



### Background and role

Established in 2001, Hong Kong Science and Technology Parks Corporation (HKSTPC) is a statutory body entrusted with the mandate to foster technological innovation in Hong Kong. Through state-of-the-art facilities and high calibre end-to-end services, HKSTPC strengthens Hong Kong's position as a regional technology hub and R&D centre, enabling the Hong Kong Special Administrative Region to be at the forefront of new tech ideas, expertise and advancement.

HKSTPC manages Hong Kong Science Park, InnoCentre and three Industrial Estates. Hong Kong Science Park, the core property of HKSTPC, encompasses three phases (Phase 3 is currently under construction and slated for completion by 2016) with purpose-built R&D office space, advanced laboratories and extensive technical support services.

At the Park, the Corporation specifically focuses on the innovation, development and commercialisation of five related clusters of technology: Biotechnology, Electronics, Green Technology, Information Technology and Telecommunications, and Precision Engineering. The clustering approach is based on the premise that technology companies mutually benefit when they are able to work with related businesses in a close and stimulating environment. The synergy that is created from 'clustering' allows for the effective cross-fertilisation of ideas. This subsequently helps companies to share expertise, identify market opportunities and, in the longer term, attract potential buyers.

Housed in a modern structure at Kowloon Tong, InnoCentre features tailored environments, including spacious exhibition halls, training and meeting facilities, augmented by a wide array of marketing and networking activities and support services. Here, a cluster of budding design firms and incubatees hone their skills, spurring the development of high value-adding design and creative industries.

HKSTPC also contributes to broadening Hong Kong's industrial base and upgrading local technology and skill levels through offering fully serviced land at competitive rates.

Three Industrial Estates, located in Tai Po, Tseung Kwan O and Yuen Long, feature extensive areas equipped with essential infrastructure for skill-intensive manufacturing and service industries, providing companies with an edge in today's competitive global economy. In addition, in recent years, the industrial estates focus on engaging more diverse businesses, such as data centres, pharmaceutical processing, recycling, and multimedia firms, as tenants.

In order to accommodate the growth of its diverse industries, underpinned by the rapid changes in the region's economic landscape, HKSTPC is committed to seek every opportunity to revitalise its existing facilities and explore options for future expansion. Through Hong Kong's special relationship and proximity with China, HKSTPC also helps companies explore access to China's vast and expanding markets.

To enhance the efficacy of its world class facilities, HKSTPC provides full service incubation programmes that cater to the needs of different technology start-ups, including the 18-month Incu-App to support web and mobile application related ventures; the 3-year Incu-Tech to assist general technology start-ups; and the 4-year Incu-Bio to nurture young companies involved in biotechnological pursuits. With tailored financial and technical support, the programmes enable innovative ideas to fully mature into practical, market-oriented products and services.

In addition, major partnerships have been established with research institutions, universities and leading technology companies from around the world for project collaboration, and technology and knowledge transfer, as well as for generating business opportunities across a spectrum of industries. In essence, HKSTPC acts as both a crucial link between academia and industry, as well as a catalyst towards the commercialisation of applied research.

As of August 2013, HKSTPC has attracted over 430 technology companies, both local and international, which employ a workforce of almost 9,300 persons.

## Locations and facilities

### *Hong Kong Science Park*

Hong Kong Science Park is strategically located in the middle of Hong Kong, with the benefit of equidistant transport links from downtown and the border with Mainland China. Its 22-hectare waterfront site contains 220,000 square metres of office space spread among 20 state-of-the-art laboratory-fitted buildings in Phases 1 and 2. Phase 3 is currently under development, and scheduled to come into place from 2014 to 2016.

The Park's world class infrastructure includes R&D offices, laboratories, and meetings, incentives, conferences and exhibitions (MICE) venues -- all are available for hourly rental or on a project basis to suit specific business needs. The SME office is geared towards companies looking for plug-and-play offices, ranging from 37 to 111 square metres (400 to 1,200 square feet) in space. For companies of a larger business scale, the Park features a number of R&D facilities, with some sporting build-to-suit suspended ceiling panels and raised floors. Laboratory space options cater to the needs of companies that require tailored lab space and facilities for their scientific research.

HKSTPC welcomes firms engaged in five key technology sectors, including Biotechnology, Electronics, Green Technology, Information Technology and Telecommunications, and Precision Engineering. Each area of focus maintains its own labs or support centres; HKSTPC also develops and provides research and development support services to assist firms in each cluster. In addition, HKSTPC partners with leading R&D equipment and software developers, continuously upgrades its equipment and laboratory services to meet client demand and market needs -- especially those related to the development of quality products, shortening the time-to-market and reduction of capital investment costs.

