

KNOWLEDGE TRANSFER

ANNUAL REPORT
2022 | 2023

Submitted to University Grants Committee

31 July 2023

The Hong Kong University of Science and Technology
Clear Water Bay, Kowloon, Hong Kong



Table of Contents

| | |
|---|----|
| Executive Summary | 1 |
| Impact Cases..... | 2 |
| KT Strategic and Infrastructure Development..... | 6 |
| Strengthening Entrepreneurship Development | 9 |
| Commercialization and Industrial Collaboration..... | 14 |
| Social Impact and Support for Community | 16 |
| Mainland and International Collaboration | 17 |
| Looking Forward | 19 |
| Appendix A – Key Performance Indicators | 20 |
| Appendix B – Other Activities Highlights..... | 22 |



Executive Summary

In the first year of the new triennium (2022-2025), The Hong Kong University of Science and Technology (HKUST) has effectively realized multiple advances in its strategic knowledge transfer (KT) objectives. The HKSAR Government's blueprint and policies advocating innovation and technology (I&T) development have provided significant support to accelerate such endeavors. HKUST's newly appointed President, Prof. Nancy IP has demonstrated strong innovation leadership in strengthening the University in the leading position of innovation and technology development.

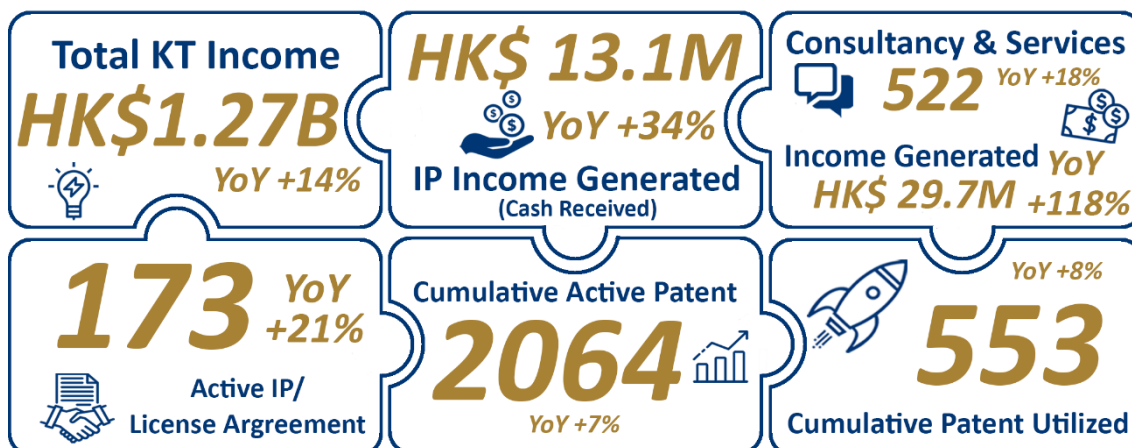
In 2022-2023, with the grand opening of the HKUST (Guangzhou) (GZ), the University deepened and diversified its industry engagement in Hong Kong and the Greater Bay Area (GBA). The adoption of HKUST Intellectual Property (IP) Policy 3.0, aligning with regulations and policies in both locations, has facilitated seamless KT across Hong Kong and the Mainland. Industrial engagement is further strengthened to boost wide-ranging partnerships with both start-ups and leading companies, spurring development of patent portfolios aligned with HKUST's areas of focus and market needs. The University's Office of Knowledge Transfer (OKT) also organized and co-organized several flagship high-connectivity events to drive forward technology commercialization. Covering large-scale and field-specific showcases, the HKUST Industry Engagement Day (IED) and its subsequent IED+s, HKUST Unicorn Day, and iNOTECH Day successfully raised awareness among industry, investors, and government as to the opportunities and potential economic and societal impact of the University's research and inventions, paving the way for more KT collaborations. Looking further ahead, the setting up of the Greater Bay Area Incubation Framework for HKUST start-ups and partnerships with other cities in the Mainland will lay the foundations for future innovation and entrepreneurship development.

As the widening of systematic impact evidence data collection demonstrated, over 2022-2023 such strategies saw HKUST achieve:

- **Strategic IP Management:** No.1 ranking in China under the 2022 Nature Index patent influence metric and record-high of 226 Invention Disclosures received; with a 33% IP utilization rate, a rise in patents granted by 32%.
- **Accelerated Entrepreneurship Development:** Additional 2 Initial Public Offerings (IPO) lead totaling 11 successful exits (9 IPOs, 2 acquisitions) overall, along with 9 unicorns and 1,747 active start-ups with HKUST DNA.
- **Strong Industry Engagement:** No.1 ranking in the industry income index in Hong Kong (Times Higher Education 2023), 173 active license agreements, resulting in an all-time high IP income of HK\$13.1 million, 826 industry collaborators.
- **Enhancing Visibility of University's Innovation:** 5 high-profile industry engagement and re-engagement events drawing thousands of participants and a remarkable University debut at the 48th Geneva International Exhibition of Inventions, sweeping 20 awards.

The year has thus seen HKUST start the triennium in line with its pursuit of excellence, with high-flying achievements built on past endeavors and a host of exciting, forward-looking developments to strengthen and extend the University's KT capabilities and contribution to society well into the future.

HKUST KT In Action (2022-2023)



Impact Cases

STRIVING TO SAVE MILLIONS FROM THE SCOURGE OF ALZHEIMER'S DISEASE

In HKUST's Strategic Plan 2021-2028, the University aspires to address the future of living, work, and people, all of which are impacted by one of the world's greatest healthcare challenges: Alzheimer's Disease (AD). The most prevalent form of dementia, AD currently affects over 50 million people worldwide. This number is forecast to rise to more than 115 million by 2050, with 40 million anticipated to be living with AD in China alone. Relatives and carers account for millions more impacted by the complex disease, which is currently irreversible and lacks effective treatment. Now, building on the many groundbreaking DeepTech discoveries on molecular neuroscience and neurodegenerative diseases by HKUST President Prof. Nancy Ip and her team over the past three decades and leveraging the University's wide-reaching KT system, HKUST is accelerating local, national, and global efforts to change such a devastating outlook through a distinctive multifaceted endeavor introducing innovative AD diagnostic tools, preventative measures, and therapeutic approaches into society via HKUST start-up entrepreneurship and strong community, government, and business partnerships.



HKUST President Prof. Nancy Ip

Closing the Gap in Early Diagnosis of AD

Biochemical changes in the brain can take place up to 20 years before AD symptoms appear. Start-up Cognitact was founded in 2020 by Ip team members at the HKUST-led Hong Kong Center for Neurodegenerative Diseases, established under the HKSAR Government's InnoHK initiative to develop Hong Kong into a global research collaboration hub. Cognitact is bringing to market University research discoveries on the early detection of aging-association diseases, in particular AD. Such breakthroughs include the Ip team's identification of novel genetic risk factors for AD in the Chinese population, the development of a biomarker-based system to quantitatively assess individual risk together with public hospitals in Hong Kong, and a non-invasive AD blood test that could accurately (96%) diagnose people at risk. From these findings and technologies, Cognitact has gone on to develop a novel blood diagnostic kit to answer the critical need for an objective and quantifiable prediction tool to check a person's risk of developing AD.

To embark on their entrepreneurial journey, the researchers turned to the University's KT ecosystem. With OKT's support, the team was then able to travel from patent applications (8 filed), licensing of the relevant HKUST technology, and government-university seed funding schemes (Technology Start-up Support Scheme for Universities-O [TSSSU-O] and [TSSSU+]) to business skill-building (HKUST Entrepreneurship Program [EP]), investment community introductions, and sponsorship for participation in HKUST-organized and external exhibitions. OKT further reviewed the proposed contracts to assist Cognitact in discussions with investors and collaborators.

Demonstrating growing external recognition of the company's potential, in August 2022, the start-up secured significant investment. At the renowned 48th International Exhibition of Inventions Geneva in April 2023, Cognitact's detection system received the Prize of the Chinese Delegation for Invention and Innovation and a Gold Medal with Congratulations of the Jury. The start-up has also contributed to greater insights for caregivers through a collaboration with Haven of Hope Hospital and Community CareAge Foundation to conduct AD assessments for 100 seniors.

TCM-based Health Supplements Boost Healthy Brains for Healthy Aging

At the same time, Ip team members have developed new preventative measures based on science-based identification and optimized formulations of traditional Chinese medicine herbs to expand on the





Prof. Nancy IP and her research team at the opening reception of the Invention Geneva Exhibition in HKUST Clear Water Bay Campus.

INFitech team then licensed related HKUST technologies to develop the health supplements. Along the way, INFitech was supported by OKT on the review of agreements and terms, development of their products through different HKUST KT funding schemes (TSSSU-O and TSSSU+); sponsorship to attend high-profile events and foster wider recognition of the company (HKUST Industry Engagement Day Series, Hong Kong International Medical and Healthcare Fair, 48th International Exhibition of Inventions Geneva); and assistance to build members' practical business skills in running a start-up (HKUST Entrepreneurship Program). The Cogniherts supplements, which are 100% made in Hong Kong, are now available in CR Care, a major retail healthcare chain, and online.

Policy and Community Impact

Along with these entrepreneurial developments, the management of AD in society continues to be advanced through the Ip team's strong collaborations with the government, community, and industry. The State Key Laboratory of Molecular Neuroscience at HKUST (2009) and the Hong Kong Center for Neurodegenerative Diseases (2019) are both directed by Prof. IP. A longstanding partnership with Haven of Hope Christian Service has enabled the non-government organizations (NGOs) to use HKUST findings on genetic factors and biomarkers to assess AD risk in the Hong Kong community and inform policy development and clinical interventions. Partner hospitals in Mainland China have employed HKUST's AD screening methods for research and the benefit of patients. In addition, over 2022-2023, HKUST and China Resources Research Institute of Science and Technology signed a Memorandum of Understanding (MoU) to explore KT collaboration on molecular neuroscience research findings, and other areas, including establishing a joint research center for brain science. On the investment community front, The Morningside Group, a private equity and venture capital firm, has backed start-up Orthogonal Neuroscience in licensing University technologies based on the Ip team's research and undertaking clinical trials. The Ip team's pioneering work has also contributed to support from other investment firms for HKUST biotechnology start-ups and the field overall in Hong Kong, with the city becoming the world's second-largest fundraising hub for biotechnology.

Always Seeking New Avenues

The team is constantly seeking to add to extend HKUST's impact in tackling AD in society. Over 2022-2023, the researchers and their collaborators identified a blood protein with a key role in the development of AD. Separately, the team engaged in cross-



HKUST-CRC Memorandum of Understanding (MoU) Signing Ceremony.

disciplinary research with HKUST AI experts to break new ground in early risk forecasting for AD. Such ongoing innovation along with the help of the University's KT ecosystem raises the prospect of a sustainable flow of societal advances in the battle to beat AD, and a brighter future for people everywhere.



VIGOROUS OUTLOOK FOR SMART DIGITAL HEALTH SOLUTIONS

Among the major legacies of COVID-19 are anxieties related to health and access to healthcare services, driving demand locally and globally for people to keep track of their own wellness. HKUST start-up PanopticAI is now effectively answering such needs through its cutting-edge personal health management solutions that empower people of different ages, life stages, incomes, and geographical locations to make monitoring of their pulse, heart rate, blood pressure and more part of daily life. Co-founded by HKUST postgraduates, alumni and faculty as a result of the inspirational synergy generated by the cross-disciplinary research group of Prof. Richard SO, Department of Industrial Engineering and Decision Analytics, PanopticAI is delivering such insights via proprietary AI-enabled technologies that conveniently connect to the camera on a user's smartphone, tablet, or computer. Health readings are obtained following a 30-second facial scan, which captures subtle alterations in skin coloration due to blood flow changes invisible to the human eye.



An MoU is signed between PanopticAI and Gleneagles Hospital Hong Kong.

Individuals are not the only beneficiaries. In 2021, the company won the Social Connectivity Award (University/Tertiary) at the inaugural Hong Kong City I&T Grand Challenge, signaling the potential community impact. A pilot program was implemented in 10-20 elderly homes throughout Hong Kong, enabling staff to monitor residents' vital signs using the care facilities' tablets and computers. Other collaborative ventures have included engagement in the Jockey Club Community eHealth Care Project to encourage the elderly to monitor their own health and use digital technology; and with Gleneagles Hong Kong Hospital to incorporate a contactless PanopticAI

wellness monitoring solution into the hospital's own app, making it easier for patients to measure their health data and proactively seek medical attention if necessary. In addition, the start-up is exploring partnerships with international insurance companies.

