted a cumulative 45 tenant companies in installing renewable energy generating facilities with a combined capacity of 11,530.98 kW. In line with the government’s two-year program for promoting solar power generation on the roofs of central government buildings and on state land, the HSPB has completed installing rooftop photovoltaic facilities across the Hsinchu, Duxing, Jhunan, Tongluo, and Longtan wastewater treatment plants and related constructions. Their collective capacity amounts to 2,148 kW.

Energy Conservation and Carbon Reduction

In tandem with the government’s energy conservation and carbon reduction policy, the HSPB has commissioned a professional consulting company to implement a water conservation, energy conservation, and carbon reduction assistance program. Highlights in 2017 included assistance offered to 10 companies in improving energy efficiency (including assessment of renewable energy use for five of them); one demonstration of excellence in energy conservation; tracking of the energy conservation

The HSP’s push for renewable energy—a photovoltaic system on the roof of a wastewater treatment plant
achievements of companies receiving assistance under the 2016 energy conservation/carbon reduction assistance project; assistance offered to 10 companies for conserving water use; one demonstration of excellence in water conservation; and tracking of the water conservation achievements of companies receiving assistance under the 2016 water conservation assistance project. In 2017, the aforesaid efforts attained energy and water savings potential equivalent to 65.43 million kWh of electricity and 251,000 tons of water respectively, translating into a 34,633-ton decrease in CO$_2$ emissions for the year.

Alongside the aforesaid efforts, the HSPB also undertook parameter analysis to attain chilled water system optimization, enacted design guidelines for energy conservation in electronic engineering, compiled water use plans and water utilization balance charts, and conducted training on Taiwan’s water environment and the status of and challenge to water supply in Hsinchu. The objective is to imbue relevant personnel with the required professional competence in order to strengthen the water and energy conservation capacity of HSP companies, enhance energy use efficiency, promote awareness of the need for water conservation, and cut back on greenhouse gas emissions.

(1) Assisting in Greenhouse Gas Validation

To ascertain the amount of greenhouse gas emissions as the basis for reduction efforts, the HSPB assisted two tenant companies in conducting greenhouse gas validation in 2017. Separately, the HSPB also conducted one presentation on greenhouse gas management and hosted one consultative meeting among experts to help tenant companies increase their capacity for greenhouse gas reduction and management as well as to help the HSPB devise action plans on this front.

(2) Promoting CSR Reports

To encourage tenant companies to fulfill their corporate...
social responsibility and publish CSR reports, the HSPB hosted a presentation in 2017 to explain the benefits and purpose of publishing these and help tenant companies get hold of the highlights in both compilation and validation. In 2017, a total of 38 HSP companies presented their CSR reports.

**Transportation Development**

1. **Infrastructure Construction**
   1. Repaving of Baoshan Road.
   2. Improvement of Shuangyuan Road’s roadside parking lot, pedestrian trail, and rails.
   3. Reversible lanes on Baoshan Road: To ease traffic between the Hsinchu Park and the city, reversible lanes are assigned on Boashan Road after the expansion of some sections and addition of markings. Implementation of this temporary measure is able to help motorists save up to 59 seconds driving to the Hsinchu Park and increase their speed by a maximum of 5 km per hour. Moreover, the number of A2 and A3 accidents fell to six from 33 after Baoshan Road underwent repaving, attesting to a significant improvement of driving safety.
   4. Smart LED lighting
      As is only appropriate to smart development of the HSP, a streetlight automatic feedback system has been ushered in to both the Hsinchu Park and the Hsinchu Biomedical Science Park. Meanwhile, sodium lamps have been replaced by energy-efficient LED lighting and electricity leakage protection devices have been installed. In addition to safeguarding pedestrian safety, the foregoing measures also go a long way toward saving time and expenses that human inspection invariably calls for.
   5. U-bike
      On August 30, 2017, the Hsinchu Park officially introduced the YouBike public bicycle sharing service, offering people another alternative in transport. There are eight stations that offer 200 bikes in the Hsinchu Park. Coupled with the 40 stations that offer 1,000 bikes in Hsinchu City, members of the general public can easily rent one in Hsinchu City or the Hsinchu Park and return it in the other end. YouBike is indeed a highly...
6. Tesla Supercharger Station

The HSP’s Tesla Supercharger Station, the first of its kind to be installed in any science park in Taiwan, became operational on November 21, 2017. This supercharger station is no less than a fitting symbol of Tesla’s long-time partnership with the technology companies operating in the HSP. The station can charge eight Tesla vehicles at the same time, and 30-minute charging will bring electricity sufficient for another 270-km drive—about the distance between Hsinchu and Kaohsiung. This supercharger is indeed an immense convenience for Tesla motorists who either work in the HSP or visit the HSP for business.

A joint toxic disaster and air pollution relief exercise (on May 4, 2017)

(2) Smart Transportation

1. APP

The HSPB has developed a smart transportation app that integrates traffic information of the HSP and neighboring areas, including real-time information for public transport systems (city bus and freeway coach services included), traffic images, parking lot information, information on national freeway traffic, and messages from changeable message signs. By making available such easily accessible traffic information, this app brings the HSP convenience, efficiency, and energy conservation.

Going online on February 10, 2017, the app HSP Mobile Genie 2.0 integrates traffic information of the HSP, Central Taiwan Science Park, and Southern Taiwan Science Park. All personnel of the three science parks are encouraged to download and use it.

2. Plate recognition in parking lots

The four off-road parking lots in the Hsinchu Park now feature smart ticketless payment and management. Plate recognition and e-tag technologies are employed to facilitate the entry and exit of vehicles. It is an environment-
friendly mode of parking made possible by today's smart technologies. Motorists have a stronger incentive to park here as it is now much more efficient to get in and out.

Safeguarding Security

In 2017, a total of 348 cameras were replaced at major crossroads in the Hsinchu, Jhunan, and Tongluo parks as well as the Hsinchu Biomedical Science Park. Meanwhile, monitoring systems were strengthened across the board. In addition to upgrading plate recognition and monitoring/recording capabilities, the HSPB introduced advanced cloud storage technology and mobile device transmission applications. These in turn have become a useful tool for the police in conducting stop-and-checks, collecting evidence, and deterring crime. To make up for a shortfall in the police force, the HSPB began assigning daytime security guards to the Tongluo Park on January 1, 2017. Separately, the HSPB conducted a number of emergency response drills in 2017 to bolster the HSP's capacity for responding to disasters and safeguarding critical infrastructure facilities.

International Cooperation

Currently the HSP is a member of the International Association of Science Parks (IASP) and Asian Science Park Association (ASPA). Besides attending leadership conferences, board meetings, and business talks, HSPB personnel are regularly sent to these organizations' annual conventions and present papers introducing the HSP, or make contact with other parks and companies, thereby achieving the goal of promoting the HSP and attracting investment. During ASPA 2017, the HSPB reaped particularly handsome results: Director-General Wayne Wang was elected vice president and became president-elect, the HSPB won the right to host the 2019 conference, and HSP company Andes Technology Corp. emerged as a winner of the Excellence Prize, one of ASPA Awards 2017.

To date, the HSPB has signed sister park agreements with 27 science parks in 14 countries, under which the two sides share management experience and promote technological interchanges and business contacts. In 2017, Indian Institute of Technology Hyderabad became the HSP's latest sister park. Separately, the HSPB signed a soft landing agreement with Kyoto Research Park, based on which either host will provide companies from the other side with weeklong mobile offices for the purpose of market probing.

Indian Institute of Technology Hyderabad, National Yunlin University of Science and Technology, the HSP, and the Central Taiwan Science Park signing a memorandum of understanding on four-party cooperation to foster talent and technology exchanges with India (on April 8, 2017)

Andes Technology Corp. accorded the Excellence Prize, one of ASPA Awards 2017, with president of the company Frankwell J.M. Lin on the right (on October 20, 2017)
Accomplishments in Investment Solicitation

Attracting Domestic and Foreign Investment

A total of 535 firms had been approved for investment as of the end of 2017, including 77 foreign firms. In 2017, 32 firms, including two Japanese firms and three American firms, won approval to invest a total of NT$11.48 billion. Another 25 firms increased their capital by a combined NT$10.32 billion.
(1) Integrated Circuits
Six firms won approval to invest a combined NT$3.2 billion. These new tenant companies engage in wafer-grade packaging technology services, nanometer probes for use in electron microscopy, and hollow fiber adsorptive materials, once again attesting to the HSP’s global fame as home to a self-sufficient supply chain in the semiconductor industry.

(2) Biotechnology
Ten firms were approved to invest a combined NT$3.11 billion. These new tenant companies engage in the new drug PEG long-lasting α-2b interferon, a high-resolution microarray biochip scanner, an implantable spinal electrostimulation system, monoclonal antibodies and recombinant protein, and a dynamic medical physiological signal analysis system. A cluster of biotechnology companies is gradually taking form.

(3) Precision Machinery
Six firms won approval to invest a total of NT$699 million. These new tenant companies engage in measurement, semiconductor equipment, and nanotechnology applications. Their entry reflects the HSP’s moving in the direction of supporting various industries in their migration toward smart manufacturing.

(4) Optoelectronics
Four firms won approval to invest a combined NT$1.22 billion. These new tenant companies engage in image recognition for self-driving cars, safety monitoring systems and products, lithium-ion energy storage batteries, and hardware and software displays. These products reflect that the local optoelectronics industry is moving toward integrating hardware and software technologies and developing innovative applications for both products and services in order to increase output, value, and competitiveness.

(5) Computer and Peripherals
Two firms were approved to invest a combined NT$37 million. They engage in synthetic aperture radar satellite data and map processing, digital billboard software, and digital players. The local computer and peripherals industry is apparently entering a new era of combining the capacity for developing digital technologies and that for building their own brand names.