In addition, the Park helps line up professional service providers, including banking and financial institutions, accounting and legal firms; education and training companies; IT outsourcing service providers; logistics, supply chain management and sourcing companies; product design, branding

and packaging companies; showrooms for materials, components, and reagent providers; and venture capitalists and consultancy firms, for the benefit of its tech companies.

Along with ample on-site parking and easy access to various modes of public transportation, Hong Kong Science Park also houses shops, food and beverage outlets and a clubhouse, ensuring that tenants and visitors alike enjoy seamless access to all the conveniences they may require on-site.

### *InnoCentre*

Inaugurated in 2006, InnoCentre is a modern six-storey building providing premier office space in Kowloon Tong, the heart of the urban centre. Essentially a one-stop shop for design-related innovations, backed by an array of marketing and business support services, InnoCentre has helped hundreds of design companies and incubatees thrive in an inspiring environment, grooming their talents and realising their dreams.

Focused design sectors include firms engaged in advertising; architectural, spatial and interior design; branding, communication and graphic design; fashion or textile design; industrial, product or packaging design; jewellery design; multimedia, film and digital entertainment; visual and media arts; design-related human resource training and education; and strategic design consultation.

HKSTPC collaborates with the Hong Kong Design Centre to maintain a creative working environment. Purpose-designed spaces range in size from 33 to 60 square metres (355 to 645 square feet). A design library and bookstore contain ample design resources, books and reference materials. Also, with 2,400 square metres of spacious exhibition halls, and training and meeting facilities, InnoCentre is able to host a variety of local and international design-focused events, conferences and seminars, providing the invaluable opportunity for designers to showcase their work and network with industry veterans and peers.

With excellent transportation network connectivity, InnoCentre is the nucleus of the design community, drawing designers and users of design services to its dedicated, cutting



Figure 1: Hong Kong Science Park



Figure 2: InnoCentre

edge facility.

### *Industrial Estates*

HKSTPC plays an integral role in strengthening Hong Kong's industrial base, upgrading skill and technology levels, through the offering of fully serviced land at its three industrial estates in Tai Po (75-hectares), Tseung Kwan O (75-hectares) and Yuen Long (67-hectares). Together, the industrial parks cover an expansive area, providing efficient raw material sourcing, and transportation and logistics-related advantages.

Each estate is situated near the town after which they are named. All are readily accessible by major highways and various modes of public transportation. The Tseung Kwan O Industrial Estate boasts the added advantage of having a waterfront site, and it is thus more suitable for industries that participate directly in the marine industry or require ocean access. The Yuen Long Industrial Estate is strategically located 12 kilometres from the border with Mainland China at Lok Ma Chau, one of the most popular gateways for entering the country.

In addition to skill-intensive manufacturing operations, the industrial estates house more diverse businesses, such as data centres, pharmaceutical processing, recycling, and multimedia industries. In order to ensure the optimal growth of its industries, HKSTPC continuously upgrades and revitalises the facilities of the industrial estates, and explores possible sites for future expansion.



Figure 3: Tseung Kwan O Industrial Estate

### **Clustering: A great leap forward**

Since its inception, HKSTPC has adopted a strategy of clustering related technologies together to create powerful synergy, offering something 'greater than the sum of its parts' to all its business partners. With physical proximity to one another, companies can reap the benefits of mutual cooperation in the sharing of ideas and resources, networking among company principals, and peer encouragement in optimising the channels and opportunities surrounding product com-

mercialisation.

Hong Kong Science Park specifically focuses on five related clusters of technologies, including Biotechnology, Electronics, Green Technology, Information Technology and Telecommunications, and Precision Engineering. These clusters, currently comprised of over 400 R&D companies, not only provide a stimulating forum for the exchange of expertise, but also reflect areas in which Hong Kong has the potential to become a world leader.

#### (1) Biotechnology

The Park's Biotech Centres offer expansive furnished and unfurnished lettable laboratory space, with upgraded provisions and various research-related utilities such as purified water, nitrogen gas, compressed air and a vacuum supply. Labs and technical centres can be configured to meet the needs of specific technology development. One highlight includes a state-of-the-art Biotech Support Centre - a shared facility established to support the daily R&D activities of both start-up and mature biotech companies. Currently, the Park and industrial estates are home to a number of life science and biotech companies who are involved in wide-variety business lines, including medical devices and diagnostics, therapeutics and personal care, regenerative medicine and Chinese medicine.