The investment community has been another enthusiastic supporter. With the HKUST Entrepreneurship Acceleration Fund initially enabling the start-up's launch, the company and its growth potential went on to attract a notable investment by the end of 2022 from Alibaba Entrepreneurs Fund, pan-Asian venture capital fund Gobi Partners, and the HKUST Entrepreneurship Fund (E-Fund). Along the way, PanopticAI's progress has been fueled at critical developmental milestones through successful applications to the University's strategically designed KT funding ecosystem. Among these, the Lo Kwee Seong Technopreneurship (Tech-Ship) Fund advanced product development, proof-of-concept, and resources; and the Bridge Gap Fund strengthened commercialization. The company also received backing via the government's TSSSU-O and TSSSU+ schemes, which assist HKUST in supporting technology-focused start-ups.

Meanwhile, OKT and Entrepreneurship Center (EC) networking opportunities have continuously raised awareness of PanopticAI among prospective partner institutions such as the Hong Kong Science and Technology Parks Corporation (HKSTP) – now the company's home – and the business community. Such links have recently seen the EC connect the start-up with Mannings, a major health and wellness retailer. The two parties are now extending PanopticAI technologies to health consultation services at the chain's stores and corporate wellness events, both conducted by Mannings' community registered pharmacists.

After establishing itself in Hong Kong, PanopticAI is also looking to extend its reach, with the GBA and Southeast Asia firmly in its sights for the future, along with a stock market listing.



KEEPING CONSTRUCTION SITES SAFE WITH AI TECHNOLOGIES

Accidents occur all too frequently on construction sites. HKSAR Government statistics show construction industrial accident cases in 2021 (3,109) and 2022 (3,046) are among the highest of all sectors in the city while accounting for the most fatalities in both years (23 in 2021, 17 in 2022). HKUST start-up AutoSafe, founded in 2021 by Prof. Jack CHENG, Department of Civil and Environmental Engineering, and a postgraduate student team, is now accelerating forward to address this pressing issue with a high-tech solution that is one of the first to draw on the strengths of AI for greater site safety. By the end of 2022, AutoSafe's rapid entrepreneurial success story had already resulted in an MoU with a major listed developer to pilot its Smart Site Safety System (SSSS) in Hong Kong and elsewhere, and a 20% decrease in accidents in the initial trial. It is now working with the HKSAR Government's Civil Engineering and Development Department to fully implement the system at one of the sites in the New Territories.

Born of a near miss on-site involving one of the company founders and brought to fruition by HKUST's holistic KT pipeline, the real-time AI-based system utilizes computer vision, in-house deep neural networks, and multicamera coordination to detect workers in danger, for example, those nearby heavy machinery on the move. The system alerts the worker(s) immediately as well as sends instant messages/email notifications to safety officers and project managers. It can also provide automated statistical analyses and links to the Central Management Platform (CMP) of their own SSSS or other Digital Works Supervision System (DWSS), now a requirement for many government capital works projects.



The start-up team: Prof. Jack CHENG, together with Issac LEUNG and Peter WONG, co-founders of AutoSafe, is awarded championship in the Sino-HKUST One Million Dollar Entrepreneurship Competition.

To move from concept to market, the AutoSafe team initially worked with OKT to file three full patent applications stemming from their HKUST research findings, and to apply for early-stage funding (Lo Kwee Seong Tech-Ship Fund; TSSSU-O) to support further development. At the same time, team members undertook finance courses and pitching practice through HKUST to enhance their business know-how and skills. Later, as AutoSafe progressed, participation in OKT networking and promotional activities created timely awareness among industry, government, and the community. Following the well-attended IED+: Putting Construction 2.0 Into Action in May 2023, the start-up has entered discussions with the Urban Renewal Authority and Energizing Kowloon East Office to explore collaboration opportunities in the future.

In addition, AutoSafe was encouraged to test and gain additional feedback by joining high-profile events and contests. To date, this has seen the pioneering site safety system receive the Construction Industry Council (CIC) Construction Innovation Award 2022 – Young Innovators Prize; the championship in the flagship HKUST-Sino One Million Dollar Entrepreneurship Competition 2022, beating over 170 other local and international teams; and a Gold Medal at the 48th International Exhibition of Inventions in Geneva in 2023.

Looking ahead, AutoSafe is expanding to get ready for more commercial projects and putting more advanced technologies to the industry and is already considering potential deployment of the safety system in warehouses, industrial facilities, laboratories, and other workplaces. Future collaboration with the different government departments is under discussion. Exploration of resources at HKUST(GZ) is also underway with a view to extending the technology to the GBA.

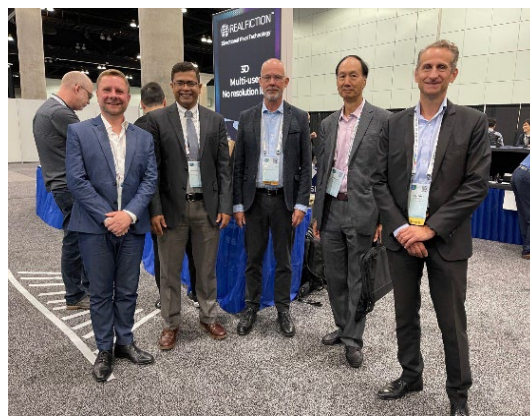


LICENSE TO ENABLE NEXT GENERATION, FAST, SUPER-COLORFUL DISPLAY PRODUCTS

HKUST's State Key Lab of Advanced Displays and Optoelectronic Technologies is a global multidisciplinary pacesetter focused on novel solutions involving liquid crystal displays (LCDs), organic light-emitting diodes (OLEDs), and other frontier technologies with strong licensing and commercialization potential. It is among the few research clusters of its kind worldwide and, to date, eight HKUST start-ups are utilizing the Lab's advances. As the recent licensing case for the Lab's award-winning ferroelectric LCD (FLCD) breakthrough demonstrates, international firms are also keen to leverage the University's inventions to amplify their industry edge and expand user impact. The international display market, covering areas such as AR/VR, gaming, and mobile devices, is currently valued at around US\$150 billion.

The FLCD technology is based on DeepTech research from 2010 onward led by Emeritus Professor and State Key Lab Executive Director Prof. KWOK Hoi-Sing and Prof. Abhishek SRIVASTAVA, Associate Director of HKUST's long-established Center for Display Research. The benefits of this technology comprise improved energy efficiency that promotes sustainability, enhanced image resolution and color saturation that outperformed display alternatives, and reduced manufacturing expenses. Through the HKUST licensing agreement with international company Realfiction, a leading global display provider of mixed reality solutions and services, future business exhibitions and events will be able to provide spectacular immersive 3D displays without the need for special glasses and available to multiple viewers at the same time.

However, moving from research and development (R&D) to market through an international company may require a more tailored licensing strategy than a University start-up to traverse the different levels of familiarity with the technology and need to validate market readiness before being implemented in products. Realfiction first indicated interest to the University researchers following the Society for Information Display's 2018 Display Week in the US, where the FLCD technology won the Innovation Zone Best Prototype. OKT, already familiar with FLCD through the earlier filing of multiple patents, then stepped in to work with both parties to formulate and structure the technology commercialization pathway via licensing. Initially, a two-phase evaluation period was agreed. Included was contract research leading to the building of a proof-of-concept display combining Realfiction's patent-pending driving system and powered by HKUST's super-fast FLCD. Satisfied with the results, the licensing deal was finally closed in April 2023. A month later, at Display Week 2023 in the US, the Realfiction demo built with HKUST drew a highly positive response from visitors.



Realfiction delegates and the research team at the Display Week 2023 held in the US.

The case exemplifies another facet of KT – the creation of impact by bridging the gap between DeepTech basic research and market needs. The HKUST entrepreneurial spirit is also flourishing again with another start-up in the pipeline that will leverage both the technology and the University's all-round support for new business development.

KT Strategic and Infrastructure Development

With its strategic IP strategy and robust industry engagement initiatives, HKUST achieved excellent IP and licensing outcomes over 2022-2023, with a historic high 226 inventions disclosures received, 345 and 288 IP filed and granted, 85 new IP utilized, and the University ranked No.1 in China and No.33 globally under the Nature Index (2022)'s patent influence metric. By 2023, 533 patents had been utilized out of a total of 1,603 owned by HKUST Clear Water Bay (CWB) (33%). A record-high number of active 173 license agreements was achieved, resulting in an all-time high IP income of HK\$13.1 million in 2022-2023, and the University ranks No. 1 in the industry income index in Hong Kong (THE ranking 2023).



STRATEGIC TECHNOLOGY PORTFOLIO MANAGEMENT

To accelerate the GBA development and faculty engagement for KT activities, the University's IP Policy 3.0 came into effect in March 2023. The new policy included revisions to align with HKUST's "Unified HKUST, Complementary Campuses" framework, which seeks to facilitate seamless KT operations across the two campuses, and an increase in commercialization revenues to creators to 70% in line with HKSAR Government policy to make engagement in innovation more attractive. The revisions sought to encourage impactful University-wide KT activities and further innovation in the wider community, with the review referencing relevant laws and regulations in Hong Kong and the Mainland, benchmarking the policy with other universities, and consulting IP users before making recommendations for the University to adopt. OKT is now working with Mainland units to ensure ongoing IP policy development in the Mainland.



IP Seminars disseminate essential IP knowledge to the HKUST community.

The HKUST community's awareness of key issues related to the commercialization of technology was also enhanced through seminars organized by OKT together with community stakeholders on topics such as how to strengthen patent applications for commercialization and data sufficiency in patent applications.

INNOVATIVE AND INDUSTRY ENGAGEMENT STRATEGY

In further moves to facilitate commercialization endeavors, the University introduced two new initiatives to facilitate its technology commercialization endeavors:

Accelerating Software Adoption Through Express Licensing Platform

The Express Licensing Platform, launched in June 2022, effectively provides an online marketplace to promote HKUST software to start-ups and industry partnerships for commercialization. The platform hosts both open-source and propriety software developed by HKUST researchers, and significantly shortens the licensing process for the software.

Technology Adoption Program (TAP) to Boost Use of Patents

TAP was launched in December 2022 to offer upfront free licenses for selected mature granted patents to increase affordability and accessibility to HKUST's wide-ranging portfolio of technologies among start-ups, small and medium-sized enterprises (SMEs), multinational organizations, and NGOs. Companies only need to pay a running royalty if the firm successfully launches products on the market. The move seeks to boost technology transfer and increase societal impact, with over 250 patents available on the University's Express Licensing Platform to date.

In addition, a series of flagship events, including the IED series, HKUST Unicorn Day and iNNOTECH Day, further promoted innovation and entrepreneurship in Hong Kong and the GBA.



The groundbreaking ceremony of Martin Ka Shing Lee Innovation Building.

INNOVATION BUILDING STRENGTHENS KT RESOURCES

The University's goal to enhance research and education in innovation, technology, and entrepreneurship took a major step forward with the groundbreaking ceremony for the CWB campus's Martin Ka Shing Lee Innovation Building in November 2022. Established with the support of a HK\$150 million donation from Dr. Martin LEE Ka-Shing, Chairman of Henderson Land Group, the eight-story building will include 3,500 sqm of laboratory areas for exploring robotics, AI data science, sustainable living and health science. Meanwhile, shared breakout rooms and space for exhibitions and workshops will foster cross-disciplinary research



opportunities for faculty and a dynamic collaborative learning environment for students. Construction is expected to be completed in Q4 2025.

ACCELERATING INNOVATION THROUGH INNOHK CENTERS



Prof. Tim CHENG and the ACCESS team.

Prof. Nancy IP and the HKCeND team.

Prof. LI Zexiang and the HKCeND team.

The three diverse HKUST-led Centers under the HKSAR Government's InnoHK Clusters initiative continued to advance KT of their innovative research. The **AI Chip Center for Emerging Smart Systems (ACCESS)** formally established a partnership with Hong Kong Applied Science and Technology Research Institute Company Ltd. (ASTRI) to jointly develop emerging AI chip technology and hardware-accelerated AI technology, and promote the transformation of advanced technology into products. The first research collaboration focuses on the applied development of customized AI chips for the AI Internet of Things. Significant University projects involving ASTRI include a location service-enabled 5G system for new industrialization and an "e-nose" for food waste management. To further boost advanced innovation and technology talents, ASTRI and HKUST signed an MoU to launch their first joint PhD program. The **Hong Kong Center for Neurodegenerative Diseases (HKCeND)** showcased its R&D achievements in developing early diagnostic tools and therapeutic strategies for AD at the Asia Summit on Global Health, jointly organized by the HKSAR Government and Hong Kong Trade Development Council (HKTDC) in November 2022 and May 2023. Meanwhile, the **Hong Kong Center for Construction Robotics (HKCRC)** hosted a Hong Kong Construction Industry Council delegation, receiving keen interest in implementing the Center's latest robotics, AI, and other advanced technological solutions for the construction industry.