(6) Communications
Combined, three firms won approval to invest NT$3.16 billion. These new tenant companies engage in single mode/multi-mode/special fiber-optic cable, broadband gateways, and 100G and 400G and high-resolution multimedia interface active optoelectronics mixed cable. This industry is staking its claim to the areas of smart image analysis technology, information security, and 5G mobile communications technology applications.

Highlights in Investment Solicitation

(1) Yilan Park:
The HSPB’s efforts to attract investment to the Yilan Park include planning a digital content center and startup site, paying visits to potential investors, and promoting cooperation with neighboring academic and research institutions. In 2017, the HSPB hosted “A New Century of Digital Content: Creating a Video Industry Ecosystem,” a seminar that is open to the general public and for experts from industry and academia to offer suggestions on the park’s development. Separately, the HSPB collaborated with the Yilan county government to organize four panel discussions and one investment solicitation event in which a number of digital content providers were invited to make a fact-finding tour of the park.

Of the four companies approved in 2017 to invest in the park, one engages in communications knowledge services and three, R&D. In addition, National Ilan University applied to establish an incubation center. Coupled with the entry of Innodisk Corp.’s Yilan Branch upon completion of a new plant in April 2018, the Yilan Park is poised to attract even more tenant companies going forward.
(2) Hsinchu Biomedical Science Park:

The Hsinchu Biomedical Science Park focuses its recruiting efforts on companies involved in new drug R&D and high-end medical devices. As of 2017, a cumulative 47 biotech firms had won approval to invest a combined NT$17.86 billion.

A highlight for 2017 was the HSPB joining forces with the Ministry of Health and Welfare to launch the “Specialty Medical Institutions for the Hsinchu Biomedical Science Park” initiative in accordance with the Biomedical Industry Innovation and Promotion Program approved by the Executive Yuan, or Cabinet, on April 17, 2017. A 2.48-hectare lot was assigned at the Hsinchu Biomedical Science Park phase II site to exclusively accommodate specialty medical institutions. The objective is to establish a world-class cluster of specialty medical institutions by integrating strengths in medical care and across-the-board services. In 2017, four applicants gained entry to this emerging cluster that is located next to National Taiwan University Hospital’s HBSP Branch.

Notable New Entrants to the HSP

Amkor Technology Co., Ltd.

With an investment of NT$2.3 billion, Amkor Technology is chiefly involved in the R&D of wafer-grade testing and packaging technologies, and is the world’s second-largest advanced semiconductor packaging and testing services provider. Amkor Technology provides advanced packaging and testing technology, and can offer the advantages of low-inductance, compact size, and easy control of high- and low-frequency noise. As a result, Amkor Technology holds a competitive edge with regard to current handheld devices and future Internet of Things products. In addition, the rapid growth of 5G applications, Internet of Things products, and self-driving vehicles expected in the near future is set to keep up momentum in the wafer-grade packaging and testing market.

PharmaEssentia Corp.’s Hsinchu Branch

With an investment of NT$1 billion, PharmaEssentia's chief product is PEG long-lasting α-2b interferon, a new-generation, improved, and long-lasting interferon that offers the advantages

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With an investment of NT$1 billion, PharmaEssentia’s chief product is PEG long-lasting α-2b interferon, a new-generation, improved, and long-lasting interferon that offers the advantages
of high purity (>95%), high patient tolerance (high-tolerance dosage available), and greatly reduced side effects. Already granted a number of patents, this interferon can be used in the treatment of polycythemia vera, chronic hepatitis, and various rare blood and liver diseases.

**MegaPro Biomedical Co., Ltd.**

With an investment of NT$600 million, MegaPro is derived mainly from an Industrial Technology Research Institute (ITRI) team credited with successful development of nanometer iron oxide products. A recipient of the 13th National Innovative Startup Awards, MegaPro now focuses its efforts on developing niche nanometer drugs and securing its position in the industry as one that adds value to preclinical trials and early human clinical trials. The company is also developing itself as a CMO of nanometer drugs and seeking collaboration with research organizations, pharmaceutical companies, and medical centers. Such endeavors promise to further promote the HSP’s cluster effect by fostering relevant supply chains and advancing nanometer process technologies.

**Wistron Medical Technology Co., Ltd.**

With the global communications products supplier Wistron Corp. as its parent company, Wistron Medical was established with an investment of NT$500 million mainly to develop medical information transmission systems. Given the growing elderly population and the increasing prevalence of various chronic diseases, global expenditures on healthcare and medicine are expected to continue to rise. Wistron Medical is relying on the R&D and manufacturing experience that its parent company has established in the ICT industry to develop medical information transmission systems, external diagnostic instruments, and medical imaging systems. Apart from helping users reduce medical expenditures, Wistron Medical is making a contribution to the domestic medical devices industry’s moving toward a fully self-sufficient supply chain.

**BioLegend Taiwan Inc.**

Established with an investment of NT$100 million, BioLegend Taiwan is chiefly involved in the development of monoclonal antibodies and recombinant proteins. Its parent company is U.S.-based BioLegend Inc., a globally recognized developer of antibodies and recombinant proteins. While a good number of companies are developing protein drugs in the Hsinchu Biomedical Science Park, BioLegend Taiwan will be able to provide antibodies and protein recombination services needed in R&D close at hand. This will not only boost the level of the domestic biotechnology industry but also stimulate industrial development throughout the Hsinchu Biomedical Science Park. In the long term, BioLegend Taiwan will increasingly focus on the development of active antibodies and will also help to train a new cohort of biotech manpower for Taiwan.

**Taiwan Electron Microscope Instrument Corp. (Temic)**

With an investment of NT$100 million, Temic chiefly develops desktop electronic microscopes and liquid testing modules. Temic is derived from one of the first batch of innovative startup teams that benefitted from government promotion in recent years. Its accolades include an honor award and NT$2 million in seed money won in the first competition under the Ministry of Science and Technology’s From IP to IPO (FITI) program in 2013, an Outstanding Nanotechnology Startup Award from the Ministry of Science and Technology, and a Corporate Innovation Award under the 12th National Innovation Awards hosted by the Institute for Biotechnology and Medicine Industry. Temic came into being by combining its core technology developed at National Tsing Hua University and funding from the ITRI, making a fine example of bringing innovation to market. Subsequently, it went on to attract investment from leading technology companies. No less than a paradigm for pooling resources across government, industry, and academia as well as the research community to accelerate innovative startups, Temic aims to become a global leader in desktop electronic microscopes.
A Future of Smart Technology

To accelerate industrial upgrading and transformation, the government is actively promoting various innovative initiatives—Asia Silicon Valley, smart machinery, green energy technology, biomedicine, national defense, new agriculture, and circular economy—as the driver of Taiwan’s next-generation industries, thereby achieving the goals of digital nation, smart island, high-value service industry, nuclear-free homeland, and energy conservation and carbon reduction.

Throughout the HSP’s formative decades, the close tie-ups with Silicon Valley have enabled tenant companies to secure a decisive role in the ICT industry’s supply chain. In particular, the continuous headway made by the HSP’s foundry houses and the ever-growing added value they bring have proved a powerful magnet for attracting top-notch professionals to start their businesses in Hsinchu. In turn, this has enabled Taiwan’s IC design industry to quickly become No. 2 in the world; Taiwan Semiconductor Manufacturing Co., Ltd. and United Microelectronics Corp. are conveniently located to deliver all the foundry services needed. For its part, Taiwan’s foundry industry has thus been able to benefit from steady expansion in business scope that sustains its continuous technology upgrade, eventually securing its standing as the world’s foremost supplier of foundry services. And now Taiwan’s foundry houses are charged with the production of chips used by Apple, Qualcomm, MediaTek, and other IC design companies. Indeed, HSP companies have emerged as innovative providers of system integration services.

Thanks to the dedicated efforts of relevant government agencies, the Asia Silicon Valley initiative has made groundbreaking progress in the areas of legal and regulatory drafting, fundraising, manpower cultivation, international linkage, IoT value chains, and demonstration sites, and its innovative methods have yielded impressive tangible results. In the future, apart from continuing full-scale promotion of IoT initiatives and innovative entrepreneurial ventures, the program will concentrate on new applications and services in the areas of mobile living, artificial intelligence, health care, and environmental sustainability.

Priority for industry upgrade and innovative economy:
5+2 Industrial Innovation Plan

- **Green Energy Technology**: Energy conservation, energy storage, energy creation, system integration
- **Asia Silicon Valley**: Innovation and business creation, IoT
- **Biomedicine**: New drugs, innovative medical equipment, innovative business models for health care
- **National Defense**: Aerospace, vessels, information security
- **Smart Machinery**: Smart machinery, industrial IoT, system/platform for integrating the tangible and intangible
- **New Agriculture**: Green and sustainable agricultural system, safe agriculture, export of and value increase for farm products
- **Circular Economy**: New materials, recycling of waste materials, energy supply and management

Connect with the community, connect with the world, connect with the future.
intelligence, self-driving vehicles, augmented reality (AR)/virtual reality (VR), and IoT information security. This program seeks to push manufacturing in Taiwan from OEM production to a higher level of intelligence and innovation, and make Taiwan a leading country in the global digital economy. According to Asia Silicon Valley Development Agency (ASVDA) CEO Li Jia-ru, the value of IoT lies in software, and Taiwan's opportunities are to be found in the areas of applications and services.

Many HSP companies have already begun seeking to make inroads into the IoT sector. While IC ventures account for the largest group of tenant companies (totaling 182 in 2017) in the HSP, TSMC certainly stands out for foundry services, and MediaTek and RealTek have embarked on their respective R&D and established partnerships with global giants such as Amazon and Apple. Chips under development are meant for use in smart household and office products, Internet of Vehicles, smart positioning applications, and smart Internet-linked health and fitness devices. Global Unichip and Faraday are both involved in the design of AI ASIC chips. In the networking and communications industry, many companies are engaging in the development of smart household gateways, IoT service platforms, and smart living solutions. Wistron Corp., Wistron NeWeb, MitraStar, and Syxel all embarked on the all-round development of IoT-related products and technologies in 2017.