#### (2) Electronics

To accommodate the specific needs of electronics companies, HKSTPC provides a completely tailored solution, from design genesis to production release. Time-shared laboratories and experienced on-site engineers help save costs and reduce the product's time to market. Laboratories include an Integrated Circuits (IC) Design Centre, offering cost-effective electronics design and automated tools to facilitate design hosting and development in a highly secured data centre; Intellectual Property (IP) Servicing Centre, providing licensing, hardening and integration at the prototyping stage of IC development; Probe and Test Centre equipped with sophisticated automated test equipment to support system on chip (SoC), analogue, mixed signal, radio frequency (RF) and digital product testing; Reliability Laboratory with IC device



Figure 4: Solar Energy Technical Support Centre

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qualification support, electronic product environmental qualification tests and stress tests; and IC Failure Analysis Laboratory, featuring high precision wafer level analysis equipment. Additional laboratories and technical centres with the necessary equipment and support services are available, customised to meet the specific needs of different technology development. This, coupled with Hong Kong's status as a major hub for the Asian electronics industry, bolsters a company's capacity to deliver quality products and services at precise specifications in a competitive manner.

(3) Green technology

With the end goal of environmental preservation and sustainability in mind, Science Park aims to become a 'green technology' hub in Asia Pacific. Through the establishment and growth of the green technology cluster, the Park features a 'living laboratory' where innovative eco-friendly tech solutions are developed, tested and commercialised to the point of achieving critical mass, with a vibrancy that drives the local, regional and international green economy forward. In this capacity, the Park offers market-focused support services, including shared laboratories and technical services to serve the needs of green tech companies. A Solar Energy Technical Support Centre has been designed to support solar panel and related testing services, and to reduce product development time for solar modules. Also, a Solid State Lighting Laboratory, equipped with precision facilities and equipment, supports the development and testing of lighting in terms of panel displays, light-emitting devices and photonics packaging. In addition to the above, the Park offers a comprehensive range of R&D facilities and business services tailored to meet specific green technology needs.

(4) IT and telecommunications

Hong Kong Science Park has created a unique environment for Information Technology and Telecommunications (IT&T) companies to unleash their innovative potential in a variety of market segments, including public services, banking and finance, healthcare, logistics and supply chain management. Shared laboratories and technical assistance are customised to meet the requirements of companies in the sector, including a Wireless Communications Test Laboratory / LTE Joint Test Laboratory equipped with state-of-the-art facilities to support digital TV broadcasting; RF and telecom technology development, including support services for product and pre-conformance testing for technologies ranging from 2G to LTE; and an Internet of Things (IoT) Centre of Excellence, a showcase for smart objects, smart business and smart life – all of which promote new IoT technology and its application in a commercial capacity. Additional lab spaces

provide the necessary equipment and support services configured specifically to meet the unique needs of various firms engaged in IT&T technology development.

(5) Precision engineering

HKSTPC has highlighted precision engineering as one of its key focus areas. An integral part of electrical, electronic, mechanical and optical engineering, the end applications and products related to this area of focus can be found across a huge number of industries, including the aerospace, automotive, engineering, electronics, materials handling, medical equipment, oil and gas, power generation, renewable energy and transportation sectors.

As such, the Park provides convenient one-stop services and comprehensive shared laboratories to support R&D and product development of the cluster. A Materials Analysis Laboratory serves as a well-equipped space where evaluation qualification services for components, materials and chemical characterisation take place. In addition, an entire range of laboratories and technical centres with the necessary equipment and support services are available in the Park, tailored to meet the specific R&D and business needs of precision engineering companies.

### Support services

As part of HKSTPC's mission to nurture new science and technology businesses, the Corporation provides every possible support for a young company's R&D journey towards commercial success. In addition to a dynamic environment and outstanding infrastructure, HKSTPC offers companies anchored in the premises a comprehensive range of business services and programmes, including a series of full service incubation programmes – Incu-Tech, Incu-Bio and Incu-App – to nurture technology start-ups through their vulnerable early years and enable them to subsequently shine in the regional and global arena.

#### *Incubation programme*

The Incubation Programmes provide fledgling technology companies with funding and subsidised access to superior R&D facilities, mitigating cost-related challenges to promote innovation-based entrepreneurship and enable firms to fully focus on their core competencies. HKSTPC has specifically devised three incubation programmes – each is embedded with relevant assistance and support to suit a variety of businesses in their different stages of tech development. Of these programmes, the 18-month Incu-App Programme targets new web and mobile application developers; the three-year Incu-Tech Programme is geared towards budding technology businesses; and the dedicated four-year Incu-Bio Programme is set aside especially for biotechnology start-ups.