INTRODUCING INNOVATIVE EDUCATION METHODOLOGIES: MAKING METAVERSE CLASSROOM A REALITY

To propel forward novel educational applications and technologies related to the metaverse, the University's leading MetaHKUST initiative is building an extended reality campus, encompassing a mixed reality classroom and digital twin for both HKUST(CWB) and HKUST(GZ). The classroom and its advanced systems will deliver immersive experiences for teaching, learning, and interaction, and connect students, faculty, and alumni across the two locations and beyond.

FOSTERING RESEARCH EXCELLENCE

In 2022-2023, HKUST was awarded HK\$286.8 million in research funding for 139 collaborative projects with government, industry, NGOs, and academic partners. Among these, University proposals continued to attract strong support from eminent Hong Kong Research Grants Council schemes. Under the **Areas of Excellence Scheme**, an R&D project on 6G products and services received HK\$87.3 million. Ten proposals were awarded a total of HK\$49.22 million from the **Collaborative Research Fund**, comprising seven project and equipment grants and three Young Collaborative Research Grants. Advances being explored include mapping of wind profiles to assess urban design scenarios and self-cleaning materials for anti-viral surfaces in public indoor spaces. In the augural round of the **National Science Foundation of China/Research Grants Council Collaborative Research Scheme**, the University received HK\$13.91 million for four cooperative projects with Mainland institutions on HKUST focus areas of information technology, medicine, and new materials science. Meanwhile, a HK\$6.75 million **Research Impact Fund** project will establish an AI-empowered platform for diagnosing brain tumors, prognosis prediction, and treatment strategies. Regarding **Applied Research Projects** under the Innovation and Technology Commission, 28 HKUST proposals attracted a total of HK\$99.13 million, ranging from a novel software platform for efficient trading of cryptoassets to Internet of Things technologies to find missing people. In funding from the Mainland, the Ministry of Science and Technology and other sponsors contributed RMB69.76 million to HKUST research,



with 26 projects securing support from the **Young Scientist Fund** and three from the **Excellent Young Scientist Scheme** under the National Natural Science Foundation of China. Many of these projects involve industry partners to address real-world issues and market demands.

Strengthening Entrepreneurship Development

As Hong Kong’s first University to invest in entrepreneurship, HKUST has successfully made the development of start-ups a core component of its KT strategy, cultivating an innovative environment and entrepreneurial spirit on campus through its tailored pipeline of programs. With the all-round support provided, the University has been highly productive in activating technopreneurship – the integration of cutting-edge technologies with entrepreneurship – and delivering economic and social impact to the wider community. To date, this has resulted in 91 DeepTech start-ups utilizing licensed HKUST technologies, a total of 1,747 active start-ups, including 11 successful exits (nine IPOs and two acquisitions) and nine unicorns.

ANOTHER IPO SETS SAIL TO THE WORLD: GALA SPORTS

In January 2023, GALA Sports (GALA) became the first mobile sports games developer to be listed on the Hong Kong Stock Exchange. Founded in 2013 in Shenzhen by HKUST engineering alumnus JIA Xiaodong and ZHAN Peixun, the company’s technology breakthroughs in rendering, AI, animation, cross-platform support, and more have enabled GALA to become the second-largest company of its kind in the China market for game revenue. Its mobile sports simulation games include “Football Master” and “NBA Basketball Master”, among many others, and it has established long-term partnerships with numerous prestigious international sports organizations, such as Manchester City F.C., AC Milan, Borussia Dortmund, and the NBA.



Mr. JIA Xiaodong, an HKUST alumnus who founded GalaSports, delivers keynote speech at the HKUST Unicorn Day.

CONTEST WIDENS ENTERPRISING HORIZONS - HKUST-SINO ONE MILLION DOLLAR ENTREPRENEURSHIP COMPETITION



The “Empower Your Future” theme for the University’s signature 2023 HKUST-SINO One Million Dollar Entrepreneurship Competition highlights the contest’s focus on next-generation enterprise and vision.

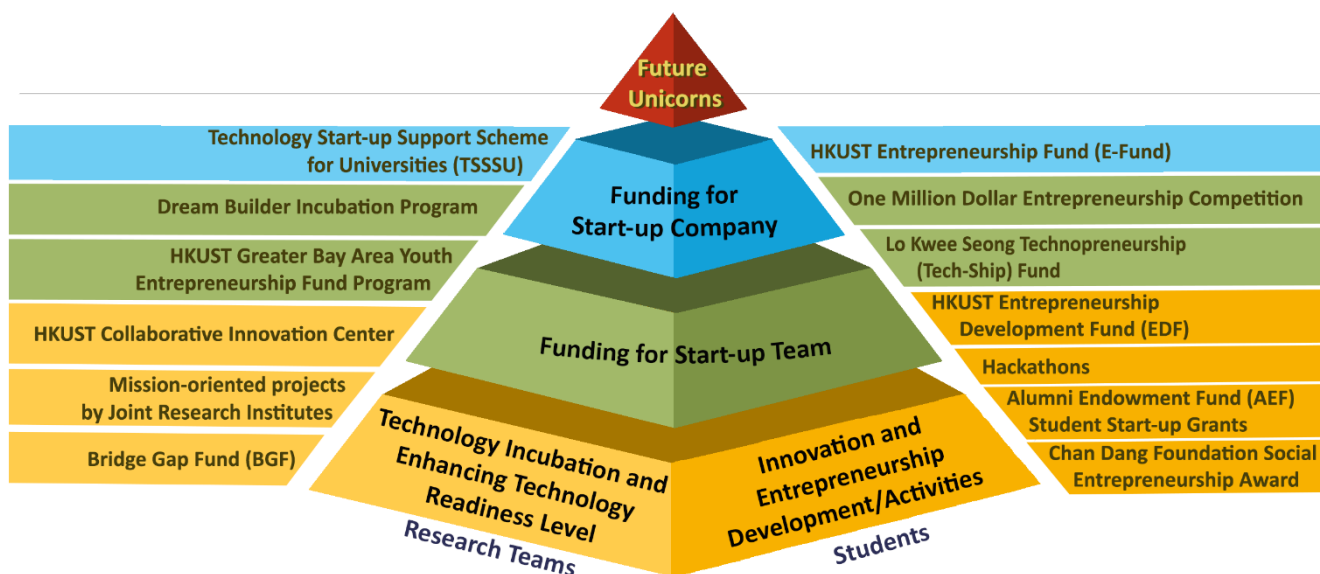
unappealing upcycled fruit into nutritious, longer-lasting freeze-dried products; and a hi-tech lower limb rehabilitation wearable that can assist stroke patients in learning to walk again. The teams will also represent Hong Kong in the 2023 Grand Final later, competing against winners from Beijing, Foshan, Guangzhou, Macao, and Shenzhen regional competitions. With the 2022 Grand Final postponed due to the pandemic, the 2023 Grand Final in Nansha in December will be a special double event, with two grand awards being presented.

STRATEGIC FUNDING PROGRAMS TO SUPPORT KT DEVELOPMENTS

The University’s core commitment to improving lives and recognition of the importance of strategically planned support to assist its research teams and students in their entrepreneurial and KT journeys to societal impact has led to the development of a highly effective support ecosystem. The funding pyramid below illustrates the



strategically designed programs and activities that spur HKUST faculty, students, and alumni to pursue their entrepreneurial dreams:



A comprehensive KT pipeline for HKUST community to embark on their entrepreneurship journey.

As part of this integrated pipeline, the **Bridge Gap Fund** boosts commercialization by encouraging University researchers to turn research discoveries and technologies into IPs that can be licensed by industry or HKUST start-ups. The **Dream Builder Incubation Program** provides seed fund at the idea or proof-of-concept and prototype stage, plus training and workshops to boost members’ entrepreneurial mindset and skills. On the resources side, the **Lo Kwee Seong Technopreneurship (Tech-Ship) Fund** enables the purchase of essential equipment and the development of proof-of-concept products or services to start-ups using HKUST technologies. The HKUST community also contributes through the **Alumni Endowment Fund Student Start-up Grants** and the **HKUST Entrepreneurship Development Fund**, which help students kick-start their own businesses and entrepreneurial dreams. Widening the University’s start-up horizons, the **Chan Dang Foundation Social Entrepreneurship Award** supports proposals for creating solutions to social challenges. In addition, the **Subsidy & Recognition Award** provides broader experience for HKUST student teams by assisting attendance at recognized entrepreneurship, innovation, and technopreneurship-related competitions or programs in and outside Hong Kong. Meanwhile, the government-supported **HKUST Greater Bay Area Youth Entrepreneurship Fund Program** continued to offer funding and mentoring opportunities to University members aged between 18 and 40 for start-up product and business development in the GBA.

Technology Start-Up Support Scheme for Universities (TSSSU)

The HKSAR Government TSSSU initiative, launched in 2014 to enable local universities to help support technology-focused start-ups, forms an integral part of the HKUST KT pipeline. In 2022, 85% of the businesses established by the 17 HKUST TSSSU 2022 funding awardees were based on University technologies, with around 79% of the awardees also participating in HKSTP and Cyberport-organized incubation programs. In 2023, TSSSU-O (formerly known as TSSSU) attracted a record 62 applications, bringing the total HKUST TSSSU funding applications since 2014 to 446. The introduction of TSSSU+ in 2023 to provide dollar-for-dollar matching funds for start-ups that demonstrate potential through securing private-sector investment was a further boost. This saw 32 start-ups (for TSSSU-O) and 11 start-ups (for TSSSU+) recommended for funding, taking total HKUST-affiliated TSSSU start-ups to 117.



TSSSU 2023-2023 Award Ceremony at the HKUST Unicorn Day.



The HKUST Entrepreneurship Fund (E-Fund)

The E-Fund provides capital investment to bridge the funding gap before HKUST start-ups draw sufficient external investment while at the same time raising investor awareness of the University's emerging DeepTech businesses. There are currently 34 Co-Investment Partners under the E-Fund's Co-Investment Model, managing an investment pool of more than US\$32 billion and investing approximately HK\$25 million in E-Fund portfolio companies. Since December 2019, the E-Fund has reached HK\$1 billion in portfolio valuation, and made 15 investments totaling HK\$17.4 million. Following the E-Fund initial investment, portfolio companies have successfully raised over HK\$191.5 million in subsequent funding rounds. Co-Investment Partners, along with other investors, have invested over nine times more than the E-Fund, demonstrating the fund's role as a catalyst for quality investors. In August 2022, the **Forbes Asia 100 to Watch 2022** list included six HKUST start-ups, namely Atom Semiconductor, DimOrder, Gense Technologies, Magnum Research (AQUMON), Opharmic Technology and PointFit Technology, from over 650 submissions. Five are backed or invested in by HKUST and three are E-Fund portfolio companies. HKUST was the only University in Asia with start-ups included in the list.



Startup Runway 2022 at theBASE.

SPURRING A START-UP MINDSET AND INCUBATION

EC forms a central part of the University's KT ecosystem by helping to build an entrepreneurial culture and mindset on campus. EC creates dynamic and pertinent training, resources and events to inspire and advance aspiring entrepreneurs.

Unlike traditional mentoring that emphasizes face-to-face interaction between experienced professionals and entrepreneurial mentees, **MentorHUB@HKUST** delivers a more dynamic mentorship model and experience by encouraging mentors and mentees to reach out to one another anytime and anywhere. The arrangement effectively enables real-time feedback and just-in-time outcomes to facilitate start-ups' early-stage growth. In 2022-2023, mentorHUB attracted 24 established mentors and over 460 mentees from 177 start-ups across 10 fields and industries. Another important factor for a new business is space to work and an encouraging environment. **theBASE** at HKUST provides a multifunctional common area for meetings, demonstrations and events, along with a vibrant co-working space to exchange ideas, find team members, and network. Events at theBASE over 2022-2023 included Startup Runway 2022, Info Day@theBASE 2022, and entrepreneurship talks. Renovation is set to enhance the environment further. Meanwhile, EC ran 29 workshops covering idea generation, business planning, marketing, finance, and legal issues, among others. EC and OKT also supported the participation of over 70 start-ups in 10 diverse exhibitions, enabling the young companies to showcase their products and services and connect with investors.