These companies are relying on the development of cloud service platforms and compilation and analysis of big data to develop solutions for automated household control, residential security monitoring, energy management, and health and medical care.

Building on Taiwan's hardware dominance crafted by long-established manufacturers and the semiconductor industry, the Asia Silicon Valley initiative is leveraging Taiwan's strength in components and parts, physical objects, and manufacturing to enhance local companies' system and application software capabilities, and further enhance competitiveness through integrating the tangible and the intangible. In the future, Taiwan must seize the opportunities offered by IoT and AI applications and services, and rely on the aforesaid integration driven by the data-centered economy to create new value, strengthen integration of hardware and software and cross-sector cooperation, promote industrial upgrading and transformation, and achieve economic growth. The Asia Silicon Valley program is further promoting innovative startups as drivers of economic growth, and employing the IoT industry to foster industrial upgrading and the development of next-generation, innovative ventures.

While the HSP is a pioneer and hub for Taiwan's technology industry, says ASVDA Chief Administrative Officer Vivian Huang, it is surely a major partner for the Asia Silicon Valley initiative in terms of top-notch talent, funding, and supply chains. The Asia Silicon Valley
IoT Major League (hereafter the “League”) is currently in the midst of mapping out strategies for the development of AI and self-driving vehicle industries in Taiwan. In this effort, it is extremely important that HSP companies with international experience join discussions on relevant future applications and the establishment of a common platform. HSP companies currently participating in the Asia Silicon Valley program include the Elan Group, Lite-On Technology, Coretronic, and UTSI, which certainly serve as a crucial link between the HSP and the Asia Silicon Valley initiative.

Another important mission for the Asia Silicon Valley initiative is to seek out potential buyers in Silicon Valley, the U.S. and help them locate a suitable supply chain in Taiwan, that is, creating an opportunity for Taiwan’s innovative startups to develop the products needed and then for HSP companies to conduct mass production on a contract-manufacturing basis. Such an approach can both bolster Taiwan’s reputation as Silicon Valley of Asia and help HSP companies make their way into the global supply chains of emerging industries, which is surely a win-win scenario for both parties.

Innovative industries certainly have a key role to play in the days ahead. HSP companies are, however, mostly involved in hardware manufacture (such as ICs, display panels, and solar energy and LED products). Innovative startups and newly established R&D centers are outnumbered by far. Accordingly, the Ministry of Science and Technology launched the From IP to IPO (FITI) program in 2013 with a view to promoting entrepreneurship across local institutions of higher learning. For its part, the HSPB has established the Young Entrepreneur’s Studio to promote innovative startups, an initiative that has surely paid off.

HSP companies can also act as providers of funding and technology to promote the development of innovative industries in Taiwan. As such, major companies and small startups in the HSP really have the opportunity and incentive to work together as equal partners. This partnership should be able to help them find vast new markets for their innovative technologies applications and enable Taiwan’s industry to go smart and reap even more business opportunities down the road.

Green Energy Technology

With worsening global warming and the impending depletion of conventional energy sources, the world’s leading countries have uniformly given top priority to energy conservation and carbon reduction in policy-making. As a consequence, adopting a strategic approach toward energy allocation, developing renewable energy, and promoting green energy industries have emerged as universal pursuits across the global economy. Responding to the coming of the green economy age and the need to achieve Taiwan’s “nuclear-free homeland” policy goal, the government has included the green energy technology industry as a focal area of its 5+2 Industrial
and balance between economic development and environmental protection. Emphasis deserves to be placed on promoting a cycle of positive reinforcement between green energy and economic development and helping the green energy industry gain competitiveness in global markets. The Photonics Industry & Technology Development Association believes that the government's promotion of green energy should be geared toward driving the industry by means of increasing domestic demand. In particular, it is essential to induce local companies to invest in such areas as photovoltaic modules and solar power generating systems.

The HSP is home to such photovoltaic companies as Neo Solar, Gintech, and Sino-American Silicon (the Jhunan Park). These companies are playing an important role in the green energy technology industry's energy conservation, energy storage, and energy creation efforts.

Innovation Plan. The government hopes to strenuously promote the development of the green energy industry by drawing on Taiwan's existing green energy niches, and thereby boost industrial competitiveness, enhance energy security, build a green economy, and promote environmental sustainability.

The Program on Promoting Green Energy Technology Industry is designed to get started with a two-year photovoltaic project and a four-year wind power project as pilot initiatives geared toward creating jobs through stimulation of domestic demand. With energy creation, energy conservation, energy storage, and systems integration as its core concepts, the program is intended to accommodate Taiwan's industrial development, make the green energy industry more competitive, and attain integration with the world community. Furthermore, the program is also promoting a smart meter project aimed at inducing users to participate in demand-side management, which promises to help ease peak power load and achieve energy conservation.

According to the Photonics Industry & Technology Development Association, green energy technology is closely aligned with global trends. But Taiwan still has far to go when it comes to drafting green energy technology policies. It must carefully study the many issues that have recently arisen: the promotion of investment in forward-looking green energy technology, prioritization of green energy policies, speed in increasing the weighting of green energy in the country's energy portfolio, capacity for matching green energy with economic development, and balance between economic development and environmental protection. Emphasis deserves to be placed on promoting a cycle of positive reinforcement between green energy and economic development and helping the green energy industry gain competitiveness in global markets. The Photonics Industry & Technology Development Association believes that the government's promotion of green energy should be geared toward driving the industry by means of increasing domestic demand. In particular, it is essential to induce local companies to invest in such areas as photovoltaic modules and solar power generating systems.

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Ranking among the world's top ten producers, Neo Solar Power and Gintech are Taiwan's second- and fourth-largest makers of silicon solar cells respectively. These companies are focusing on the production of silicon solar cells and seeking to stay competitive through ongoing improvements in conversion efficiency.
Taiwan is currently home to the largest number and greatest density of photovoltaic firms worldwide. Many strategic alliances have been established in recent years, and companies are merging their production capacity. On October 16, 2017, Neo Solar Power, Gintech, and Solartech announced a three-in-one alliance aimed at jointly creating a flagship company with international competitiveness and a mutually beneficial platform. This alliance seeks to take advantage of a new wave of photovoltaic opportunities expected to emerge in 2020. It is also expected that the alliance may come up with annual output of 1GW within five years.

The government is actively promoting photovoltaic power and following a specific timetable. Green energy will be a new driver of Taiwan’s energy transformation and economic development in the future, and the government plans to strongly promote energy R&D geared toward meeting industry needs in order to establish a positively reinforcing cycle between energy R&D and industrial development.

**Smart Machinery**

By including the smart machinery industry as another key element of the 5+2 Industrial Innovation Plan, the government aims to move up another rung from precision machinery, thereby creating jobs and expanding turnkey exports. Initiated by the Ministry of Economic Affairs, the Smart Machinery Industry Promotion Program is intended precisely to help the precision machinery industry become smart so that it can provide innovative, branded, customized, and smart products and services through integration with technical services and development of total solutions. While boosting the international competitiveness of Taiwan’s smart machinery industry, the program also seeks to provide the public with greater convenience and higher living standards.

According to Taiwan Association of Machinery Industry Chairman Alex Ko, the advent of Industry 4.0 means that Taiwan must strive for smart machinery and smart manufacturing. An extraordinary competitive edge can be expected if Taiwan can usher in its unique strength in the ICT sector to the machinery industry while also drawing from IoT, sensor, cloud computing, and big data technologies. The future promises to be marked by integration of the tangible and the intangible, cross-industry partnerships, and cooperation with the ICT industry.

Leading precision machinery companies that have made their way into the HSP—Mirle Automation, Tokyo Electron (Japan), Applied Materials (U.S.), Lam Research (U.S.), Chunghwa Precision, Foxsemicon, Gallant Precision, Machvision, and Hermes-Epitek—are almost exclusively involved in equipment for making semiconductors or displays. Echoing the government’s inclusion of smart machinery in its 5+2 Industrial Innovation Plan, it just so happens that equipment for making semiconductors or displays needs to be the “smartest” of precision machinery. In particular, the semiconductor industry has relied on the support of equipment suppliers to push process technologies to under the 10-nanometer (nm) mark. This reliance is set to remain firmly in place for future development of 5nm and more advanced technologies.

The government is actively promoting photovoltaic power and following a specific timetable. Green energy will be a new driver of Taiwan’s energy transformation and economic development in the future, and the government plans to strongly promote energy R&D geared toward meeting industry needs in order to establish a positively reinforcing cycle between energy R&D and industrial development.
Modern technology asserting its advantage in the machinery industry of the Industry 4.0 era

The HSP has also nurtured a number of exemplary homegrown companies. After years of hard work, Hermes-Epitek has been able to bring semiconductor and optoelectronics equipment to market. Moreover, Hermes-Epitek has set up such subsidiaries as Hermes Microvision and Advanced Ion Beam Technology and developed an ion beam implanter that is recognized as a viable substitute for imported products. Hermes-Epitek has also successfully manufactured front-end semiconductor process equipment subsequently adopted by the world’s leading chipmakers. In addition, Hermes-Epitek subsidiary Hermes Microvision was later acquired by ASML, a leading global supplier of semiconductor equipment.

Speaking about the machinery industry’s crossing over to AI, Syntec Technology Co., Ltd. President Tsai You-keng states that Industry 4.0 calls for smart manufacturing characterized by integration of the physical and the virtual, value-added applications, smart production, digital platforms, smart components and parts, and smart machinery. Taiwan’s machinery industry stands to benefit from cross-sector cooperation with the ICT industry.