## (1) Incu-App: Nurturing mobile and web app start-ups

With the rapidly growing mobile and web applications, HKSTPC launched Incu-App in 2012. The overwhelming response to the 18-month incubation programme tailored for web / mobile apps technology start-ups has led to the expansion of the Incu-App Centre from the original 5,300 sq ft to another 4,700 sq ft. The open environment creates networking opportunities for incubatees to get to know one another and exchange ideas. The Centre is also equipped with an additional resting area with a smart TV, an Xbox and a Kinect game consoles, built to cater to the expansion and incubatees' needs for testing their games. HKSTPC is collaborating with 11 strategic partners, including CITIC Telecom, Hong Kong Applied Science and Technology Research Institute (ASTRI), Hong Kong Business Angel Network Limited (HKBAN), Microsoft, Nokia, Samsung, to name just a few. These partners provide specialist services in apps development, testing, infrastructure support and publishing, which are essential to the growth of app start-ups.



Figure 5: Incu-App Centre

## (2) Incu-Tech: Helping young technology firms flourish

Throughout the 3-year Incu-Tech incubation period, HKSTPC offers an office space in the Park, with subsidised rent and various supporting services. This benefit specifically applies to start-up companies engaged in the electronics, green technology, IT and telecommunications, or precision engineering fields.

## (3) Incu-Bio: Supporting promising biotechnology companies

Designed for biotechnology start-up companies that require a wet lab environment, Incu-Bio offers a lab space in the cutting edge Biotech Centres of Hong Kong Science Park, with subsidised rent and various supporting services. During the 4-year incubation period, incubatees will enjoy the use of independent ready-to-use wet lab space in the Biotech Small Enterprise Centre; rental fees are waived during the first year and subsidised rents are provided, including electricity fees, for the subsequent three years. Additionally, lab equipment, meeting rooms,

business centre services and a pantry are shared among the biotech start-ups. HKSTPC also offers a range of technical support and business services, including marketing and administrative expertise.

*Technology support and laboratory services*

On the broadest level, the R&D offices, laboratories and technical centres of Hong Kong Science Park assist companies in developing high quality products while boosting speed-to-market and saving on capital investment costs. Technology development support is readily available within walking distance in Science Park. Dedicated tech support teams are able to augment engineering tasks throughout the product development cycle, while the laboratories and technical centres provide dedicated support, advanced testing and reliability checking in regularly upgraded facilities.

Each technology cluster maintains their own support centres; the latter encompass a Biotechnology Support Centre for biotech start-ups (for more detailed information, please see the section titled Key Initiatives in Biotechnology and Green Technology below); an IC Design Centre, IP Servicing Centre, Probe & Test Centre, Reliability Laboratory, and IC Failure Analysis Laboratory for electronics firms; a Solar Energy Technology Support Centre and Solid-State Lighting Laboratory for players in green technology (please see section titled Key Initiatives in Biotechnology and Green Technology below); a Wireless Communications Test Laboratory and LTE Joint Test Laboratory for IT and telecommunications companies; and a Material Analysis Laboratory for precision engineering start-up firms.

Similarly, specific laboratory services have been developed to address the needs of each technology cluster, allowing firms to fully explore the relevant aspects and qualities of their respective technologies. For biotech firms, HKSTPC provides bio-analytical services, life science equipment support, and other communal laboratory services. Electronics tech start-ups enjoy access to a secure virtual IP chamber for EDA and IP services; place & route, MPW & LVP services; IC test development and pilot production; reliability testing; and IC failure analysis. Green technology firms have access to labs for solar panel characterisation and testing, and LED testing. IT and telecommunications companies can take advantage of RF testing, and 3GPP and LTE testing facilities, and precision engineering start-ups benefit from nano and surface materials analysis.

*Business support services*

On the business and administrative side, HKSTPC assists incubatees to devise business and marketing plans and funding strategies, source funding, and build strategic partnerships by organising networking and matching events with potential investors, technology partners and product distrib-

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utors, among other activities. Each incubatee may be eligible for a package of financial aid during the incubation period. The aid helps cover part of the cost of business support and development services provided by HKSTPC, as well as the business operational expenditures of each individual firm.

To assist in the business development of partner companies and incubatees, HKSTPC provides many types of publicity support services, covering the arrangement of pavilions and showcases at major trade fairs and exhibitions, as well as facilitating product launches and serving as the media liaison for incubatees. HKSTPC itself maintains a major presence in prominent events and competitions in the global, regional and local arenas; the Corporation thus invites its incubatees to join such high profile functions, including The International Exhibition of Inventions of Geneva, Asia Pacific ICT Alliance Awards, Asian Innovation Awards, and The Hong Kong Awards for Industries, among others.