A MentorHUB networking event at theBASE.

DEEPTeCH INCUBATION



Expert workshops are organized to build start-up teams' knowledge.

HKUST has played a leading role in championing the transfer of DeepTech innovation to business and society, with 91 start-ups utilizing HKUST technology licenses founded by 2022-2023. The **HKUST Entrepreneurship Program (EP)**, run by HKUST R and D Corporation Ltd. (RDCHK), has approved 67 companies to join its comprehensive incubation program since launch in 1999, with two companies listed in Hong Kong and a third moving along the Shenzhen listing pipeline in 2022-2023. The **HKUST Startup Zone** has provided space to 122 DeepTech start-ups by the end of June 2023. Additional funding is also now strengthening new businesses' operations, with five expert workshops co-organized by RDCHK, OKT, and EC over the year in areas such as people management, pitching, and fundraising. RDCHK also kick-started the provision of bookkeeping and payroll-related services, auditing, and legal services, among others, to enable start-ups to focus more resources on core business development.



ENTREPRENEURSHIP INITIATIVES IN THE GBA

In line with its mission, the University has also targeted the development of entrepreneurship beyond Hong Kong as an important objective to spur regional economic and social development and draw top overseas talents to increase the GBA's profile as an international innovation hub. A growing number of initiatives and facilities are facilitating this goal.

Nansha

The **Nansha Guangdong-Hong Kong-Macao (International) Youth Entrepreneurship Hub**, jointly acknowledged by the Guangdong and Hong Kong governments in December 2022, encourages young entrepreneurs from overseas to explore growth opportunities in the GBA. The platform, operated by HKUST Fok Ying Tung Research Institute (FYTRI), supported around 80 start-ups in 2022-2023 by providing workspace, R&D facilities, and entrepreneurial guidance. With support from the Nansha Government, the hub has also launched a **Technology Seeding Program** to attract high-potential, hi-



The Nansha Guangdong-Hong Kong-Macao (International) Youth Entrepreneurship Hub.

tech start-ups led by academics from world-renowned universities. Besides incubating 12 start-ups over 2022-2023, the platform additionally hosted more than 150 innovation and entrepreneurship activities, including sharing sessions, training courses, entrepreneurship competitions, pitching, and networking.



The HKUST Shenzhen Industry, Education and Research (IER) Building Exhibition Hall showcases the success stories of companies supported by Shenzhen platforms.

Shenzhen

The University's **Blue Bay Incubator** provides targeted entrepreneurship support schemes for start-ups at different stages. In 2022-2023, a total of 43 companies were under incubation, eight of which had received a total investment amount of nearly RMB300 million. Incubatees are assisted through the provision of services such as business and policy counseling, legal, financial and tax services, financing, and exhibition and media exposure. Blue Bay is now seeking additional space for experimental and manufacturing activities to meet the needs of various start-ups and widen the scope of its provision.

In a further initiative to transfer research to society, HKUST R and D Corporation (Shenzhen) Ltd. (RDSCSZ) has set up a dedicated site for technology transfer, known as **T-Camp**, in the HKUST Shenzhen Industry, Education and Research (IER) Building. T-Camp, set up in 2022, provides low-cost space to companies or HKUST research teams to encourage potential commercialization or collaboration involving HKUST patents and technologies.

Foshan

The HKUST Foshan Center for Technology Transfer and Commercialization (FCTTC) is an innovation and entrepreneurship service platform for technology transfer and commercialization, entrepreneurship incubation, and nurturing of innovative talents. As an incubator located in Nanhai, Foshan, FCTTC seeks to assist HKUST faculty, staff, students and alumni to establish start-ups in Foshan, as well as provide entrepreneurial support services and funding.

ENTREPRENEURIAL TALENTS SHOW COMPETITIVE EDGE

In leading competition and investment highlights, **Skyland Innovation**, a spin-off from the InnoHK HKUST-led HKCRC, emerged as the overall champion and PropTech winner in the international 2023 Elevator Pitch Competition (EPiC). The contest, organized by HKSTP, drew over 610 start-ups from 55 economies. Skyland offers innovative on-site solutions and smart tools for construction management to property developers and contractors



through the use of robotics and AI. It was also a fruitful year for **PointFit Technology**, which received the 2022 Grand Prize at the ASICS Accelerator Program 3.0; Gold Award for Hardware and Devices in the Hong Kong ICT Start-up Awards 2022; and saw its founders listed in the Forbes 30 Under 30 Asia 2023 together with other five HKUST entrepreneurs. The start-up has devised a non-invasive continuous health-monitoring system based on sweat sensors and a skin patch using HKUST-developed porous nanofilm.



Skyland Innovation receives the overall champion award in the international elevator pitch contest in 2023.

In the GBA, the University reinforced its entrepreneurial standing with numerous awards for related start-ups in the Qianhai-Guangdong-Hong Kong-Macao-Taiwan Youth Innovation and Entrepreneurship Competition 2022. **CryoChip**, which has created an automated platform for egg or embryo cryopreservation in vitro, entered the contest's Grand Final in Qianhai via the Guangzhou regional competition and won the gold award in the Enterprise category. **PhoMedics**, whose founder is also listed in the Forbes 30 Under 30 Asia 2023, won a special award for Technological Innovation in celebration of the HKSAR 25th Anniversary in the Grand Final and the gold award in the Enterprise track in the Hong Kong regional competition. The company was feted for its CHAMP Microscope™, which is seeking to transform histological imaging by detecting and giving instant information about the status of cancer before, during, and after surgery. Meanwhile, **Gabi Education** and its AI dyslexia pre-screening system, a multi-award winner at a host of other events, received a further accolade at the regional contest of the competition. The University was the most prolific high achiever in the Tertiary Institutions section of the Hong Kong regional contest, with 12 start-up teams receiving a total of 12 awards.

Further afield, there was success at Nanjing's International Conference on Display Technology, one of the largest annual events in the display industry. A 0.39-inch single-chip full-color micro-LED micro-display developed by HKUST start-up **Raysolve Technology** (TSSSU 2020-2021 awardee) won the first prize in the I-Zone Innovation Award, which honors novel display technology by SMEs, start-ups, and research labs. The micro-display is set to bring a new immersive experience to consumer-level augmented reality glasses and devices. **Roumei (Hong Kong) Technology Ltd.** (TSSSU 2020-2021 awardee) was awarded the second prize I-Zone Innovation Award. Roumei is using licensed HKUST technology in its development of next-generation LEDs.

HKUST UNICORN DAY



Around 955 people join the HKUST Unicorn Day, including representatives from different business sectors and government bodies.

The first HKUST Unicorn Day attracted nearly 100 innovators and around 1,000 visitors who had the opportunity to learn more about the University's past achievements in entrepreneurship and current start-ups. At the enterprising event, University-nurtured founders of unicorns or listed companies and close to 90 new businesses exchanged insights and explored partnership opportunities during the day-long event. Start-up participants displayed their innovations and four pitching sessions took place for potential investors. Some 955 industry representatives, potential investors, academics and government officials attended the gathering, including representatives from seven Consulates General.



HKUST FOUNDER'S CLUB LAUNCHED

To build additional bonds between the University's young entrepreneurs following graduation and provide ongoing support for their business journeys, the University set up the HKUST Founder's Club over 2022-2023. The Founder's Club is seeking to foster a dynamic community of HKUST entrepreneurs, innovators, and change-makers, foster entrepreneurship on campus, bridge the gap between HKUST founders and industry, government, and investors, channel resources to HKUST companies, and lead the way in developing Hong Kong's entrepreneurial culture. Selected start-ups, SMEs, as well as DeepTech companies created by HKUST members will be invited to join the Club. Members will receive entrepreneurship training, potential investment opportunities, business matching services and R&D collaboration opportunities with HKUST academics. The Club will also nominate members for incubation and accelerator programs organized by the University's external partners.



HKUST senior management and guests celebrate inauguration of the HKUST Founder's Club.

Commercialization and Industrial Collaboration

HKUST makes tremendous efforts to set up multiple avenues to connect with the wider community as part of its KT strategy. The goal is to stimulate innovation through combining the University's deep research strengths and novel applications with the know-how of business, industry, government-related organizations, and other sectors to spur new products and services and speed economic and social development. Up to 2022-2023, HKUST has 826 industry collaborators.

HKUST INDUSTRY ENGAGEMENT DAY (IED) SERIES



Representatives from the business, industrial, academic and technology sectors explore the inventions on display at HKUST Industry Engagement Day.

The inaugural IED proved a great success, showcasing 31 University inventions spanning four strategic research areas. The event attracted hundreds of industry players, potential investors, academics, government officials, and entrepreneurs interested in exploring collaboration with University researchers. Representatives of the European Union and Consuls-General also joined to explore potential opportunities. At the accompanying symposium, Prof. SUN Dong, JP, Secretary for Innovation, Technology and Industry of the HKSAR

Government and senior executives from innovation and technology heavyweights such as WeBank, Guangdong Bright Dream Robotics, Chiaphua Industries, and Huawei Technologies also shared their insights on how to drive Hong Kong's innovation agenda through University-industry collaboration. To continue to build interaction between HKUST researchers and start-ups and the community, smaller theme-based Industrial Engagement Days (IED+) were subsequently introduced and held quarterly. Over 2022-2023, these IED+s have focused on biotechnology innovations (February 2023) and the construction sector (May 2023), resulting in a total attendance of over 1,200 individuals for the entire series.

MULTIPLE AWARDS AT GENEVA EXHIBITION DRAW INTERNATIONAL ATTENTION

The 48th International Exhibition of Inventions Geneva provided a high-recognition overseas showcase for HKUST's entrepreneurial and research advances and a valuable platform to boost Hong Kong's innovation hub profile. The exhibition, held in April 2023, marked HKUST's first institutional participation at the event, with 19 University teams collecting 20 awards. Projects on display covered areas ranging from cell therapy, histological





The exhibition reception for Exhibition of Inventions Geneva.

imaging, and nanomembrane materials to 3D printing for manufacturing. Four of the innovations in water treatment were developed in collaboration with the HKSAR Government’s Drainage Services Department. Accolades comprised one Prize of the Chinese Delegation for Invention and Innovation, three gold medals with congratulations of the jury, five gold medals, six silver medals, and five bronze medals. Following the international event, a Geneva exhibition booth was set up on the HKUST campus to share the teams’ achievements with the University community. A reception with senior management was also held to recognize participants’ endeavors and attracted 200 attendees.

MORE HKUST RESEARCH INSTITUTES AND JOINT LABS BOOST KNOWLEDGE TRANSFER OPPORTUNITIES

In 2022-2023, eight further research institutes/centers and joint labs with industrial partners were approved to reinforce KT, talent development, and research innovation, bringing the total to 68. This deep pool of state-of-the-art research centers/joint labs focuses on the latest science and technology advancements and serves as a platform to facilitate collaboration with industrial partners and organizations.

STRENGTHENING TELECOM CONNECTIONS TO ACCELERATE SMART SOCIETY



HKUST and China Unicom sign a strategic collaboration agreement and framework agreement to establish the joint laboratory.

In a “smart” advance for the community, collaboration between HKUST and leading global telecommunications operator China Unicom is set to speed forward Hong Kong’s digital economy through the establishment of the HKUST – China Unicom Joint Laboratory on Smart Society and other strategic endeavors. The Lab will focus on cutting-edge research, technology transfer, and the fostering of young talents. Initial projects will investigate aspects of smart cities, the industrial internet, AI, computing power, and cybersecurity. Additional collaboration will seek to impact digital economy infrastructure development. This will encompass the commercialization of advanced 5G communication technologies; and promote the setting-up of smart computing and data trading centers at Hong Kong-Shenzhen Innovation and Technology Park in the Lok Ma Chau Loop. The partners will also work toward extending HKUST’s smart campus development.

JOINT SPORTS SCIENCE CENTER KEEPS HONG KONG ATHLETES RACING FORWARD

With sports science and technology among HKUST’s strategic research areas, the University inaugurated the HKUST – HKSU Joint Center for Sports Science and Technology in March 2023 together with the Hong Kong Sports Institute (HKSU) to strengthen elite athletes’ performance in international competitions. The same month, HKUST co-hosted the “Futureproofing Sports in Asia” tech summit with Asia Sports Tech, co-founded by an alumnus. Part of a recent donation from the Viva Group will also be used to advance sports science-related research projects in tandem with funding from the HKSAR Government’s Research Matching Grant Scheme.



Establishment of the HKUST-HKSI Joint Center for Sport Science and Technology.