**Biomedicine**

It is fair to say that of all technologies mankind has developed, biotechnology has been the fastest-growing and brought about the most applications. It can not only improve human health by upgrading healthcare technologies, but also realize boundless other possibilities. The biotech industry holds immense potential indeed. As such, the government has included biomedicine in its 5+2 Industrial Innovation Plan as a key driver of Taiwan’s industrial growth in coming decades.

Embodying an ambition to “connect with the future, connect with the world, and connect with the community,” the government has introduced the Program for Promoting the Biomedicine Industry as a new blueprint for innovative R&D in the field. The government has also amended Article 3 of the Act for the Development of Biotech and New Pharmaceuticals Industry to enhance the production value and competitiveness of the local biotech industry and consolidate Taiwan’s status as a biomedical R&D hub in the Asia Pacific.

Biotechnology is a typical emerging industry that gives top priority to creativity, according to Dr. Julie Sun, director of the Biotechnology Industry Student Center at the Taiwan Institute of Economic Research. This is vastly different from the ICT industry that values manufacturing above all else. Biotechnology also makes a unique industry given its number of startups, technology transfer practices, and business models. Other features that set biotech and new drug companies apart from peers include massive R&D outlays, long-term efforts toward securing patents, uncertainty in reaping returns on investment, provision of a big variety of offerings in small
Medical device suppliers in the HSP have grown and prospered, thus gradually securing a viable standing in the world market. United Orthopedic specializes in artificial joints; Somnics focuses on the development of lightweight, comfortable, and convenient negative pressure devices for treatment of sleep apnea; and MiS develops sensory optoelectronics imaging systems. Leading companies involved in the development of blood glucose monitoring products include ApexBio, Bioptik, Tyson Bioresearch, and EPS Bio. In vitro diagnostic firms include General Biologicals, which has chiefly developed hepatitis testing reagents, but has recently actively entered the areas of precision medicine and aesthetic medicine. In the field of consumable medical materials, Pacific Hospital Supply makes such products as sealed sputum suction tubes, urine bags, and wound drainage tubes. Among medical device startups, Applied Nano Technology focuses on the development of advanced ophthalmological devices, while Taiwan Biomaterial chiefly develops artificial foam meninges.
Taiwan Surgical Corp.'s surgical devices

integration of technologies, the HSP can provide such resources as R&D, pilot production, clinical research, regulatory compliance, and patent consulting. The HSP also offers easy accessibility to various long-established industries in the neighborhood: precision machinery, materials, electronics and electrical machinery, ICT, and industrial design. A regional ecosystem for innovation can easily take shape through strengthening fusion across industry and academia as well as the research community and bolstering the linkage of innovative technologies, capital, and manpower. Moreover, the HSP also expects various government incentives introduced so far to prove effective in stimulating the development of high-end medical devices in Taiwan, thereby creating jobs, fostering investment, and enhancing competitiveness.

Outlook

Compared with other science parks around the world, most of which draw their research capabilities only from a single nearby university or R&D institution, the HSP stands out as a rare instance that boasts extensive R&D resources within a 10-km circumference, including two internationally recognized first-tier universities and four key research organizations that accommodate tens of thousands of top-notch professionals. Combined, they make a unique niche for the HSP to create a pioneering ecosystem for innovation. In order to link these nearby academic and research organizations with HSP companies and enhance common capabilities through multilateral cooperation, the HSP has rightly and successfully served as a physical site manager. Over the years it has indeed provided a good number of joint R&D projects bringing together HSP companies and academic and research institutions. On the other hand, the HSP has also played host to symposiums and workshops to facilitate the exchange of expertise among professionals within or outside their respective fields, as well as many other social occasions for the same purpose. It is no understatement to say that these formal and informal events have brought about an infinite supply of opportunities for professionals and their expertise in the HSP as a unique ecosystem for innovation.

If the 5+2 Industrial Innovation Plan fulfills its promise, it will have differed from previous efforts toward past industrial upgrading and transformation chiefly in its promotion of innovation through cross-industry fusion. In light of the government’s promotion of the IoT, green energy, biomedicine, and smart machinery industries, the HSP’s job is to help companies in existing fields understand new applications in other fields while promoting the exchange of innovative ideas in capabilities between companies in different fields. Cross-industry fusion and innovation will ensure that the 5+2 plan achieves a 5x2 level of effectiveness and maximizes the scope of possibilities for industrial development. Drawing on the innovative R&D capabilities of existing tenant firms, the HSP will train outstanding innovative manpower, increase the exchange of practical knowledge in the areas of IoT, green energy, smart machinery, and biomedicine under the Asia Silicon Valley framework, and help tenant companies engage in cooperation both within and outside the park and make inroads into new markets. Furthermore, by implementing industrial promotion strategies and meeting the needs of industry clusters, the HSP will bring about opportunities for cross-industry cooperation and dialogue. By publicizing the results of its industry promotion experience, the HSP will increase public knowledge of its outstanding technological levels in relevant fields, and enhance the competitiveness and influence of the park’s industrial technologies.
A Regional Ecosystem of Innovation

To drive innovation across the HSP, encourage R&D, and help with industrial transformation, the HSPB offered NT$71.32 million in R&D subsidies in 2017. Equal emphasis was placed on recruiting, cultivating, and retaining top-notch professionals. As such, the HSPB continued to implement various training programs and take action to support the Ministry of Science and Technology’s Leaders in Future Trend (LIFT) initiative with a view to ensuring the HSP’s status as a bellwether of innovation.

Subsidies for R&D

(1) The Ministry of Science and Technology’s Project for Industry-Academia Collaboration on Innovative R&D in Science Parks

Launched in 2010, the Project for Industry-Academia Collaboration on Innovative R&D
in Science Parks is designed to have tenant companies, academic institutions, and research entities join forces and consolidate their resources. In turn, they can work together toward heterogeneous integration and cross-sector applications and develop products and technologies with marketability. In 2017, approval was extended to 14 applications for a combined NT$48.32 million in grants under the project. The outlay in turn was expected to induce tenant companies to come up with over NT$80 million of R&D spending on their own. In the meantime, the project solicited involvement by a total of 150 R&D engineers from tenant companies and provided training to another 42 young professionals. Some highlights of such projects concluded in 2016 are as follows:

1. Bion Tech Inc.’s HSP Branch collaborated with National Chung Hsing University in an R&D project for the development of an innovative biological mosquitoicide. The project was rewarded with precisely such a product that went on to pass biological safety assessment, undoubtedly a great boost to its competitiveness on the market. This project emerged as a highlight at the 2017 Future Tech exhibition hosted by the Ministry of Science and Technology and won a Futuristic Inventive Technology Award in recognition of its significance in developing environment-friendly microbial agents conducive to health and environment management.

2. AU Optronics Corp. teamed up with National Sun Yat-sen University to develop a next-generation, full HD transparent display. Their reward is the industry’s first transparent OLED display that is easily switchable between the black state and the transparent state. Intended for window display or AR applications, it is a fitting instrument for displaying a rich diversity of information.

3. General Biologicals Corp. and National Tsing Hua University joined forces to study monitoring of metabolic disorders caused by periodontitis by means of a molecular diagnosing platform. The project bore fruit in the form of a highly efficient multiplex real-time PCR approach toward testing for periodontitis. By promoting it alongside related products and services, the company has succeeded in bringing this new offering to market (through such retail channels as Tokyo Drugstore, Wholesome Pharmacy, and Watsons) and generated sales in excess of NT$25 million to date.

(2) Innovative Medical Equipment Program: Cross-Sector Integration to Promote Biomedicine

To promote five specifically designated innovative industries and help Taiwan move toward an innovation-driven economy, the government adopts biotechnology as a convergence point for fostering cross-sector integration and assisting HSP companies in

| Subsidies granted in 2017 for the Cross-Sector Integration to Promote Biomedicine program |
|---------------------------------|---------------------------------|
| **Independent Project**         | **Collaborative Project**       |
| **Project**                     | ** Applicant**                  |
| A critical subsystem for proton therapy of tumors—design and manufacture of a marketable high frequency resonant cavity | Chinan Biomedical Technology, Inc. |
| Production of standardized human platelet antigens and development of related applications | General Biologicals Corp. |
| Artificial retina devices capable of automatic adjustment and control | Iridium Medical Technology Co., Ltd. |
| **Project**                     | ** Applicant**                  |
| Early diagnosis device and cloud analysis platform for sleep disordered breathing | Somnics, Inc. |
| Development of a remotely controlled, minimally invasive bone cement injection system for osteoporosis | Wiltrom Medical Device Co., Ltd’s HSP Branch |
| **Partner Enterprise**          | ** Academic/Research Institution** |
| Physiolguard Biotechnology Inc. | National Central University |
| Point Robotics                  | Taipei Veterans General Hospital |
helping the local populace stay healthy.

In 2017, subsidies totaling NT$19.15 million were granted to five projects (three independent projects and two collaborative projects), which in turn were expected to incur corresponding R&D outlays of over NT$25 million on the part of participating companies and help train more than 60 R&D professionals.

(3) Innovative Product Awards

To encourage HSP firms to develop innovative products and expand international markets, the HSPB initiated the Innovative Product Awards in 1986. High on the list of screening criteria are innovation, technology, market competitiveness, R&D input, benefits incurred, numbers of internationally recognized awards and patents secured, and number of papers published. In 2017, nine innovative products were awarded, and public commendation of the winners was part of the HSP’s 37th anniversary celebrations. Of the winners, Coretronic Corp. and Harvatek Corp. both made their way into the 2017 Future Tech exhibition hosted by the Ministry of Science and Technology and won a Futuristic Inventive Technology Award each.