The 'First@SciencePark' programme offers Hong Kong Science Park as a venue for partner companies to try out or test their technologies or prototypes before rolling them out to the market. It is essentially a stage for incubatees to showcase and demonstrate their products, gaining first hand feedback on their products and services to further enhance their market intelligence efforts and overall competitiveness.

Through an expansive network of contacts, HKSTPC helps to create business collaboration opportunities for its incubatees, linking them with relevant industry peers, veteran industry experts, scientific research centres, universities and leading technology corporations across the world. In addition to increased commercial opportunities, start-ups gain access to the latest scientific knowledge and thinking. On the academic front, HKSTPC bridges incubatees to expertise and opportunities through consultancy, student placement or projects, as well as joint R&D projects; institutional partners represent Hong Kong's outstanding tradition of academic excellence, including University of Hong Kong (HKU), The Chinese University of Hong Kong (CUHK), The University of Science and Technology of Hong Kong (HKUST), City University of Hong Kong (CityU), Hong Kong Baptist University (HKBU), Polytechnic University of Hong Kong (PolyU), Institute of Vocational Education (IVE), and more.

On a broad level, with the goal of fostering sustainable development well into the future, these efforts also help nurture and upgrade local science and engineering talent that will soon become a dynamic component of Hong Kong's skilled manpower supply.

HKSTPC has also set up panels of accounting and legal firms to provide professional services for its partner companies and incubatees. The panel members, including local and international firms backed by a wealth of experience, offer competitive rates to the Hong Kong Science Park community. On occasion, HKSTPC also arranges 'Free Chats with Legal

Experts' and 'Free Chats with CPA' programmes, which allow partner companies and incubatees to consult with panel professionals in an open setting, thus gaining collective knowledge in various legal / IP and accounting issues.

#### *Angel/VC financing*

The right funding can make or break a new venture. HKSTPC therefore works aggressively to secure funding for its technology entrepreneurs through the offering of free investment matching services with the Hong Kong Business Angel Network (HKBAN) and the region's venture capital (VC) companies. In addition to linking start-ups with seasoned technology angel investors and venture capitalists, HKSTPC enlists the support of industry veterans who can help guide fledgling start-up businesses to maturity.

From time to time, angel investors and venture capitalists are invited to join investment matching events where entrepreneurs pitch their business and investment plans to potential investors. To adequately prepare its incubatees for this daunting task, HKSTPC hosts a seminar on 'How to Prepare an Investment Teaser and 15-minute PowerPoint to Attract Investors'.

As a rule of thumb, investment sizes below USD1 million are targeted for HKBAN, while larger funding is directed to the VCs. In 2012, start-up companies, including incubatees and graduates, from HKSTPC's incubation programmes have attracted over HKD75 million in angel and VC investment funds.

#### *Mainland collaboration*

The world's most populous nation, China, especially the Pearl River Delta (PRD), is becoming a rapidly rising global economic powerhouse, with tremendous business opportunities. In 2011, the Chinese government's 12th Five Year Plan identified the development of technology and innovation as the engine that will drive China's economic growth. The Plan named seven key industries as growth drivers - the majority of which were related to technology and innovation.

HKSTPC is in an ideal position to play a huge part in this development. It therefore forges close ties with China's regional and provincial government bodies and other related institutes and organisations, so as to leverage the strengths of both regions.

Underpinned by rich experience and a professional management team, HKSTPC provides support in technology, talent and industry development, helping both Mainland and overseas companies reach their target markets. The number of HKSTPC partner companies engaged in Mainland collaboration has increased by five times in three years. As such, HKSTPC serves as an ideal 'launching pad' for Chinese companies seeking to 'go global', and global companies seeking to 'go to China'.

### Key initiatives in biotechnology and green technology

Biotechnology and green technology represent two tech clusters that have witnessed recent success in terms of laboratory support and commercialisation. Start-up companies have sought out new initiatives and resources of the Biotechnology Support Centre (BSC), Solar Energy Technology Support Centre (SETSC) and Solid-State Lighting Laboratory (SSLL), achieving technological breakthroughs, conducting R&D and testing activities with greater safety measures, and forming a more solid network of industry partners and advisors.

#### *Biotechnology Support Centre (BSC)*

Opened in March 2009, the Biotechnology Support Centre (BSC) ensures the availability of various R&D tools or platforms for supporting researchers, provides quality technical support in assisting local life science research activities, and enables knowledge sharing and networking among partner companies and relevant outside parties.