Social Impact and Support for Community

HKUST KT endeavors cover multiple sectors of society, with members of the University committed to advancing people's lives through cutting-edge technologies, vitalized services, and sharing of expertise, along with nurturing the young science and technology innovators of the future.

COMPANION ROBOTS FOR LOCAL HEALTHCARE SECTOR

The HKUST cross-disciplinary intelligent design team showcased their two companion robots for seniors at the Gerontech and Innovation Expo cum Summit, a large-scale event focused on novel technologies to enhance the lives of seniors in Hong Kong. The companion robots are now available on the market and have served over 40 elderly centers, healthcare organizations, and hospitals. The robots provide news, exercise, entertainment, and video conferencing opportunities with families, along with health monitoring tools that can evaluate the user's facial expression (emotion) and stress level. The team has also attracted media attention, being invited to share their experience of serving the community by RTHK in 2021 and becoming the focus of a TVB news feature following participation in Gerontech.

樂齡科技博覽展出智能機械人陪長者做運動



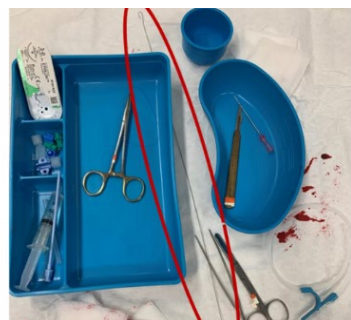
PhD student and intelligent design team member FUNG Kwong-Chiu, talks about the companion robot during the TVB news feature.

AI GUIDEWIRE TECHNOLOGY ADDS TO PATIENT SAFETY

An HKUST computer science and engineering-inspired innovation, employing AI, is starting to improve patient safety by reducing the risk of guidewires being left in the body following a clinical procedure. Guidewires are used to assist placement of a catheter in a central vein to administer fluids or medication, or monitor blood



The new technology helps medical staff identify the guidewires by taking a photo of all the medical instruments.



flow stability in some medical procedures. The AI software has been deployed at Tseung Kwan O Hospital in 32 cases from November 2021 up to February 2023, without missing a wire. The technology involves an "AI checker" using computer vision, object recognition and data augmentation techniques. Benefits include detecting and impartial cross-checking of manual counting in real-time, high accuracy and tireless efficiency over time. It is also anticipated that the technology can be extended from guidewires to other medical instruments.

ACCELERATING ODOR AND MICROBIAL CONTROL IN DRAINAGE AND FLUSHING SYSTEMS

Helping to enhance people's lives in the community, HKUST researchers led by Prof. YEUNG King-Lun, Department of Chemical and Biological Engineering, have devised an inexpensive and effective multifunctional hydrogel for eliminating odors from drainage sites and antimicrobial control in flushing systems. The MalOdor-Control hydrogel formula works by killing odor-causing microbes and preventing emissions of odorous gases emanating from manholes, nullahs, water channels, and other sites. The team's antimicrobial hydrogel, AMGel, can eliminate bacteria and viruses in flush water, including the SARS-CoV-2 Omicron strain. In collaboration with the HKSAR Government's Drainage Services Department, the technology is being trialed at public housing blocks and an elderly care home.

ADDRESSING CLIMATE CHANGE CHALLENGE TOGETHER

HKUST successfully organized two large-scale events focused on caring for the environment over the year, attracting more than 2,000 participants overall from government, business, science and technology, the investment sector, and climate action organizations. From June 2022-June 2023, a series of **Blue Economy Summits** and a sharing workshop took place to foster industry-university-research cooperation on the sustainable and harmonious development of people and the ocean. Over 90 prominent speakers from different marine sectors took part. In December 2022, HKUST held the three-day **Climate Adaptation and Resilience**



Conference (CARE2022), becoming the first event in Hong Kong to bring together diverse public and private sector stakeholders to discuss climate change solutions and measures, and co-create recommendations. The event centered on the latest impacts of climate change on Hong Kong, technical issues related to mitigation and adaptation, and policy and green finance. A report based on the discussions at the conference and offering ways forward was published in February 2023.



CARE2022 draws representatives from the Government and Industry to discuss climate change solutions and measures.

Mainland and International Collaboration

Celebrations were in order over 2022-2023 as HKUST officially opened its new campus HKUST(GZ) in the GBA, heralding a new era for the University overall. HKUST also increased its reach and provision through diverse collaborative agreements with different regions of the Mainland and international partners.



HKUST celebrates the opening of its HKUST(GZ) campus.

HKUST(GZ) MAKES RAPID STRIDES

The opening of HKUST(GZ) marked the start of the “HKUST 2.0” era, with the two institutions working in synergy under the pioneering “Unified HKUST, Complementary Campuses” framework that enables new Hong Kong-Mainland collaboration in research, KT and education, and seeks to lead the way in higher education globally. HKUST(GZ)

has rapidly moved forward, gaining approval for more than 100 government-funded research projects, working with a wide range of companies in University-industry research partnerships, signing collaboration agreements with over 70 leading enterprises and scientific research institutions, and establishing joint labs with front-running industries. Some 200 international academic talents and 800 postgraduate students are now at work at HKUST(GZ), with the first undergraduates – from Hong Kong, Macao and Taiwan – enrolling in 2023.

INNOTECH DAY SOLIDIFIES CONNECTIONS WITH INDUSTRY AND GOVERNMENT

Riding on the success of HKUST Unicorn Day, HKUST(CWB) and HKUST(GZ) co-hosted iNNOTECH Day in June 2023 at the Guangzhou campus. Activities attracted around 1,000 participants, more than 100 cutting-edge projects/start-ups, and over 300 investors, venture capital community members, and leading companies. Forums brought together experts and scholars in the digital economy, intelligent systems, AI for science, and life sciences to share the latest research findings, discuss cutting-edge technologies, and encourage collaboration and innovation. Meanwhile, roadshows and exhibitions inspired more than 100 faculty, student, and alumni start-ups and projects to showcase their enterprising products and ideas. The occasion, incorporating the one-year anniversary celebrations of HKUST(GZ)’s first academic year, also featured the signing of agreements with several Guangzhou state-owned enterprises and marked the opening of seven provincial and municipal-level key laboratories.



HKUST Council Chairman Prof. Harry SHUM at the iNNOTECH Day.

MISSION-ORIENTED RESEARCH INSTITUTES AND MAINLAND PLATFORMS ADDRESS INDUSTRY NEEDS

Joint Institutes/Center Propel Forward KT

In November 2022, Guangdong Bright Dream Robotics signed five IP licensing agreements to develop HKUST technologies into applications, marking the first of the innovations from the HKUST-Bright Dream Robotics Joint





The licensing agreement for the five HKUST technologies is signed between HKUST and Guangdong Bright Dream Robotics.

Research Institute (HBJRI) to be licensed. The technologies range from more efficient building materials to a high-caliber indoor human localization system. In addition, advances continued at the HKUST-Kaisa Joint Research Institute and HKUST Collaborative Innovation Center in new materials, Internet of Things/AI, big data, Fintech, energy and environment, among others. More than 50 projects have been initiated since the joint units were established in 2019 to foster technology talents and increase the development of applications that can be commercialized to meet the needs of society.

Shenzhen Platform Adds Impetus to Innovation and Sustainability

Under the University's Shenzhen platform, HKUST Shenzhen-Hong Kong Collaborative Innovation Research Institute (SHCIRI) and the Blue Bay Incubator created active relationships with different community sectors to accelerate Greater Bay innovation. Moves included industry partnerships with Tian An Cyber Park and Shui On Group to provide real cases and resources for start-ups and cooperation with high-profile organizations, including InvestHK, HKTDC, and HKSTP, to create comprehensive support for Hong Kong or overseas start-ups that intend to start businesses in Shenzhen. SHCIRI has established a Green Sustainability Open Lab with Shui On Xintiandi and its incubator at InnoSpace GBA. Shui On will also set up a Green Fund under the Open Lab for HKUST researchers to conduct basic and applied research on green and sustainable technologies and ESG-related topics.



Unveiling Ceremony for the Green Sustainability Open Lab.

Wuxi-Hong Kong Collaborative Innovation Center



Members of HKUST and Wuxi EDZ unveil the plaque for the Wuxi-Hong Kong Collaborative Innovation Center to propel forward knowledge transfer.

HKUST entered into a collaboration with the Wuxi Economic Development Zone (Wuxi EDZ) to jointly establish the Wuxi-Hong Kong Collaborative Innovation Center at HKUST following the signing of an MoU to deepen exchanges on areas spanning innovation, entrepreneurship, talent training, and policy research. The Center will seek to identify and incubate research teams and innovative start-ups in microelectronics, big data, cloud computing,

Fintech, precision medical equipment, and life and health sciences through activities such as entrepreneurship competitions. For more established research teams and companies, the Wuxi EDZ will offer policy support to facilitate their collaboration with industry and academia in promoting KT and originating new ventures.

RELENTLESS BUILDING OF COLLABORATIONS NEAR AND FAR

Spurring Pharmaceutical Development in the GBA

The University signed an MoU with the China Pharmaceutical Innovation and Research Development Association (PhIRDA) to establish two innovation and research centers to deepen Hong Kong's pharmaceutical commercialization capabilities as well as contribute to life and health tech development in the GBA overall. The Greater Bay Area Center for International BioMed Innovations will promote basic research and expedite KT. Meanwhile, the Greater Bay Area Center for Policy Research on BioMed Development will, among others, conduct studies on the



Members of PhIRDA delegation discuss with HKUST the ways to deepen strategic cooperation between the two parties.



regulatory science of drugs and medical devices, advise Mainland China and Hong Kong authorities on policy matters, and may host courses on pharmaceutical innovation, regulation and R&D management to train talents.

University of Strathclyde Partnership Widens Its Scope

HKUST continuously seeks to work in partnership with distinguished local, national and overseas universities on leading research to share its expertise, accelerate discovery through additional insights, and raise Hong Kong's global profile as an innovation hub. Riding on the success of an earlier collaborative research agreement with the University of Strathclyde and extended in March 2022 to include HKUST(GZ), another call for proposals is underway, with the scope expanded to include biomedicine, material science and future energy, artificial intelligence, Fintech, green technology, and art technology.

Looking Forward

The strong track records in innovation and entrepreneurship development and the presence of HKUST(GZ) put the University in a leading position to embrace and align with major new HKSAR Government Innovation and Technology (I&T) initiatives to strengthen economic and social development of the city, the GBA, and beyond.

In the GBA development, the opening of HKUST(GZ) marked the start of the "HKUST 2.0" era. The synergizing of IP policy and operations between HKUST's two campuses in Hong Kong and Guangzhou now provides a framework to expand HKUST's KT reach. To do so, HKUST will strategically fortify its KT foothold, assisted by the setting up of the Greater Bay Area Incubation Framework for HKUST start-ups and by engaging industry partners in key collaborating cities. In alignment with HKSAR Government policy, HKUST additionally stands ready to contribute to Lok Ma Chau Loop development as well as the Northern Metropolis. Further afield, the University is set to explore more KT engagements with regional countries to spark broader collaborative ventures with overseas companies, incubators, and start-ups.

One major focus is the government's HK\$10 billion Research, Academic and Industry Sectors One-plus Scheme (RAISE+) to accelerate the transformation of R&D outcomes and industry development. The Scheme will provide excellent opportunities for HKUST DeepTech start-ups to accelerate innovation development to create economic impact. HKUST will identify disruptive technologies and high-potential DeepTech start-ups, forge technology and business links, and establish robust governance and professional support teams to boost the success of its RAISE+ projects. OKT will initiate the Collaborative Venture Creation Program to create impactful DeepTech start-ups and link HKUST research teams, investors, and industry partners; engage capable external partners; and provide focused support for the University's InnoHK Centers to maximize their R&D capabilities and impact.

As HKUST 2.0 moves forward, HKUST 3.0 is thus already in the University's sights, emphasizing the proactive strategic planning at HKUST and KT's pillar role in its future development vision. Longer-term planning is also underway for an HKUST Innovation Park (HKUST InnoTech Park) to further advance technology transfer readiness of University research discoveries through the provision of additional space and opportunities for co-development with industry. HKUST InnoTech Park will not only solidify HKUST's position as a global leader in cutting-edge research but bolster the University's ability to transfer knowledge from lab to market, ultimately benefiting society at large.