(4) Research and Development Achievement Awards

The HSPB launched the Research and Development Achievement Awards in 2003. In addition to encouraging HSP companies to strengthen their R&D and acquire patents, thereby protecting their own intellectual property, the initiative is meant to promote Taiwan’s industrial development by raising technology standards. High on the list of
Subsidy Program for Growing Talent in Science Parks for the 2017 Academic Year

<table>
<thead>
<tr>
<th>Item</th>
<th>Project</th>
<th>Implementation Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Applying cell cultures and natural product analysis to critical technologies for development of dietary supplements</td>
<td>China University of Science and Technology</td>
</tr>
<tr>
<td>2</td>
<td>Modular course on growing professionals for photovoltaic system installation and module packaging</td>
<td>Chien Hsin University of Science and Technology</td>
</tr>
<tr>
<td>3</td>
<td>Measuring the performance of information center management</td>
<td>National Chiao Tung University</td>
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<tr>
<td>4</td>
<td>Modular course on gaming design for mobile devices</td>
<td>Soochow University</td>
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<tr>
<td>5</td>
<td>Modular course on mobile apps development and digital content design</td>
<td>Fo Guang University</td>
</tr>
<tr>
<td>6</td>
<td>Internship on integrated IoT and mobile device programming and applications</td>
<td>Chia Nan University of Pharmacy &amp; Science</td>
</tr>
<tr>
<td>7</td>
<td>Solid-state lighting technology and applications</td>
<td>Ming Chi University of Technology</td>
</tr>
<tr>
<td>8</td>
<td>Modular course for growing professionals on internet technology and security management</td>
<td>Chien Hsin University of Science and Technology</td>
</tr>
<tr>
<td>9</td>
<td>Design, structure, and impact analysis of servers/workstations</td>
<td>National Ilan University</td>
</tr>
<tr>
<td>10</td>
<td>Modular course for growing professionals on supply chain management in the hi-tech industry</td>
<td>China University of Technology</td>
</tr>
<tr>
<td>11</td>
<td>Modular course on and internship for precision machinery professionals</td>
<td>Minghsin University of Science and Technology</td>
</tr>
<tr>
<td>12</td>
<td>Modular course for growing professionals on apps and IoT applications</td>
<td>Vanung University</td>
</tr>
<tr>
<td>13</td>
<td>Modular course on electromagnetic compatibility and antenna design</td>
<td>JinWen University of Science and Technology</td>
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HSP 2017 Talent Cultivation and Training Program

<table>
<thead>
<tr>
<th>Program</th>
<th>Number of Trainees</th>
</tr>
</thead>
<tbody>
<tr>
<td>HSP Optoelectronics Professionals Training Program</td>
<td>956</td>
</tr>
<tr>
<td>HSP Semiconductor Professionals Training Program</td>
<td>1,024</td>
</tr>
<tr>
<td>HSP ICT Professionals Training Program</td>
<td>890</td>
</tr>
<tr>
<td>HSP Program for Training Occupational Safety and Health Promotion Professionals</td>
<td>953</td>
</tr>
<tr>
<td>HSP Lectures on Science and Technology Management</td>
<td>3675</td>
</tr>
<tr>
<td>HSP Biotech Medical Equipment Professionals Training Program</td>
<td>900</td>
</tr>
</tbody>
</table>

Total 8,398
screening criteria are the following: appropriations and manpower for R&D, revenue, number of domestic and international patents secured, benefits incurred, etc. The two 2017 winners—eMemory Technology Inc. and Wistron NeWeb Corp.—were accorded public commendation as the HSP celebrated its 37th anniversary.

**Talent Cultivation and Training**

(1) **Talent Cultivation & Training in the HSP**

The HSPB is keen to help HSP tenant companies promote the professional competence of their employees. Catering to the emerging trends in the HSP’s six major industries and specific needs of tenant companies, the HSPB organized training programs on the following six fronts in 2017: semiconductor, optoelectronics, ICT, occupational safety and health promotion, science and technology management, and biotechnology and biomedical equipment. It also hosted a number of forums and seminars on forward-looking technologies to help tenant companies develop the high-caliber manpower they need. In 2017, a total of 218 training sessions were offered, totaling 2,267 lecture hours and attracting 8,398 trainees.

(2) **Subsidy Program for Growing Talent in Science Parks**

With a view to helping the HSP’s tenant companies cultivate specialized talent, the Subsidy Program for Growing Talent in Science Parks is undertaken to encourage neighboring institutions of higher learning to introduce modular courses that are relevant to the local industrial community and can help would-be graduates enhance their specialized competence. Meanwhile, internship at tenant companies is also offered to make up for the learning gap between industry and academia, thereby making an effective matching mechanism for the two parties. In the 2016 academic year (from July 2016 through August 2017), the HSPB offered a total of NT$10 million in 15 subsidies for modular courses and internship programs. A total of 2,341 students

<table>
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<tr>
<th>Industry-Academia Interchange Events in 2017</th>
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<tbody>
<tr>
<td><strong>Category</strong></td>
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<tr>
<td>Interchange meeting among government, industry, and academia as well as the research community</td>
</tr>
<tr>
<td><strong>Date</strong></td>
</tr>
<tr>
<td>04/10</td>
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<tr>
<td><strong>Event</strong></td>
</tr>
<tr>
<td>Greater Hsinchu Industrial Development Strategic Alliance</td>
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<tr>
<td>Technology forum on cross-sector innovation</td>
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<tr>
<td>02/21</td>
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<tr>
<td>IoT Cross-Sector Technology Forum</td>
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<tr>
<td>06/02</td>
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<tr>
<td>Smart Hospital—Technology Forum on Seeking New Opportunities</td>
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<tr>
<td>07/14</td>
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<tr>
<td>Create New Opportunities for Smart Care</td>
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<tr>
<td>08/31</td>
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<tr>
<td>Cloud Technology Symposium</td>
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<tr>
<td>09/27</td>
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<tr>
<td>Green Energy Technology Forum and Business-Matching Meeting</td>
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<tr>
<td>10/24</td>
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<tr>
<td>iT and AI Technology Symposium and Presentation</td>
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<tr>
<td>11/22</td>
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<tr>
<td>AI and Visual Technology Symposium</td>
</tr>
<tr>
<td>09/14</td>
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<td>Originators’ meeting and the first preparatory meeting</td>
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<td>11/01</td>
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<tr>
<td>The second preparatory meeting</td>
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<td>11/20</td>
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<td>The first general assembly of the first association; joint meeting of board of directors and supervisors</td>
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benefitted. In the 2017 academic year (from July 2017 through August 2018), the HSPB would offer NT$9.5 million in subsidies for 13 modular courses.

(3) Leaders in Future Trend (LIFT)

The Ministry of Science and Technology implemented the LIFT initiative to both meet domestic needs for advanced R&D professionals and take in overseas elites yearning to return home. In 2017, more than 30 such elites answered this call. For its part, the HSPB assisted in establishing a platform for the interchange of professionals of various disciplines and organizing a variety of interchange events, as well as provided returning professionals with relocation services such as rent discounts for HSP dormitories and schooling for their children. In order to help these returnees fully assert themselves in their respective fields, the HSPB makes it a point to help them settle comfortably in Taiwan as soon possible so that they can focus on what they do professionally.

Industry-Academia Interchange

The HSPB has taken the initiative to promote the establishment of an industry-academia association with a view to building a premium science park driven by innovation, fostering opportunities for sharing experiences with regard to innovative startups, pushing collaborative R&D, facilitating talent interflow, and bolstering introduction of forward-looking technologies. The planned association is intended to focus on integrating resources across government, industry, and academia as well as the research community as it seeks to cultivate professionals that local companies need, foster new applications of key technologies, and create opportunities for cross-sector cooperation, thereby enhancing the competitiveness of Taiwan’s next-generation technology industry. That is, institutions of higher learning, research institutions, and private companies will be brought together to pool resources toward joint efforts that transcend all boundaries and make possible an interchange of professionals of various disciplines.

In 2017, the preparatory committee of the HSP Industry-Academia Association organized a number of forums, symposiums, and other interchange events while making preparations for setting up the association. After the Ministry of the Interior approved its establishment on July 24, the association is scheduled to be officially inaugurated in March 2018 to help promote Taiwan’s industrial upgrading.

Forming the Greater Hsinchu Industrial Development Strategic Alliance

To promote development of the region and cooperation across government, industry, and academia as well as the research community, the HSPB, Hsinchu county and city governments, Industrial Technology Research Institute, National Applied Research Laboratories, and
Association of Industries in Science Parks as well as National Chiao Tung University and National Tsing Hua University signed a memorandum of understanding on forming the Greater Hsinchu Industrial Development Strategic Alliance on April 10, 2017. The alliance aims to achieve the following:

1. Establish an information platform for industrial investment and economic development to bolster Greater Hsinchu’s investment environment.

2. Expand industry-academia collaboration between the HSP and Hsinchu City and Hsinchu County, enabling the sharing of information and such services as talent training and technology matching.

3. Expand industry-academia collaboration between the HSP and Hsinchu City and Hsinchu County, enabling the sharing of information and such services as talent training and technology matching.

4. Offer appropriate assistance and suggestions in line with the central government’s policy on industrial development.

5. Jointly promote measures to improve communities and transportation facilities in the vicinity of the HSP’s specific areas on five critical fronts.

Promotion of Innovative Startups

Innovation holds the key to staying competitive. As the bellwether of Taiwan’s high-tech industry, the HSP has succeeded in carving a name for itself internationally. And now how to keep up its competitive edge and attain sustainable development is a common goal shared by every member of the HSP family.