The central facility is comprised of workstations, a Culture Room, Dark Room, Mass Spectrometry Laboratory, Microscope Room, Genomics Laboratory, Proteomics Laboratory, Bioanalysis Laboratory, Microbiology Laboratory, and Server Room. There are more than 60 pieces of ready-to-use life sciences instruments for shared R&D use.

In addition, BSC offers a world class Laboratory Information Management System (LIMS); University Advanced Laboratory Equipment Collaboration Programme (an extended laboratory instrument service); and Convenience Laboratory Product Purchase Plan (CLPPP – a common laboratory consumable stock room service) to the Park's biotechnology community.

BSC recently introduced a number of initiatives to further support and enhance growth of the biotech cluster. First, advanced life science instruments were added to its service portfolio; these include a Real time – PCR, ultracentrifuge, flow cytometer (analyser), Fast Protein Liquid Chromatography system, advanced fluorescence imaging systems, genetic sequencer, and texture analyser.

BSC also boosted laboratory safety and security measures for the use of its shared facilities. For example, it implemented a monthly Biotech Support Centre Safety and Operation training, required approval of materials to be used in Biotech Support Centre, conducted an assessment of advanced equipment users, and required provision of MSDS documentation.

Additionally, the Centre continued its University Equipment Collaboration Programme with five local universities, namely The Chinese University of Hong Kong, Hong Kong Baptist University, The Hong Kong University of Science and Technology, The Hong Kong Polytechnic University and The University of Hong Kong. The programme offers advanced life science instrument services to companies in Hong Kong Sci-

ence Park.

#### *Solar Energy Technology Support Centre (SETSC)*

Established in March 2009, the Solar Energy Technology Support Centre (SETSC) is comprised of a Photovoltaic Test Laboratory (PVTL) that supports R&D for partner companies and customers engaged in the solar modules manufacturing industry. Specifically, PVTL helps to fine tune the conversion efficiency and cost in the development of a new generation of PV modules. Testing support is not limited to a-Si, but also multi-junctions thin film, CIGS thin film and OPV.

Most of the testing criteria, such as electrical performance, mechanical impact and environmental reliability, refer to that which was set by international standards. Some of the equipment can also support the LED and gemstone industries.

#### *Solid-State Lighting Laboratory (SSLL)*

The Solid State Lighting Laboratory offers precision facilities and equipment to support development and testing for lighting in terms of research and development of panel displays, light-emitting devices and photonics packaging. The lab's testing initiatives are vital for quality control and product re-engineering, which are key factors for companies engaging in photonics product development within the local Hong Kong market.

In the light-emitting device (LED) area, the Laboratory is equipped with a full range of sophisticated test and measurement equipment, encompassing the latest technological advances for luminous flux, luminous intensity and beam profile measurement. Integrating sphere, optical probe and goniophotometer are also available. To bolster its LED safety test services, the Laboratory has expanded its lumen measurement and maintenance business with testing houses, such as TUV-SUD Hong Kong and SGS HK, in analysing LED-related consumer products. In addition, its laser safety service can test consumer products to ensure the safety of products before launch into the market.

The Laboratory continues its collaborative development partnership with GZ-OME, where it maintains a focus on small LED lighting, while GZOME concentrates on the lumen measurement of street lights and other large-scale illumination devices.

For the Display Panel Test Station, the Lab offers a complete solution for characterising LCD, displays, OLED screen, phosphor powder, reflectors and colour filters. Testing services cover viewing angle, contrast ratio, luminance, efficiency of phosphor powder, diffuse reflection and transmission spectrum measurement.

### Success stories

HKSTPC's outstanding facilities and comprehensive support services have yielded a number of successful outcomes,

including commercialisation. The following are three recent stories that illustrate the crucial role HKSTPC plays in the success of its innovative incubatees.

*Appotech Limited: Successfully incubating one man's dream*

In 2003, AppoTech Ltd., an integrated circuit design house, faced a challenge familiar to any technology start-up - how to ensure business success during the all-important first years. Mr. Chuck Cheng, founder and CEO of AppoTech, had already decided to base his fledgling business in Hong Kong, leveraging the city's low tax rates, well established legal system, and robust intellectual property laws. In addition, the proximity to China allowed cost-effective entry into the world's fastest growing economy.

As AppoTech sought to develop products, find trusted manufacturing partners and win its first clients, Mr. Cheng discovered that his firm needed an edge in order to thrive in an industry fraught with rivals. He thus joined the three-year Incu-Tech Incubation Programme of HKSTPC, taking his company to new levels of competitiveness. AppoTech, which began life as a one-man band, immediately gained access to HKSTPC's excellent infrastructure, training and networking opportunities, mentoring services, and collaborative channels with both local and overseas universities.