Appendix A – Key Performance Indicators

| Performance Indicators | 2021/2022 (Achieved) | | 2022/2023 (Achieved) | |
|---|-------------------------|----------|-------------------------|-----------------------------|
| Inventions, Patents, Licenses, IP, Contracts, and Services | | | | |
| Number of invention disclosures received ^{Note 1} | 217 | | 226 | |
| Number of patents filed in the year ^{Note 1 & Note 2} | 328 | | 345 ^{Note 3} | |
| Number of patents granted in the year ^{Note 1 & Note 2} | 218 | | 288 ^{Note 4} | |
| Number of patents used based on new contracts (according to contract date) ^{Note 5} | 85 | | 85 | |
| Number of active patents used (by the end of the reporting year) ^{Note 6} | 513 | | 553 | |
| Number of new intellectual property (IP)/license agreements signed in the year ^{Note 7} | 24 | | 32 | |
| Number of total active IP/license agreements signed ^{Note 7} | 143 | | 173 ^{Note 8} | |
| Income (on a cash basis) generated from IP rights ^{Note 9} | \$9.8M | | \$13.1M | |
| Number of collaborative researches, and income thereby generated ^{Note 7 & Note 10} | 171 | \$433M | 176 | \$351.3M |
| Number of contract researches (other than those included in “collaborative researches” above), and income thereby generated ^{Note 7} | 217 | \$117.8M | 309 | \$103.3M ^{Note 11} |
| Number of consultancies, and income thereby generated ^{Note 7} | 58 | \$9.6M | 98 | \$26.5M ^{Note 12} |
| Number of equipment and facilities service agreements, and income thereby generated ^{Note 7} | 385 | \$4M | 424 | \$3.2M |
| Sub-total Income | \$574.2M | | \$497.4M | |

The figures reported for 2022-2023 are subject to year-end adjustments. Figures may not add up to the corresponding totals owing to rounding.

^{Note 1} Starting from 2013-2014, the number reported also includes invention disclosures, and patents filed, granted and used by Mainland platforms and InnoHK.

^{Note 2} The numbers are counted based on the definition laid down by the University Grants Committee (UGC) under the Common Data Collection Format (CDCF) according to (1) the number of countries where patents are filed, and (2) the number of patent types, defined in accordance with the international patent classification (i.e., technology area) of the patents.

^{Note 3} CDCF Table 65: The number of patents filed came to 345 and the number of inventions involved totaled 259 during 2022-2023.

^{Note 4} CDCF Table 66: The number of patents granted came to 288 and the number of inventions involved totaled 124 during 2022-2023.

^{Note 5} Refers to the number of patents utilized by licensing during the reporting period, including rights granted as background intellectual property (IP) in newly signed contracts with value according to the contract date. All patents used are only counted once if included in more than one contract.

^{Note 6} Refers to the number of active patents utilized at least once by means of licensing in the current and past reporting periods, including rights granted as background IP in all signed contracts (both active and inactive contracts) with value. All used patents only counted once even if it is included in more than one contract. Only active patents/pending patents are counted, namely, expired patents before or end of a specific year will not be counted.

^{Note 7} Starting from 2017-2018, the number reported also includes the number of new IP/license agreements signed, total active IP/license agreements signed, collaborative researches, contract researches (other than those included in “collaborative researches”), consultancies, equipment and facilities service agreements, and income thereby generated by Mainland platforms.

^{Note 8} The number reported comprises 155 patents and software license agreements, and 18 assignments on technology transfer managed by HKUST R and D Corporation Ltd. (RDC).

^{Note 9} Includes licensing income from patents via RDC and Mainland platforms as well as copyright of courseware via the University. The reporting period for copyright of courseware via the University is 1 April to 31 March of the respective financial year, as data for 1 July to 30 June of the respective financial year are not available by the date of submission for the Knowledge Transfer Annual Report.

^{Note 10} The number reported comprises the number of InnoHK projects and income thereby generated.

^{Note 11} The total number of new contracts and contract value of contract research agreements signed in the 2022-2023 period are 104 and \$77M respectively.

^{Note 12} The total number of new contracts and contract value of consultancy agreements signed in the 2022-2023 period are 66 and \$18.4M respectively.



| Performance Indicators | 2021/2022 (Achieved) | 2022/2023 (Achieved) |
|--|------------------------------------|------------------------------------|
| Entrepreneurial Education and Culture | | |
| Number of teams for One-Million-Dollar Entrepreneurship Competition at the Clear Water Bay campus ^{Note 13} | 175 | 234 |
| Accelerator: number of teams/start-up companies ^{Note 14} | 133 | 159 |
| Number of teams/start-up companies in the mentorHUB ^{Note 15} | 151 | 177 |
| Number of students engaged in start-ups and entrepreneurship ^{Note 16} | 4,261 | 3,418 |
| Start-up and Spin-off Companies | | |
| Number of start-up companies ^{Note 17 & Note 18} | 182 | 232 |
| Number of spin-off companies ^{Note 17 & Note 18} | 329 | 312 |
| Total number of start-up and spin-off companies | 511 | 544 |
| Contributions to the Public | | |
| Number of student contact hours in short courses or e-learning programs specially tailored to meet business or Continuing Professional Development (CPD) needs | 1,463,423 hours ^{Note 19} | 1,784,869 hours ^{Note 20} |
| Income received from Continuing Professional Development (CPD) courses | \$545.1M ^{Note 19} | \$775.8M ^{Note 20} |
| Number of public lectures/symposiums/exhibitions and speeches to a community audience | 564 | 628 |
| Number of performances and exhibitions of creative works by staff or students | 19 | 68 |
| Number of staff engaged as members of external advisory bodies including professional, industry, government, statutory or non-statutory bodies | 509 | 525 |
| Total KT Income | \$1,119.6M | \$1,273.1M |

The figures reported for 2022-2023 are subject to year-end adjustments. Figures may not add up to the corresponding totals owing to rounding.

^{Note 13} HKUST One-Million-Dollar Entrepreneurship Competition is one of the Entrepreneurship Center (EC)'s annual flagship events, providing a platform for students and alumni to turn their entrepreneurial ideas into an actual business.

^{Note 14} Accelerator includes funding programs and co-working space programs for HKUST start-up teams and companies, such as the Yeung Wing Yee Entrepreneurs Fund (YWYEF), HKUST Dream Builder Incubation and Accelerator Program, Lo Kwee Seong Technopreneurship Fund (Tech-Ship), HKUST Entrepreneurship Development Fund (EDF), Chan Dang Social Entrepreneurship Award and HKUST X HKSTP Co-Ideation Program.

^{Note 15} A mentoring program launched in 2020 and tailored for co-founders of start-ups. Its mentoring model offers flexible and timely advisory input and experience-sharing by mentors from diverse professional backgrounds.

^{Note 16} Student participation in EC entrepreneurship events over the reporting year (by headcount).

^{Note 17} Includes economically active start-up and spin-off companies being funded or incubated by HKUST entrepreneurship programs at the Clear Water Bay campus and via Mainland platforms. Programs include: the HKUST Entrepreneurship Program (EP), Technology Start-up Support Scheme for University (TSSSU) Program, U*STAR Award, Yeung Wing Yee Entrepreneurs Fund (YWYEF), HKUST Entrepreneurship Acceleration Fund (EAF), Alumni Endowment Fund (AEF) Student Start-up Grants, HKUST One-Million-Dollar Entrepreneurship Competition (regional competitions inclusive), MentorHUB, HKUST Dream Builder Incubation Program, Entrepreneurship Development Fund, HKUST Greater Bay Area Youth Entrepreneurship Fund Program, other entrepreneurship programs such as HackUST, Tech-Ship Program, theBASE facility user, HKUST Entrepreneurship Fund (E-Fund), and Chan Dang Social Entrepreneurship Award, companies under InnoHK; programs under the Blue Bay Incubator, Blue Bay X of HKUST R and D Corporation (Shenzhen) Ltd. (RDCSZ) and HKUST Shenzhen – Hong Kong Collaborative Innovation Research Institute (SHCIRI) in Shenzhen; programs under Guangzhou HKUST Fok Ying Tung Research Institute (FYTRI) in Nansha; and programs under HKUST LED-FPD Technology R&D Center at Foshan (FSC) in Foshan. Companies funded or incubated by more than one program or with offices in more than one location are only counted once.

^{Note 18} The reporting period is 1 January to 31 December of the calendar year, as per UGC under the CDCF requirement.

^{Note 19} Starting from 2017-2018, the number reported includes taught postgraduate programs (including EMBA, MBA, MSc, MA, PgD) with reference to the definition of Continuing Professional Development (CPD) courses laid down by UGC under the CDCF. As the compiled income of the programs above for 2021-2022 was not yet available by the date of submission for the Knowledge Transfer Annual Report, 2021-2022 data reported was based on data collected in 2020-2021.

^{Note 20} Starting from 2017-2018, the number reported includes taught postgraduate programs (including EMBA, MBA, MSc, MA, PgD) with reference to the definition of Continuing Professional Development (CPD) courses laid down by UGC under the CDCF. As the compiled income of the programs above for 2022-2023 was not yet available by the date of submission for the Knowledge Transfer Annual Report, 2022-2023 data reported is based on data collected in 2021-2022.

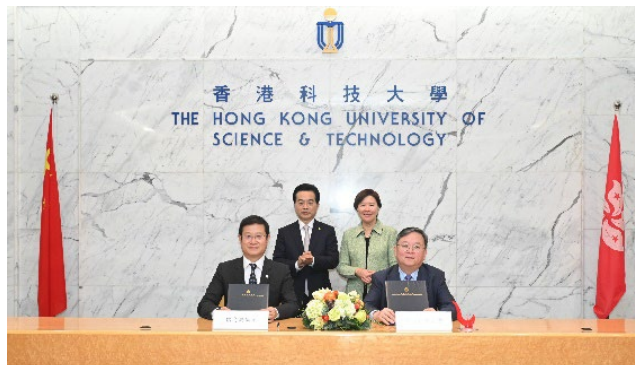


Appendix B – Other Activities Highlights

1. Strategic Alliance and Collaboration with Industrial and Institutional Partners

ENHANCING RESEARCH COMMERCIALIZATION THROUGH BUSINESS WORLD SYNERGY

Further deepening ties with the business world, HKUST and China Merchants Group (CMG) signed an MoU to strengthen commercialization of research discoveries and nurture talents. The partnership is expected to generate theme-based research initiatives and incubate sizable innovation and technology companies. China Merchants Group will also support the University in organizing innovation and entrepreneurship competitions, conferences and technology exhibitions, among others. On the education front, the Group will assist with talent-building through internships and employment opportunities for HKUST students, while the University will help the company's executives keep up to date with the latest trends through training programs.



China Merchants Group (CMG) Executive Vice President Mr. DENG Renjie signs the agreement under the witness of CMG Chairman Mr. MIAO Jianmin.

COOPERATION AGREEMENTS SIGNED WITH SUZHOU MUNICIPAL GOVERNMENT

In February 2023, a Suzhou Municipal Government delegation visited HKUST for in-depth exchanges in areas such as KT and talent cultivation and signed three cooperation agreements. While on campus, the delegation visited the Aerodynamics and Acoustics Laboratory and attended presentations on the University's joint technology innovation and training for emerging talents.

GUIZHOU UNIVERSITY MOU TO ADVANCE MOLECULAR SCIENCE RESEARCH

In April 2023, a delegation led by Prof. LU Yongzheng, Guizhou Provincial Party Standing Committee Member, visited HKUST to sign an MoU between HKUST's Chinese National Engineering Research Center for Tissue Restoration and Reconstruction (CNERC-TRR) and the State Key Laboratory of Green Pesticides at Guizhou University. The focus of the agreement is on collaboration to advance research in the field of molecular sciences. Prof. WANG Yang, HKUST Vice-President for Institutional Advancement, attended the ceremony and gave a speech welcoming the delegation to the University.

ALIBABA CLOUD COLLABORATION ENTERS NEW PHASE



HKUST and Alibaba Cloud sign an MoU to nurture talents.

HKUST and Alibaba Cloud signed an MoU in August 2022 on further collaboration to nurture local technology talent in data analytics and facilitate cutting-edge technology research by HKUST researchers. The two parties will implement joint talent development programs, provide workshops and seminars to equip students with practical skills to use advanced technologies, and promote a culture of innovation. Under the agreement, Alibaba Cloud will also offer internship opportunities to HKUST students.

MASSIVE OPEN ONLINE COURSES (MOOCs) HIGHLIGHTS

HKUST has been at the forefront of Massive Open Online Courses (MOOCs). Since its inception in 2013, close to 4 million learners have enrolled in over 75 HKUST MOOCs offered on Coursera and edX through partner licensing arrangements. In addition to standalone courses, HKUST offers MicroMasters in Big Data Technology, Specialization or Professional Certificate programs in diverse fields, such as Software Engineering, Protecting



Business Innovation, Fintech, Web and Mobile App Development, Business English, and Semiconductor Devices. In 2022-2023, MOOCs contributed a licensing income of HK\$6.14 million to the University.