“Start a Nest for Phoenixes, Start Businesses to Make Dreams Come True”

Committed to fostering industry innovation and transformation and attaining sustainable development, the HSPB regards “innovative concepts and innovative services” as its core value. In turn, it has established the Young Entrepreneur’s Studio as an exclusive platform for serving would-be business founders of the younger generation. Among others, it offers such resources and services as specialized consulting, matching of funding and technology, and all-inclusive secretarial services. The objective is to maximize the HSP’s cluster effect and craft a sustainable package of services for...
startups, thereby bridging the gap between IP and IPO. Implemented by the Ministry of Science and Technology in March 2013, the From IP to IPO (FITI) program selects R&D teams with the potential for technological innovation and product marketability from among local academic and research institutions on a semiannual basis. The objective is to transfer the solid R&D momentum of such entities to the industrial community and bring about a new wave of startups. As of the end of 2017, the FITI initiative had funded a cumulative 266 teams, of which 131 had gone on to become startups that, combined, register paid-in capital of over NT$1.1 billion.

In 2017, a total of 28 startup teams from the HSP were accorded grants: five from the National Development Fund’s angel funding; nine from the Ministry of Science and Technology’s initiative for promoting acceleration and consolidation of startups from R&D accomplishments; two from Hsinchu City’s Small Business Innovation Research (SBIR) initiative for 2017; four from the Program on Selecting Ideas for Startups introduced by the Ministry of Economic Affairs; three from the SBIR initiative of the Ministry of Economic Affairs; and five from the Silicon Platform for Innovative Startups. Separately, another three teams won awards at 2017 Smart City Next, a contest organized by the Ministry of Economic Affairs.

The HSP is complete with incubation resources, R&D momentum, and an obvious competitive edge derived from its cluster effect. Coupled with well-rounded assistance and services, it is no less than a paradise for would-be entrepreneurs to make their dream come true. As the HSPB continues to promote innovative startups, it will place special emphasis on helping innovative industries take advantage of the growing trend for cloud computing, IOT, and big data analytics to come together. In 2018, the HSPB is set to engage industry veterans (chief officers in various fields) for in-depth counseling as well as offer subsidies for local aspirants to participate in international exhibitions, thereby highlighting the market value of startups and facilitating their reach beyond national borders.

**Going to Kyoto Research Park for Visit and Promotion**

In August 2017, the HSPB headed a delegation of local startups to Koyo Research Park (KRP), one of the HSP’s sister parks. During its annual KRP Week for the year, a highlight was a special event: “Meet Taiwan! The Island of Technology & Innovation.” Japan’s government officials, business representatives, and journalists were invited to attend the event that proved conducive to helping them learn more about Taiwan’s science parks and presenting the products of the aforesaid local startups to the Japanese market.

To effectively meet every need of incoming teams, the HSPB always takes the initiative to identify problems and get them fixed in no time while doing its best to help nurture startups. The objective is to inspire a new army of business founders and thus help local high-tech industry reinvent itself. Thanks to the HSP’s incubation resources, counseling, and secretarial services, a good number of startups have indeed emerged. In the days ahead, the HSPB will work even harder to ensure the HSP’s sustainability as a venue conducive to startups as well as its standing as a bellwether for advancing innovation and starting businesses.
A Friendly Working Environment

Health Care at the Hsinchu Science Park Clinic

Inoculation is surely the most effective prevention against the flu. Always committed to caring for the health of HSP employees, the Hsinchu Science Park Clinic makes it a point to deliver just that. In 2017, a total of 4,900 persons were inoculated. In keeping with the spirit of preventive medicine, the Hsinchu Science Park Clinic also provides the employees of some 150 tenant companies with free low-dose lung CT services. As of the end of 2017, 4,981 persons had taken advantage of this service.

Those who work in the HSP certainly have a
The HSPB granted an award of excellence for its outstanding performance in labor inspection.

Implementation of the Program on Safety and Health Assistance and Inspection for High-Risk Businesses and Chemicals

A Safe and Healthy Workplace

In addition to conducting labor inspections at the authorization of the Ministry of Labor, the HSPB is also responsible for promoting public awareness of occupational safety and health and offering assistance thereof. In 2017, the HSPB conducted 1,032 labor inspections (including those of danger-prone machines and workplaces) and joined the Ministry of Labor in undertaking another 23 special inspections (such as those of the working conditions in the electronic components manufacturing industry). Meanwhile, the HSPB held 14 awareness workshops (attended by 1,288 persons) and offered assistance to tenant companies in 57 cases. The objective was to better protect the employees of tenant companies by prodding the latter to strengthen autonomous management of their safety and health affairs. Other important undertakings include:

1. To remind tenant companies and nearby residents of the importance of health promotion, workplace safety, and environmental protection, the HSPB implemented the 2017 Labor Safety and Environmental Protection Month campaign.

2. Through implementing the Program on Safety and Health Assistance and Inspection for High-Risk Businesses and Chemicals, the HSPB seeks to ensure that tenant companies

stronger incentive to donate blood after the Hsinchu Blood Donation Center set up an outpost at the Hsinchu Science Park Clinic. In 2017, it received donations totaling 1,938 units from people aged between 17 and 65.

To help HSP companies strengthen health management at the workplace, the Hsinchu Science Park Clinic undertook 16 health promotion lectures and offered health counseling to a total of 106 HSP employees in 2017. To further bolster health management at the workplace throughout the HSP, these health promotion events were followed by a gathering for promoting health services by means of experience sharing.

To keep up friendly relations with neighboring communities, the Hsinchu Science Park Clinic teamed up with the HSPB and Association of Industries in Science Parks to undertake a charitable drive in 2017: offering volunteer medical counseling to residents in the neighborhood. A team headed by Superintendent Wang Yao-hong did the following: taking blood pressure and sugar readings and measuring bone mineral density (of the ankle). Transportation would be made available to residents with a BMD reading of minus 1.5 or lower for undergoing a dual-energy X-ray absorptiometry test at the Hsinchu Science Park Clinic. In 2017, a total of 3,202 residents took advantage of this charitable service and another 671 persons underwent the said X-ray absorptiometry test free of charge.

Inoculation against the flu (photo by the Hsinchu Science Park Clinic)
take whatever action is required. Meanwhile, a platform of safety and health experts is put in place to provide small- and medium-sized enterprises with consulting services and promote the interflow of disaster relief information and relevant techniques.

3. To encourage HSP companies and employees to work toward occupational safety and health and prevent occupational disasters, the HSPB went to great lengths in 2017 to seek out businesses and personnel that did exceptionally well on this front. Awards were granted at the opening ceremony of the 2017 Labor Safety and Environmental Protection Month campaign.

4. To effectively enhance the performance of labor inspection agencies, the Ministry of Labor forms an evaluation team to conduct on-site, item-by-item checkups. The HSPB’s outstanding performance on this front in 2017 was once again rightly recognized as the Ministry of Labor accorded it an award of excellence during the year’s national staff conference on occupational safety and health as well as labor inspection.

**Measures for Promoting a Friendly Working Environment**

To help facilitate parent-child interaction, the HSPB hosts theatrical plays produced for children each year. On the evening of August 16, 2017, the troupe KSTR was invited to present “Rainbow Music Forest” for both adults and children in the HSP. This impeccable performance that won a hearty response was followed by a musical feast—“April Rain: An Evening of Teng Yu-hsien’s Orchestral Music”—on December 20. The Longtan Philharmonic Orchestra and Ms. Chou Yue-chi collaborated to interpret Mr. Teng’s simple but firm music that reflects the musician’s empathy for the common people of his time.

Workers make both an essential driving force behind Taiwan’s economic development and an invaluable asset of the country. To express gratitude and respect to HSP workers for their hard work and contribution, the HSPB selected 87 outstanding employees from throughout the HSP in 2017 and gave them commendations during an evening celebration on Labor Day (May 1). Separately, the HSPB subscribed to the Ministry of Labor’s nationwide campaign of selecting and commending model workers by recommending that three tenant company employees—Tsai Hsiu-yen of Taiwan Semiconductor Manufacturing Co., Ltd., Chuang Tsung-peng of Realtek Semiconductor Corp., and Liu Lin-hai of Episil Technologies Inc.—participate in the selection process. Of the three, Tsai went on to win the honor of being a model worker in the industrial labor category.
Outside the Workplace

To help the employees of tenant companies enjoy recreation in their leisure time, the HSP has established such outdoor facilities as basketball courts, tennis courts, swimming pools, and a golf driving range. Separately, there is an activity center that comprises an indoor general-purpose gymnasium (complete with areas for badminton, basketball, volleyball, ping-pong, dance, and yoga), an auditorium (for meetings and exhibitions), and a convenience store. During holidays, the center occasionally becomes the venue for art and cultural events, parent-child activities, or a market for small farmers.

Dietary Delights

To provide HSP employees with a full range of dietary choices, there are both Chinese and Western restaurants (such as Yunting Taiwanese Restaurant and Toscanini Italian Restaurant). Located by Jingxin Lake, VegetableFruit Love adopts a dietary approach that refrains from harming any animal and features natural foods with their original flavor. For HSP employees, it is certainly a refreshing and wholesome choice. Shako Restaurant advocates nature and takes seriously the sources of foods in its rigorous selection of ingredients. In addition to serving healthy foods, the restaurant adopts OLED lighting that is only fitting to this “health first” establishment.

Improving Accommodations

The HSPB provides dormitories for both singles and couples with dependents. In 2006, the HSPB began renovating outdated single dorms on a one-by-one basis. To date, all four dorm buildings meant for single women and another four for single men have been renovated. In 2018, the HSPB will begin renovation of the Rongyuan Building. Given concern over its structural safety, the Xuanyuan Building of single dorms is to be demolished for reconstruction this year. Completion and availability to tenants is slated for 2020.

A Premium Educational Environment

To help HSP employees strike a balance between work and family and address their needs for childbirth, parenting, and family care, the HSPB offered assistance to 152 tenant companies (with 100 or more employees) in setting up childcare facilities in 2017.