Bolstered by this support, AppoTech is currently a thriving business that employs about 250 people, with annual revenues of HK\$300 million. In October 2012, Mr. Cheng garnered the Outstanding Entrepreneurship Award, a sub-category of the prestigious Asia Pacific Entrepreneurship Awards (APEA) of Hong Kong. The award recognises Mr. Cheng's outstanding tenacity, perseverance and courage in his field of business. It also reflects his status as a role model for emerging entrepreneurs, providing the insight to steer their young companies safely through choppy waters.

Since 1992, more than 300 start-ups have benefited from HKSTPC's Incubation Programmes. Backed by financial support for new ventures, subsidised rates on fitted R&D office space, and access to excellent shared facilities, small and



Figure 6: AppoTech CEO and President Chuck Cheng won Ernst & Young Entrepreneur Of The Year 2011 China Award

medium-sized enterprises can fully focus on innovation and growth, pushing ahead through the vulnerable early years.

*nwStor Limited: Soaring high with cloud-based security app*

Established in 2007 by a group of entrepreneurs from Silicon Valley and Hong Kong, nwStor Limited specialises in network and cloud data security, helping customers to secure and protect data from unauthorised access. At the onset, the company was guided by the mandate to enhance advanced technology in hardware and software in order to develop a new generation of reliable, accessible and serviceable data and storage security systems.

Backed by a sound business plan and direction, nwStor tapped into the Incu-Tech Incubation Programme. The Corporation appreciated the passion behind nwStor's inception and quickly understood its early needs, providing necessary services, including technical, marketing and promotion support, business matching, networking opportunities, and financial aid and rental subsidies over the given timeframe.

Today nwStor, having graduated from the Incubation Programme, has achieved impressive levels of success with new technological innovations, including the award-winning iSav data security appliance; wide market access; and a growing reputation for reliable, user-friendly products. In 2012, the company won the 2012 Hong Kong Awards for Industries: Technological Achievement Award, one of technology industry's most prestigious awards. The recognition reflects nwStor's outstanding scientific and technological achievements, as well as its role in enhancing Hong Kong's local and global competitiveness in industry and business.

Less than a month after winning the award, nwStor announced the launch of a completely new intelligent data security appliance -- specifically, uSav, a Cloud-based data security application software that allows users to control their protected sensitive data in Cloud and all end-point devices anywhere and anytime.

"HKSTPC's Incu-Tech Programme supported us in our scientific research and business management, which contributed significantly to our achievement. Following the iSav data security appliance, we now introduce the latest Cloud-based data security app, uSav, which provides a powerful encryption to files by adopting the AES-256 bit encryption standard used by the US Government and assigning a unique key for every file," explained Chan Ng, CEO of nwStor Limited, who had previously served as the lead Storage Architect with the IBM Corporation in Silicon Valley.

uSav secures users' sensitive files; users can encrypt and decrypt files simply by dragging them onto the app. As the uSav is a Cloud-based application software, it is also designed to allow users to control their own data security on any Cloud and local storage devices. Users can customise the receiver authority to access encrypted files, and set limits for decrypt-





Figure 7: The uSav App of nwStor



Figure 8: SolSource of One Earth Designs

tion, the number of times a file can be accessed, or authority changes.

Mr. Ng added, “We will continue to leverage the facilities and support of HKSTPC to keep developing more practical and innovative technological products in the future.”

The momentum behind the company’s drive reinforces the value and developmental direction of HKSTPC’s incubation programmes. Since the beginning of the programmes, incubatees have received capital and angel funds totalling more than HK\$830 million. They obtained over 650 registrations of intellectual properties and were rewarded nearly 240 technical or design awards. Of the almost 300 companies that have successfully graduated from the programmes, 75% of them are still in business today.

#### *One Earth Designs: Environmental innovations for sustainable living*

Hong Kong Science and Technology Parks Corporation (HKSTPC) is committed to fostering innovation and technological advancement in a range of industries, propelling companies with extraordinary insight into success on a global level. One such incubatee, One Earth Designs, received worldwide recognition at the 41st International Exhibition of Inventions of Geneva, Switzerland, winning the Geneva Gold Award in mid-2013.

With a focus on harnessing a complete energy suite that is clean, convenient and renewable, One Earth Designs developed SolSource, an advanced parabolic solar concentrator that harnesses heat from the sun to meet the cooking energy needs of households in developed and developing countries. Inspired by the problem of indoor pollution from household stoves faced by rural families in China, SolSource was developed in collaboration with Himalayan families. Five years and thirteen prototype generations later, SolSource is providing hundreds of rural families with cleaner air in their homes, reducing their fuel gathering time and energy costs.