JOINT ENDEAVOR WITH DELOITTE CHINA TO FOSTER NEXT-GENERATION TALENTS AND INDUSTRY

HKUST Business School (SBM) and Deloitte China signed an MoU to develop the next generation of business talents and equip them with the latest industry insights. Areas for collaboration include sharing industry perspectives, conducting joint research, and nurturing know-how to meet market needs.



An MoU between HKUST Business School (SBM) and Deloitte China is set to nurture tomorrow's leaders.

PARTNERSHIP WITH HONG KONG INSTITUTE OF BANKERS



HKUST signs a partnership agreement with Hong Kong Institute of Bankers to develop Fintech talent in Hong Kong and the GBA.

A partnership agreement between HKUST SBM and the Hong Kong Institute of Bankers will establish an Enhanced Competence Framework (ECF)-Fintech (Professional Level) program based on the Hong Kong Monetary Authority's ECF for its professional qualifications. The program seeks to build a strong foundation for the development of Fintech talent locally and in the GBA, enhancing Hong Kong's status as a leading international financial hub. Modules on "Regulatory Trends and Data Ethics" and "AI and Big Data" were launched in January and May 2023 respectively.

PARTNERSHIP WITH HSBC TO ACCELERATE FINTECH DEVELOPMENT

In October 2022, HKUST and HSBC entered into a strategic partnership to explore innovative solutions for future development, including digital currency advances. The agreement will facilitate the application of the latest technologies incubated in joint research projects, with a commitment of HK\$10 million by the bank. The partnership will also enable use cases to be assembled and reinforce HKUST's support for digital development in the industry through the generation and sharing of new knowledge.



HKUST is working together with HSBC to accelerate digital development under the new collaboration.

GENERATING FUTURE FINANCE HIGH FLYERS TOGETHER

HKUST SBM has established an enterprising academic-industry talent development initiative with Ant Group to generate Fintech talents. The MoU ranges from internship and employment opportunities to joint industrial research. As the first new endeavor under the partnership, selected master's degrees at HKUST SBM have begun incorporating the global Fintech training program, "10x1000 Tech for Inclusion", jointly organized by International Finance Corporation and Ant Group's Alipay. The popularity of the training, a philanthropic initiative first launched in 2018, has seen the quota for HKUST students raised to over 100. The program has an annual target of 1,000 learners globally for ten years.

COOPERATION HELPS ADVANCE mRNA DRUGS AND VACCINES RESEARCH

University synthetic biology researchers have uncovered a way to augment the effectiveness of mRNA vaccines and drugs, including those fighting cancer, COVID-19, and genetic diseases, and are now working with Sun Yat-sen University in Guangzhou to take the research further. The HKUST team's advance involves the optimization of mRNA tail sequences. The innovation can enhance the lifespan and increase synthetic mRNAs' protein production efficiency by up to 10 times. It could also lower the cost of such treatments. The team hopes to collaborate with pharmaceutical companies to transfer the discovery from lab to market.



HONG KONG'S FIRST GLOBAL MARINE RESOURCES MANAGEMENT DUAL DEGREE ON ITS WAY

With the blue economy becoming an issue of concern worldwide, HKUST and the University of Southampton, UK, signed an agreement in November 2022 to launch Hong Kong's first Dual Degree Program in Global Marine Resources Management. Students admitted to the one-year Master of Science program will be offered a multicultural and cross-continental learning experience, spending the first semester in Southampton and the second as well as the summer at HKUST. Students will graduate with qualifications from both universities. The first cohort will begin the program in 2023-2024.



HKUST and the University of Southampton agree to launch the first marine resources dual degree of its kind in Hong Kong.



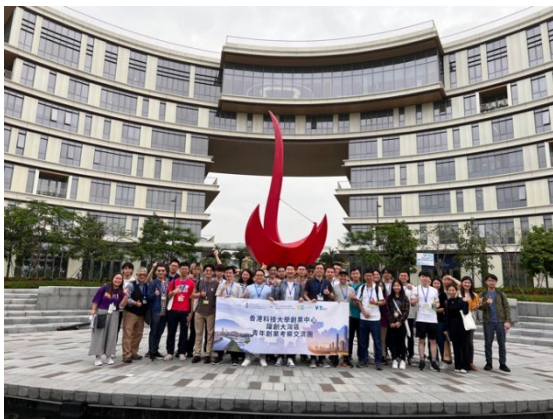
HKUST signs a collaborative agreement with the Chinese Studies Foundation and Sunwah Group to establish the GBA & Vietnam Knowledge Exchange Fund.

DEEPENING ACADEMIC EXCHANGE WITH VIETNAM SCHOLARS

A collaborative agreement between HKUST, the Chinese Studies Foundation, and Sunwah Group was established over the year to launch the GBA & Vietnam Knowledge Exchange Fund. The fund, set up following a HK\$1 million donation from the Chinese Studies Foundation, will support a visiting scholars' program and encourage outstanding HKUST academics to visit higher institutions in Vietnam, and vice versa. The fund will also facilitate collaborations and knowledge exchange events in Hong Kong and Vietnam.

2. Powerhouse of Entrepreneurship

GREATER BAY AREA YOUTH ENTREPRENEURSHIP EXCHANGE TOUR



Members of the exchange tour at HKUST(GZ).

This two-day study tour, organized by EC, enabled a group of 40 students, alumni, and staff to visit several HKUST-related Mainland-based science and technology innovation platforms and gain a deeper understanding of emerging industries and business development in the GBA. Platforms included the HKUST Foshan Center for Technology Transfer and Commercialization, HKUST Fok Ying Tung Research Institute, Hong Kong & Macao (International) Youth Entrepreneurship Hub, HKUST(GZ), HKUST Shenzhen Research Institute, and HKUST SZ-HK Collaborative Innovation Research Institute. Study tour participants also went to the Vtech Research & Development Center. Vtech is a Hong Kong-based global leader in electronic learning toys.

HACKUST 2023

The University's renowned hackUST provides a wide-reaching opportunity to foster entrepreneurship and internationalization by attracting worldwide talents from different cultures and backgrounds to work together on creatively solving real-world problems. In 2023, 608 participants from 23 countries and regions formed 105 teams to participate in the



hackUST 2023.

competition's celebratory "Web 3.0" 10th-anniversary edition. The event is well supported by the business sector and community, with over HK\$1 million in prizes awarded to hackUST 2023 winners.



HONG KONG TECHATHON 2023



Hong Kong Techathon 2023.

Co-organized by HKSTP, HKUST, and eight other local universities, Techathon provided a week-long platform for programmers, engineers, designers, marketers, and entrepreneurs to collaborate and develop ideas and prototypes, and to pitch for seed funding and incubation support. HKUST members demonstrated their strong entrepreneurial capabilities, constituting 38% of the 945 participants. HKUST also secured the most awards among the universities taking part, with 10 HKUST teams winning a total of 11 honors for their novel projects, including two Champion awards.

HKUST START-UPS SHINE IN LOCAL COMPETITIONS

HKUST talents shone in a host of contests covering a wide range of areas, indicating the extensive reach of the University's creativity. Eleven HKUST start-up teams won a total of 11 awards in six fields at the **8th Hong Kong University Student Innovation and Entrepreneurship Competition**. Four HKUST start-up teams received eight awards at the **Hong Kong Social Enterprise Challenge 2023**. There was further recognition when a University team using the 3D Pedestrian Network from the Hong Kong SAR Government's Lands Department won the championship and two other awards at the **Open Data Hackathon 2022**.



A series of HKUST alumni stories showcases how the University's business education unleashes entrepreneurial innovation.

START-UPS STORIES AND BEST BUSINESS PRACTICES

HKUST SBM developed a series of alumni entrepreneurship and success stories – “Innovative Business Visions” – to showcase to people beyond the campus how the School's business education nurtures an entrepreneurial and innovative spirit, and how alumni turn their creative visions into pioneering businesses and best management practices.

PRIVÉ TECHNOLOGIES COLLABORATION BUILDS ENTREPRENEURIAL VISION

HKUST has established a partnership with Privé Technologies, one of the leading innovators in the financial and wealth management industries, to boost student entrepreneurship. Under the partnership, HKUST's Quantitative Finance students have been invited to join the HALO Accelerator Program 2023. The program seeks to build an ecosystem and network of student entrepreneurs who “dream big” and are ready to “be brave”.



A partnership with Privé Technologies is set to nurture Fintech entrepreneurs.

ADDING AIOT-EMPOWERED LABORATORY INTELLIGENCE TO R&D ECOSYSTEM

HKUST start-up WeShare Tech has built an artificial intelligence of things (AIoT) system that combines software and hardware to track and manage chemicals in R&D labs to optimize their use and facilitate lab productivity.



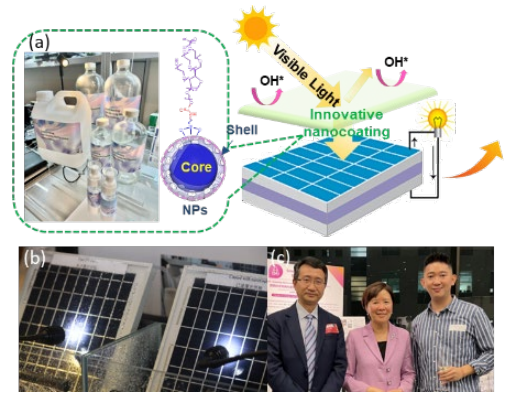
The lab system and WeShare team, supervised by Prof. YANG Jinglei.

The start-up and project have arisen from research at the Multifunctional Composites & Structures Lab, led by Prof. YANG Jinglei, Department of Mechanical and Aerospace Engineering (MAE). Both have received support from HKUST and HKSTP, with multiple R&D labs collaborating with the University team and piloting the system. R&D facility vendors in the GBA have also indicated interest in the technology.



NOVEL SELF-CLEANING NANOCOATING FOR SUSTAINABLE PHOTOVOLTAIC PANELS CAPTURES INDUSTRY ATTENTION

Coalot Tech Ltd., also spun off from HKUST's Multifunctional Composites & Structures Lab, is facilitating R&D of a durable self-cleaning nanocoating based on cutting-edge polymer modification and encapsulation technologies. The low-cost nanocoating technology can improve power generation efficiency of photovoltaic panels by 10%-15%, among other benefits. The start-up, supported by HKUST and HKSTP, has attracted external investment and is conducting pilot applications in Hong Kong with industry partners. The technology has also drawn the attention of overseas investors.



Prototype and decontamination mechanism of the novel nanocoating and comparative trials on the surface of photovoltaic panels.

3. Leader in Sustainability Innovation

INSPIRING YOUNG THINKERS TO EXPLORE AIR POLLUTION SOLUTIONS



Professors and experts interacted with students and shared their insights on clean air challenge at a panel discussion.

A competition for secondary school students across Hong Kong to provide creative air pollution solutions has encouraged young people to find ways to achieve a healthier Hong Kong. Working with Clean Air Network, a non-profit organization, and sponsored by The Robert H. N. Ho Family Foundation Hong Kong, faculty from the HKUST Institute for the Environment provided DIY workshops, online tutorials and expert talks to students from October 2021 leading up to the presentation of awards in August 2022. The contest sought to encourage knowledge and skill transfer to inspire and educate students on air pollution, its consequences, and how to improve the situation. Industry members also contributed their perspectives. Hands-on experience for participants ranged from creating simple test kits to collection of air pollutant samples and analysis of results, with the aim of generating ongoing interest in sustainability among students. Nineteen secondary school winners were selected for awards in the hardware, e-solution, and social & arts categories.

MOU WITH INSTITUTE OF SUSTAINABILITY AND TECHNOLOGY TO VITALIZE ESG SOLUTIONS

HKUST SBM signed an MoU with the Institute of Sustainability and Technology to assist Hong Kong's green transition and ESG through education and technology. The institute is a non-profit organization sponsored by Century City Group to empower solutions to pressing environmental and social challenges through innovative technology. The partnership aims to accelerate the transition to a circular economy and drive innovation toward a net-zero future.



An MoU between HKUST and the Institute of Sustainability and Technology aims to help Hong Kong's move toward net-zero.