On August 1, 2017, Roger Lee assumed office as the 7th principal of National Experimental High School at Hsinchu Science Park. Principal Lee, who proclaims open, diverse, innovative, forward-looking, and inclusive as his core beliefs, vows to meet the needs of the school’s five divisions via an integral approach. Setting out from a shared vision, he aims to forge a school-wide consensus via multilateral communication across the campus in order to attain his ultimate objective of creating a school marked by respect and harmony.
Upgrading Daily Services in the Jhunan Park

On September 7, 2017, the HSPB ushered in Anjie Technology Consulting Co., Ltd. to the Juhnana Service Office Building for provision of services with regard to occupational safety and health and public security. This was followed by the introduction of Universal Luck International Co., Ltd. to the same building, on December 27 of the same year, for the 2018 launch of smart convenience store services in the Jhunan Park.

Green Ecology

Landscape Management

To enhance the HSP’s landscape quality and create a desirable working environment, the HSPB always takes seriously the maintenance of planting, environmental cleaning, and drainage dredging. As seasons change, flowers or bushes are planted or replaced at the HSP’s entrance or along the major road sections to make possible landscape variation fitting to each season. In 2017, planting and replanting covered an area of 4,150 m² in the Hsinchu Park, 77 m² in the Hsinchu Biomedical Science Park, 882 m² in the Jhunan Park, 550 m² in the Tongluo Park, and 487 m² in the Longtan Park. Meanwhile, flower seeds were scattered across an area of 15,575 m² in the Yilan Park. On the other hand, installation art pieces created out of the twigs thus trimmed or other retrieved waste materials are placed in parks or other green spaces across the HSP. Other endeavors on this front include encouraging tenant companies to sponsor the maintenance of parks and green spaces and organizing plant landscaping competitions, thus urging concerted efforts across the HSP to make a pleasant environment for all to enjoy.

Plant Landscaping

When tenant companies begin building their plants, they will be required to set aside recession green belts larger than 25% of the lot size. The objective is to connect all the green belts to form green corridors, thus giving the HSP the lush appearance of a large park. To be sure, vegetation makes the HSP a beautiful place that offers a natural stress-relieving environment less prone to noises and air pollution.

(1) Competition for and Symposium on Plant Landscaping and Environmental Maintenance

The HSP’s 2017 Competition for Plant Landscaping and Environmental Maintenance was held in May and June. A total of 20 tenant companies were awarded. After the competition ran its course, jury members—Chuchien Community University President Wu Tsung-chi, Chung Hua University Associate Professor Yang Gwosyang, and TSMC departmental manager Chung Chen-wu—were invited to give lectures at the 2017 Symposium on Plant Landscaping and Environmental Maintenance, which is part of the HSP’s 37th anniversary celebrations, on November 30, 2017. The three spoke on Environmental Aesthetics and Landscape Planning, Modern Garden Design—Seen From Landscape Architecture’s...
### Winners of the HSP’s 2017 Competition for Plant Landscaping and Environmental Maintenance

#### High Distinction Awards (11 companies)

<table>
<thead>
<tr>
<th>Company Name</th>
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<tr>
<td>Powerchip Technology Corp.’s Fab P1/2</td>
<td>AU Optronics Corp.’s L3B</td>
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<tr>
<td>TSMC’s Fab 12 P4</td>
<td>TSMC’s Fab 12 P7</td>
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<tr>
<td>Macronix’s Fab Lixing</td>
<td>Elan Microelectronics Corp.</td>
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<tr>
<td>UMC’s Fab Lixing</td>
<td>Rohm and Haas Electronic Materials Asia-Pacific Co., Ltd.’s Jhunan Plant</td>
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<tr>
<td>Shin-Estu Hanodotai Taiwan Co.</td>
<td>K Laser Technology Inc.’s Lixing Plant</td>
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<td>TSMC’s Fab 12 P7</td>
<td>Maxchip Electronics Corp.</td>
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#### Distinction Awards (9 companies)

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<td>AU Optronics Corp.’s L3C</td>
<td>Mosel Vitelic Inc.</td>
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<tr>
<td>King Yuan Electronics Co., Ltd.’s Tongluo Branch</td>
<td>Macronix’s Fab 1</td>
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<tr>
<td>Macronix’s Test Building</td>
<td>Neo Solar Power Corp.’s 2nd Plant</td>
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<tr>
<td>Microtek International Inc.</td>
<td>Innolux Corp.’s JOC Plant</td>
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<td>Macronix’s Fab 5</td>
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#### Special Contribution Awards (2 companies)

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<tr>
<td>Taiwan Semiconductor Manufacturing Co., Ltd.</td>
<td>Elan Microelectronics Corp.</td>
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A view of K Laser Technology Inc.’s plant

Macronix International Co., Ltd.’s ecological pond
Evolution, and Landscape Design and Construction Planning for Office Buildings of Technology Companies respectively.

(2) Sponsoring Parks and Green Spaces
Currently, a total of 24 tenant companies and other entities sponsor the maintenance of parks and green spaces totaling some 37 hectares across the Hsinchu, Longtan, Jhunan, and Tongluo parks. The HSPB believes that, with tenant companies joining in a common cause, the HSP can keep up an utterly pleasant landscape.

Environmental Protection
(1) Monitoring Environmental Quality and Installing Real-Time Bulletin Boards
To effectively keep track of air quality around the Hsinchu Park, the HSPB has installed two monitoring stations (each with station building, monitoring equipment, meteorological tower, and data-gathering system) on the green lots above the Xingye 2nd Road Parking Lot and to the south of Lixing Road and Lixing 3rd Road respectively. The two stations are charged with long-term, nonstop monitoring of such items as sulfur dioxide, nitrogen oxides, total hydrocarbon, ozone, carbon monoxide, aerosols, and particulate matters in the air, as well as wind direction and velocity, temperature, and humidity, thereby offering real-time information on air quality.

Separately, an electronic bulletin board has been installed at a crossroads next to the Hsinchu Wastewater Treatment Plant to display such real-time information as the pH value of effluents from the Hsinchu, Longtan, and Jhunan wastewater treatment plants, density of suspended solids, and traffic status of the national freeway sections close to the HSP, as well as the aforementioned air quality readings.

(2) Fulfilling Corporate Social Responsibility
1. To highlight its commitment to sustainability, the HSPB adopted the latest reporting framework in 2017 for compiling its 2016 corporate social responsibility report that covers such dimensions as environmental sustainability, operations management, and social responsibility. In November 2017, the report won a golden Corporate Sustainability Report Award for the university, hospital, and government sector from the Taiwan Institute for Sustainable Energy.

2. The HSP’s tenant companies take their corporate social responsibility seriously and strive for sustainable development. Many are avid participants in competitions for CSR awards organized by Taiwan’s CommonWealth Magazine and Global Views Monthly.
(1) 2017 CommonWealth Excellence in Corporate Social Responsibility Awards


In particular, UMC emerged as an award recipient in the large enterprises sector for a third straight year, attesting to the jury’s affirmation of the company’s commitment to caring for employees and the underprivileged and fulfilling corporate social responsibility.

(2) 2017 Global Views Corporate Social Responsibility Awards

A total of three HSP companies won the said awards:

- United Microelectronics Corp.—the exemplary award in the electronics and technology category and the top award in the happy enterprises category.
- AU Optronics Corp.—the top award in the environmental friendliness category.
- Hon Hai Precision Industry Co., Ltd.—the top award in the education and promotion category.

(3) Promoting Environmental Education

In 2017, the Hsinchu Wastewater Treatment Plant conducted environmental education by means of flyers, posters, and presentations of previous accomplishments on this front. It also arranged visits to schools and communities to solicit new partners for environmental education. New partners added in 2017 include seven communities, two elementary schools, and 18 individuals. In total, the HSPB’s environmental education venues played host to 25 visiting groups (737 persons) in 2017.

In 2017, the HSPB offered two training sessions for environmental education professionals and another session for boosting their competence. Besides enhancing the professional competence of personnel responsible for environmental education, such training was also intended to strengthen their understanding of the job and help them better serve the general public in guided tours.

(4) Promoting Transformation of Industrial Waste Into Resources

Committed to promoting transformation of industry waste into resources and supporting the Environmental Protection Administration’s policy, the HSPB has implemented a resources recycling program. In turn, the percentage of the HSP’s industry waste being transformed into resources increased to 88.4% (226,165 tons) in 2017 from 73.32% (99,752 tons) in 2008.
Technology and the Humanities

The HSPB is proactive to create an art and cultural ambiance against the HSP’s setting as a high-tech environment where scientists and engineers can naturally and comfortably cultivate an appreciation of the humanities. In so doing, the HSPB also aims to build closer ties with neighboring communities—a bond through which local residents will further identify themselves with the place.

Public Art

The primary goal of public art is to blend the humanities and the environment, thereby fostering the concept of "sustainable participation" and inducing viewers to consider and explore the complementary relationship between technology and the environment. For its part, the HSPB adopts a no-wall approach toward ushering in public art to the HSP—a domain characterized by information flowing at a breakneck speed and technology evolving by leaps and bounds—with a view to introducing elegance and beauty, disseminating vitality, and inspiring creativity. In 2017, the HSPB undertook screening of second-phase public art installations in the Hsinchu Biomedical Science Park and decided to award the project to DADA Idea, which in turn is given until the end of July 2018 to complete installing the following three works:

1) "Linked Movements"/Bodo Korsig

Over the past 25 years, Bodo Korsig’s art has been inspired by the brain’s neurons and chemical reactions, an element that makes this work an especially significant and exciting challenge. Through "Linked Movements," Korsig seeks to create an extraordinary rendezvous space that invites people to linger and give their imaginations free rein. All 23 symbols in the work are from some vague, unknown object, and their soft, fresh forms are references to the elements of nature and science. In addition, because these symbols are not specific signifiers, they are able to provide a fluid, unconfined space for visitors to set free their ideas. As the title of the work denotes, it can let people meet and make connections with one another, while providing a setting in which people can focus on the flow of their thoughts. Bodo Korsig hopes that this work can create a space that brings out all kinds of ideas and reflections and induce people to explore possible new links in everyday life.