This winning company has leveraged HKSTPC’s comprehensive service offerings, from financial subsidies and business matching to technical and marketing support. HKSTPC is

happy to assist in such innovations developed by One Earth Designs. They are testament to the creativity, entrepreneurship, perseverance and continued pursuance for progress that is in Hong Kong’s DNA, and we have set a complementary support framework in place to stimulate the city’s innovation and technological advancement.

In addition to One Earth Designs, two other technology companies anchored at HKSTPC received similar accolades in Geneva. They include Go Fun Card Limited, creator of innovative retail customer marketing platforms and consumer loyalty programmes; and iMusicTech Limited, a platform that empowers people to enjoy and be creative with music. The awardees were among 725 exhibitors from 45 countries showcasing around 1,000 inventions.

Along with this success, HKSTPC was recently enlisted as a finalist in the Incubator of the Year Award organised by the National Business Incubation Association in the United States. This international recognition is solid proof of the Corporation’s devotion to advancing innovation and technology development in Hong Kong.

The International Exhibition of Inventions of Geneva is one of the biggest events in the world exclusively devoted to inventions. On one hand, private and state organisations, companies, universities and inventors gather together to present their new inventions and findings; on the other hand, manufacturers, commercial agents and financiers mark this event as a valuable platform to look for innovations ready to be marketed in all fields of business, including energy and environmental protection, computer sciences and electronics.

To answer the specific needs of start-ups during their vulnerable inception stage, HKSTPC runs a series of full-service incubation programmes that last from 18 months to 4 years, targeting companies across industries of mobile and web app development, general technology and biotechnology.

#### **Phase 3 for a greener future**

Following on the success of Phases 1 and 2, Hong Kong Science Park Phase 3 is set to provide an exciting home for

technology start-ups and giants alike, with the broader aim of acting as a catalyst for green development in Hong Kong and the Pearl River Delta. Green technology is a key technology cluster, and Phase 3 will be a new green technology hub, incorporating a number of eco-friendly measures and exemplifying a broad commitment to a more sustainable future. Phase 3 is currently under construction; it is scheduled to be completed in stages between early 2014 to 2016.

When fully completed, the new development specifically provides a dedicated facility and nurturing ground for environmental and renewable energy technologies. It will also offer its 150 businesses one of the best R&D eco-systems in the region for developing and commercialising a range of products.



Figure 9: Hong Kong Science Park Phase 3

Fittingly, the development itself is one of the largest showcases of sustainable practices, construction methods and development processes in Hong Kong. The facilities will be carbon neutral over their lifetime, based on the key sustainability principles of reduction, efficiency and generation. Every building incorporates the latest practical green technologies and sustainable building design, with a focus on cost effective energy-saving measures, making it easy for the community to adopt green practices.

HKSTPC boasts some of the best green credentials of any R&D location in the region, having been designated in 2011 as a 'National High-Tech Industrialisation (Partner) Base for Green Technology' by the Ministry of Science and Technology (MOST) of the People's Republic of China. Phase 3 has also gained early recognition in the industry, winning the Grand Award in the New Building category at the prestigious Green Building Awards 2012. At the same time, Green 18 building, the last building in Phase 2 captured the Merit Award in the New Building Category – Completed Building segment.

Adding to the jubilation, all of the buildings at Phase 3a and 3b have achieved the Provisional Platinum rating certification under the BEAM Plus scheme, which is the highest rating awarded by the Hong Kong Green Building Council (HKGBC).



Figure 10: Hong Kong Science Park was designated by the MOST of The People's Republic of China as a "National High-Tech Industrialisation (Partner) Base for Green Technology

Inaugurated by the HKGBC and Professional Green Building Council (PGBC), the Hong Kong Green Building Awards are aimed at recognising building-related projects that contribute to sustainability and the built environment, while also encouraging the mainstream market to move towards adoption of sustainable planning, design, construction and other relevant practices. BEAM Plus is the latest edition of Hong Kong's rating tool for green buildings – the successor to BEAM (Building Environment Assessment Method). The large number of projects that received BEAM assessment underscores its significance as a device for benchmarking performance, prioritising areas for improvement and disseminating the achievements of specific buildings or properties.

HKSTPC is fully committed to building a sustainable future for Hong Kong and will continue to advance associated practices and technologies leading to the transformation of the Territory into a green hub, further paving the way for Hong Kong to tap into Mainland China's burgeoning green technology market.