HKUST AND OXFORD STUDENTS TEAM UP FOR FIRST GLOBAL IMPACT VALUATION SPRINT

The Global Impact Valuation Sprint 2023, hosted by the Skoll Centre for Social Entrepreneurship at the Saïd Business School, University of Oxford, and supported by HKUST SBM and the Value Balancing Alliance, provided a first-of-its-kind research opportunity across universities and organizations in global sustainable finance. The one-month Sprint was centered around the



metrics of greenhouse gas emissions and occupational health and safety. The activity brought together students from HKUST and Oxford to review existing ESG impact valuation tools, enhance systems, and brainstorm new approaches for public policy and business practice.

ADDING ECO-FRIENDLY PERSPECTIVES TO VALUE INVESTING

The Department of Finance and Chartwell Capital Ltd. organized their 6th Annual Value Investing Challenge for HKUST undergraduates, with ESG being incorporated into the judging criteria in this edition of the contest. The Challenge encourages students to perform fundamental stock research in the Asia-Pacific Region and aims to inspire interest in value investing. In 2022, the Challenge received sponsorship from the Melting Pot Foundation and was supported by HKUST BSc in Sustainable and Green Finance program and HKUST's Fintech and Green Finance Research Project.



Five teams in the Value Investing Challenge's finalists' presentation.

PARTNERSHIP WITH SUSTAINABILITY LEADER SETS SIGHTS ON ESG IMPACT

With sustainability within and beyond the campus a strategic priority for the University, HKUST SBM signed an MoU with the non-profit Institute of Sustainability and Technology to deliver ESG initiatives that move Hong Kong toward a circular economy and net-zero future. In addition, the two partners are due to co-create a series of globally recognized training programs to foster the next generation of ESG talents and help Hong Kong evolve into a green hub for the region.

EXPLORING HOW TO OPTIMIZE STRATEGIES ON OZONE POLLUTION

HKUST is among four local universities participating in a large-scale collaborative project led by the HKSAR Government's Environmental Protection Department to study and develop optimized, science-based regional ozone and photochemical smog control strategies. The multi-year, multidisciplinary research also includes input from researchers in Guangdong, Macao, and international experts.



Executive Director and representatives from Great Eagle Holding Ltd. at the scholarship signing ceremony.

SCHOLARSHIPS FOSTER ENVIRONMENTALLY AWARE TALENTS AND DEVELOPMENT

HKUST's Division of Environment and Sustainability (ENVR) received a generous donation of HK\$1 million from Great Eagle Group, a major property developer, to set up the Great Eagle Group Scholarships in celebration of the company's 60th anniversary. The scholarship scheme will encourage ENVR undergraduates to contribute to local sustainable development.

ADVANCING SUSTAINABLE AND GREEN FINANCE THROUGH DATA ANALYTICS

In the Analytics Challenge @HKUST 2022-2023 competition, tertiary students in Hong Kong had the opportunity to hone their data analytic skills by framing a problem, developing a data methodology, and crafting proposals for driving sustainable and green finance innovation and development in the region. Over 200 students in 60 teams joined the annual challenge, with the top five teams competing in a 24-hour datathon and presenting their proposals in the final round. Team X, comprising HKUST MSc in Business Analytics Program students and alumni, won first place. The competition was organized by the HKUST Center for Business and Social Analytics in collaboration with Wisers Information Ltd., and supported by HKUST's Fintech and Green Finance Research Project.



In the Analytics Challenge @HKUST, the top five teams have to engage in a 24-hour "datathon" to solve tasks within the limited time frame.



4. Widening Engagement with the Community

PLATFORM HIGHLIGHTS BUSINESS RESEARCH IMPACT

HKUST SBM has developed a comprehensive platform called [BizInsight@HKUST](#) to showcase high-impact research by the School's faculty. The website provides a snapshot of the latest findings and KT in a user-friendly format to highlight how business researchers can contribute to societal advances.

YOUNG INNOVATORS SHINE LIGHT ON GLAUCOMA PREVENTION

A team of HKUST engineering students, led by Prof. David LAM (MAE) and supervised by Dr. Stanley LEUNG has invented O_Oley, an easy-to-use, non-invasive physiotherapy device effective in preventing the progression of glaucoma in mild and pre-glaucoma patients. O_Oley provides a set of comfortable, curved-shell goggles for contactless thermal stretching of users' eyes. The invention won the Hong Kong leg of the James Dyson Award, with the team going on to patent the design and kick-start a start-up.



The corneal tissue compliance improvement (CTCI) system developed by HKUST researchers wins the Hong Kong leg of the James Dyson Award.



Mr. Aleksander DANDA, Consul General of the Republic of Poland in Hong Kong and Macao, introduces some of the scenic images.

LEARNING MORE ABOUT NATURAL TREASURES OF CENTRAL EUROPE

The University partnered with the Consulate General of Hungary in Hong Kong and Macao to hold the *Natural Treasures of the Visegrad Group* photo exhibition at the Shaw Auditorium. The display showcased the natural beauty of the four countries in the Visegrad Group – Hungary, Slovakia, Czech Republic, and Poland. The Association of Hungarian Nature Photographers, one of the largest nature photographers' associations in the Visegrad countries, helped coordinate the selection and provision of the 60 images.

OPENING UP DIALOGUE ON POLICY ISSUES

The Division of Public Policy organized five lectures under its Policy Dialogue Series from October 2022 to March 2023. Lectures featured distinguished scholars who addressed some of the hottest issues of today, ranging from post-pandemic policy to the dilemma between development and environment and Hong Kong as an international metropolis. The series was well received, drawing a total of over 300 participants.



Ms. Christile DRULHE, Consul General of France in Hong Kong and Macao, discusses sustainability and joint international efforts.

SHARING GLOBAL PERSPECTIVES

The University launched its Global Dialogue Series, bringing together Consuls General from different countries to share and exchange ideas on international issues. Consuls General taking part represented Israel ("The Origins of the Start-Up Nation"), Egypt ("A Taste of Egypt"), and France ("France and the Blue Economy: Contributing to a More Sustainable World").



A Paddling Workshop introduces the Tai O Dragon Boat Water Parade.

ENHANCING AWARENESS OF LOCAL CULTURAL HERITAGE

Over 2022-2023, the University organized 27 field trips, camps, and workshops for over 600 primary and secondary school students, teachers, and the elderly to find out more about the distinctive culture of Tai O, a traditional fishing village on Lantau Island. The *Tai O Fishermen Image Gallery Exhibition* was also held at HKUST, attracting 7,000 visitors. In a further boost for local heritage, *Hong Kong Temples* by Prof. LIU Tik-Sang, Division of Humanities, and his research team was selected as one of Sino United



Publishing's annual top 10 "Good Books", a list that highlights significant Hong Kong cultural and historical resources.

DELIVERING CROSS-DISCIPLINARY INSIGHTS ON BIG DATA AND BIOMEDICINE



The Joint Workshop on Big Data and Biomedical and Chemical Science brings together faculty, students, researchers, and industry representatives.

The HKUST BDI Workshop on Big Data and Biomedical and Chemical Science brought together faculty, students, researchers, and industry representatives from different fields and disciplines to share their experience and expertise on adapting AI and data techniques to the biomedicine and biochemistry fields. HKUST faculty from both HKUST(CWB) and HKUST(GZ) and technology experts from the biomedical science industry gave presentations and discussed the latest advances at the workshop.

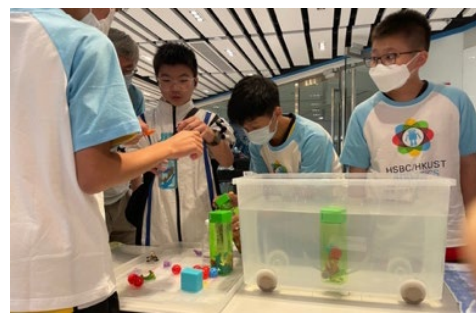
BUILDING MAINLAND EXCHANGE

University faculty shared their perspectives and deciphered the mysteries of technological advances for the wider community through the HKUST Professor Column, available via the HKUST SBM Mainland Office's WeChat public account. More than 50 articles have been published since the column was launched in March 2022, generating nearly 50,000 views. Meanwhile, the Red Bird Salon continued to offer a platform for knowledge exchange between high-flyers from different sectors, faculty, and students. The forum was initiated by the HKUST community in Hong Kong in 2021. Sessions feature experts from academia, literature, and business in discussion on a variety of topics. Twenty-eight sessions have taken place to date.

5. Inspiring Next-Generation I&T Dynamos

UNDERWATER ROBOT COMPETITION 2023

The University's 2023 Underwater Robot Competition attracted 86 teams from local primary and secondary schools to its workshop and qualifier, with 30 teams being selected to appear in the final. The annual event promotes inclusive and innovative Science, Technology, Engineering, Arts and Mathematics (iSTEAM) education. It also opens up opportunities for undergraduates from across the University to develop and conduct STEAM-related workshops and become more aware of diversity in society.



A school team is working on one of the buoyancy mini games designed by HKUST undergraduates for the Underwater Robot Competition.

MATH MODELING CONTEST DRAWS GREATER CHINA STUDENTS



Greater China young mathematicians at the opening ceremony for the IMMC 2023 Final Presentation Competition at HKUST.

HKUST hosted the ninth annual International Mathematics Modeling Challenge (IMMC) Greater China Final Presentation Competition in April 2023. The event drew secondary school students, experts, and judges from Hong Kong, Macao, Mainland China and Taiwan and helped build the interest of young mathematicians. Some 900 teams entered the competition, with 52 presenting their solutions to the Grand Jury on campus and 22 winning an IMMC 2023 Outstanding Award.

SETTING THE PACE ON SYNTHETIC BIOLOGY ENGAGEMENT

HKUST has continued to take the lead in wider engagement on synthetic biology, in particular through the International Genetically Engineered Machine Competition (iGEM). A premier annual event globally, iGEM invites undergraduate and graduate students to undertake year-long projects on synthetic biology and its



applications, with over 300 universities and colleges participating. The University has played a key role in initiating teams in other local higher education institutions and supports half a dozen teams from secondary schools. HKUST provides these teams with training and public engagement activities, fostering a vibrant synthetic biology community in Hong Kong.

FIRST ROBOT EXPLORER CUP PROMOTES STEAM EDUCATION

Over 110 students from 16 primary and secondary schools worked in teams to build robots while enriching their engineering knowledge at the first Robot Explorer Cup, organized by HKUST and supported by the Bank of China (Hong Kong) (BOCHK). The initiative is tailored to primary and secondary school students and teachers and strives to create more interest among students in science, technology, engineering, arts, and mathematics (STEAM) education. During the program, students have the opportunity to build, make, fix, and control a robot and develop critical thinking skills and creativity.

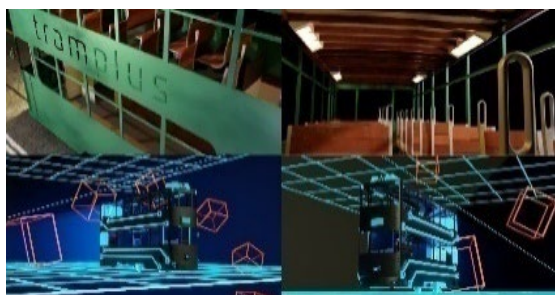
HKUST FINTECHSTIC 2022

Organized by HKUST SBM, the six-week HKUST Fintechstic 2022 featured fun and educational activities in celebration of Hong Kong Fintech Week before, during, and after the event while also serving as a valuable platform to build connections between industry and future Fintech talents. Around 600 university students joined the seven online Fintechstic workshops, exploring the initiative's theme of "NFTs and the Metaverse" and featuring eminent speakers from the local Web3 community. More than 170 students in 50 teams competed in the Fintechstic 2022 Student Competition. The initiative also brought greater public awareness of Fintech, with around 3,000 participants testing their non-fungible tokens (NFT) and metaverse knowledge through online activities.



Associate Dean Prof. Allen HUANG together with the Fintechstic student competition winning team.

TRAM PLUS PARTNERSHIP ON TRACK WITH "3D ENGINEERING CHALLENGE"



3D modeling demonstration with trams.

HKUST and Tram Plus Ltd. signed a cooperation agreement for the launch of a special science, technology, engineering and mathematics (STEM) program for local primary and secondary school students to give early exposure to engineering from a top university and spark interest in exploring more about life as an engineer. Modeled on an HKUST School of Engineering foundation course for first-year students, the "3D Engineering Challenge" provides lectures on multi-3D modeling design, tailored for different levels of students and fostering problem-solving abilities and design thinking. School of Engineering students also serve as technical advisors to assist participants in solution-building.