2) Derivative Melody/Chen Li-hsing

This work’s structure reflects the spirals, twists, repeats, and continuity of the genome, and these elements are developed into the
form of a flower. This portrays the contribution that biotechnology makes in extending the continuity of Earth, humanity, and life. Indeed, biotechnology is no less glorious than a flower in bloom. This stainless steel sculpture will be installed at the Biotech Building's entrance, and its six continuous "∞" symbols of infinity will serve as a metaphor for the endless chain of genes and life. One of the threads in this whole, biomedical technology will continuously evolve and blossom in the midst of life’s bounty.

(3) Song of Dream and Dew/Lin Shun-lung

Boulders streaked with white are set on the grass, and the distant tranquil memories they have accumulated over millions of years extend outward. Polished stainless steel columns of different lengths protrude from the surface of each boulder, looking as if some new sprout has arisen from each boulder’s million-year life history. The unadorned natural rock and artificial steel columns evoke the contrast between science and the natural realm. The way the steel columns are borne from the boulders’ surface provides a clever and gentle metaphor for the relationship between biomedicine and nature. When contemplating the great achievements of modern technology, people must not forget to trace them back to the wisdom and nurture of the natural world. This deserves to play an important part in the pursuit of biomedicine.

Cleaning up the Homeland and Neighborhood

To ensure harmonious relations between the HSP and neighboring communities, the HSPB is keen to give a helping hand in keeping their streets clean and preserving a pleasant overall environment. As such, it has initiated an annual community drive under which everyone is invited to join in cleaning up the neighborhood. A total of 12 such events were held in 2017 to clean up communities across the Hsinchu Park’s neighboring villages: Keyuan, Xiangong, Xianshui, Jinshan, Gaofeng, and Xinzhuang; the villages of Dingpu and Shanxia around the Jhunan Park; the Tongluo Park’s Jiuhu Village; the villages of Jianye and Nanqiao around the Yilan Park; and the villages of Sanhe, Shengde, and Bade around the Longtan Park. These certainly met with a hearty response among local residents.
1. HSPB Director-General Wayne Wang travelled to the U.S. for CES 2017 and called at businesses.
2. Construction kicked off on National Taiwan University Hospital’s HBSP Branch.
3. The Center for Implementing the Biomedical Industry Innovation and Promotion Program was inaugurated in the Hsinchu Biomedical Science Park.

4. Minister of Science and Technology Chen Liang-gee inspected the Hsinchu Biomedical Science Park and the Young Entrepreneur’s Studio.
5. Innodisk Corp. held a ground-breaking ceremony in the Yilan Park.
6. AU Optronics Corp. hosted an inauguration ceremony for its solar power plant in the Longtan Park.
7. Control Yuan ombudsmen Chen Xiaohong and Chen Qingcai inspected the Yilan Park.
8. The Executive Yuan, or Cabinet, approved the HSPB’s Mid- to Long-Term Plan (2017-2021) for Building a Second Biotech Building in the Hsinchu Biomedical Science Park.

9. The HSPB, Hsinchu county and city governments, Industrial Technology Research Institute, National Applied Research Laboratories, and Association of Industries in Science Parks as well as National Chiao Tung University and National Tsing Hua University signed a memorandum of understanding on forming the Greater Hsinchu Industrial Development Strategic Alliance.
10. Indian Institute of Technology Hyderabad, National Yunlin University of Science and Technology, the HSP, and the Central Taiwan Science Park signed a memorandum of understanding on four-party cooperation.
11. HSPB personnel joined a Ministry of Science and Technology delegation to Singapore for collecting the Gold Award for Smart Transport, one of APEC’s 2017 Energy Smart Communities Initiative (ESCI) Best Practices Awards, and calling at the city state’s cluster of innovative startups.

12. HSPB personnel participated in a Ministry of Science and Technology fact-finding tour of Japan’s green energy industry.
13. AU Optronics Corp. hosted an inauguration ceremony for its solar power plant in the Longtan Park.
14. Control Yuan ombudsmen Chen Xiaohong and Chen Qingcai inspected the Yilan Park.
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19. The HSPB hosted the 2017 Competition for Plant Landscaping and Environmental Maintenance, attracting a total of 20 entrants.
20. An HSPB delegation travelled to Iran to attend the ASPA Leaders Meeting.
21. The HSPB assisted the Yilan county government in conducting a disaster relief exercise in the Yilan Park.
22. Minister of Science and Technology Chen Liang-gee called at the Hsinchu Biomedical Science Park and had a meeting with HSP companies.
23. The HSPB participated in Wan-An Drill No. 40, a civil defense exercise that covered northern Taiwan, and Drill Min-An No. 3 organized by the Hsinchu city government. Both went smoothly.
The Hsinchu Park ushered in the YouBike public bicycle sharing service.1

The Ministry of the Interior gave approval for the HSP Industry-Academia Association to be established.24

The Hsinchu county government completed its review of the Proposal to Change Designated Areas under the THSR Hsinchu Station Specific Area Zoning Plan—Hsinchu Biomedical Science Park and Medical Care II Land: Overall Development Plan and Detailed Development Plan.28

Ceremony for presenting letters of gratitude and honoring accomplishments of the Subsidy Program for Growing Talent in Science Parks for the 2016 academic year on August 28

Forum on the Co-existence of Cities and Industry in a Circular Economy on September 21

Attending Taiwan Expo in the Philippines on September 28
The HSPB organized the Forum on the Co-Existence of Cities and Industry in a Circular Economy.

An HSPB delegation travelled to Turkey for IASP 2017.

An HSPB delegation travelled to the Philippines to help promote the international image of Taiwan’s science parks by endorsing Taiwan Expo there.


Taiwan Electron Microscope Instrument Corp. held an opening ceremony.

HSPB Deputy Director-General Hsu Tseng-ju travelled to Huntsville, Alabama for AURP 2017 and then called at businesses in Los Angeles.

The HSPB organized two rounds of “DIY Food Forest and Natural Living” to promote environmental awareness throughout the HSP.

The HSPB and the Hakka Affairs Council’s Hakka Culture Development Center jointly organized a drill on safeguarding critical infrastructure facilities, which went smoothly.

The HSPB organized a presentation on green accounting applications to facilitate promotion of such practices in the days ahead.

An HSPB delegation travelled to Vietnam for ASPA 2017, where Director-General Wayne Wang was elected vice president and became president-elect, the HSPB won the right to host the 2019 conference, and HSP company Andes Technology Corp. emerged as a winner of the Excellence Prize, one of ASPA Awards 2017.

The HSPB signed a soft landing agreement with the HSP’s sister park Kyoto Research Park, based on which either host will provide companies from the other side with mobile offices for the purpose of market probing.

Genvax Pharmaceuticals, Inc.’s Hsinchu Branch held an opening ceremony.

The HSPB organized “A Farming Experience in Our Field” as an event under the Labor Safety and Environmental Protection Month campaign, giving the public an opportunity to appreciate an eco-friendly vegetable garden up close and better understand what eco-friendly farming is all about.

The HSPB’s 2016 CSR report won a golden Corporate Sustainability Report Award for the university, hospital, and government sector from the Taiwan Institute for Sustainable Energy.

The HSPB was awarded for its excellent performance as a labor inspection agency, attesting to its contribution to labor inspection in the HSP.


The HSPB submitted its plan for expanding the HSP (available land in Baoshan) to the Executive Yuan (Cabinet) through the Ministry of Science and Technology.

Minister of Science and Technology Chen Liang-gee inspected the Longtan and Tongluo parks for a better understanding of the latest in their stage-by-stage development and the operations and plant construction of tenant companies. He also had a meeting with the latter.

An HSPB delegation travelled to Indonesia and Malaysia to promote cross-border cooperation.

The Ministry of Science and Technology approved the HSPB’s screening of second-phase public art installations in the Hsinchu Biomedical Science Park.

The HSPB was cited as an excellent agency in conducting the 2016 Industry and Service Industry General Survey.

Winning the 2017 Golden Corporate Sustainability Report Award from the Taiwan Institute for Sustainable Energy on November 23

"DIY Food Forest and Natural Living": making natural toothpaste on October 13
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</tr>
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<tr>
<td>Deputy Editors-in-Chief</td>
<td>Hsu Tseng-ju, Chen Shu-chu</td>
</tr>
<tr>
<td>Editors</td>
<td>Hu Shih-min, Lin Hui-hung,</td>
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</tr>
<tr>
<td>Publishing Organization</td>
<td>Hsinchu Science Park Bureau,</td>
</tr>
<tr>
<td></td>
<td>Ministry of Science and Technology</td>
</tr>
<tr>
<td>Address</td>
<td>2, Xinan Road, Hsinchu City</td>
</tr>
<tr>
<td>Telephone</td>
<td>+886-3-577-3311 (ext. 2252)</td>
</tr>
<tr>
<td>Fax</td>
<td>+886-3-578-8028</td>
</tr>
<tr>
<td>Website</td>
<td><a href="http://www.sipa.gov.tw">http://www.sipa.gov.tw</a></td>
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Hsinchu Science Park

Hsinchu Science Park Bureau, Ministry of Science and Technology
2, Hsin-ann Road, Hsinchu City 30016, Taiwan (ROC)
TEL : +886-3-577-3311 (ext. 2712)  FAX : +886-3-577-6222