[Government Departments' Forum 政府部門論壇]
Driving Sustainability:
Innovative Solutions for a Greener Tomorrow
綠色創新，引領可持續發展之路

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Date 日期：	29 / 10 / 2025 (Wednesday) 2025 年 10 月 29 日（星期三）
Time 時間：	11:00am – 12:20pm 上午 11 時正至下午 12 時 20 分
Venue 地點：	Business Exchange, Hall 3, AsiaWorld-Expo 亞洲國際博覽館三號展館商務洽談區
Language 語言：	English 英語
Programme 程序表：	**11:00am – 11:20am** **Forging Hong Kong's Nature-Based Tomorrow: The Nature-based Solutions Design Guidelines 打造基於自然的未來：基於自然的解決方案設計指引** **Mr Stephen Suen 孫天佑先生** **Director, AECOM 董事** **[Representative of Civil Engineering and Development Department 土木工程拓展署代表]** **11:20am – 11:40am** **Green Innovation: Rewiring Industry DNA at Existing Public Hospital Building 綠色創新：重塑公立醫院在現有建築行業的基因** Mr WAN Wing Kit, Victor 雲永傑先生 Building Services Engineer, Electrical and Mechanical Services Department 機電工程署 屋宇裝備工程師 **11:40am – 12:00nn** **Two-Phase Immersion Cooling System for High Performance Computer Workstation – Enhancing Cooling Efficiency and Performance for Computer System through Innovation** **高性能電腦工作站兩相浸沒式冷卻系統—應用創新科技優化冷卻效能及強化電腦系統效能** Ir LEUNG Charn Wai, Charles 梁燦偉工程師 Senior Electronics Engineer, Civil Aviation Department – Air Traffic Engineering Services Division 民航處 航空交通工程服務部 高級電子工程師 **12:00nn – 12:20pm** **Smart Trunk Transfer Support System 智慧幹管輸水支援系統** Mr LEUNG Chi Chung 梁志聰先生 Chief Electrical & Mechanical Engineer / Maintenance 總機電工程師/保養 Water Supplies Department 水務署

Subject to change, updated as of 18 October 2025

11:00am – 11:20am	**Forging Hong Kong's Nature-Based Tomorrow: The Nature-based Solutions Guideline** **打造以自然為本的未來：自然解方設計指南**
	Stephen is a UK-chartered landscape architect and urban designer with over twenty years of global experience in master planning, urban and landscape design. As Design Director and Nature-based Solutions Lead at the Hong Kong Design Studio, Stephen's diverse background in engineering and design has empowered him to guide multidisciplinary teams in city-scale master planning, open space design, and infrastructure projects. Notable projects include the London 2012 Olympic Legacy Masterplan and Parkland Design, the West Kowloon Cultural District, Hong Kong Northern Metropolis Masterplans, and the award-winning Tung Chung East Eco-shoreline design. Stephen currently oversees the Natural Capital Initiative, an innovative financing mechanism for nature that seeks to quantify and transform natural capital into a new asset class to incentivise private sector's involvement in conservation efforts. Stephen 是英國註冊園境師和城市設計師，在規劃、城市設計及園境建築設計領域擁有超過二十年的國際經驗。 作為香港設計工作室的設計總監和基於自然的解決方案負責人，Stephen 在工程和設計領域的經驗使他能帶領跨專業團隊進行城市規模的園境規劃、開放空間設計和基礎設施項目。他曾參與的重點項目包括 2012 年倫敦奧運總體規劃及奧運公園設計、西九龍文化區開放空間設計、香港北部都會總體規劃以及屢獲殊榮的東涌東生態海岸線設計。 Stephen 目前負責“自然資本倡議”，這是一個創新的機制，旨在量化自然資本並將其轉化為創新的資產類別，以激勵私營機構參與自然保育工作。

Forging Hong Kong's Nature-Based Tomorrow: The Nature-based Solutions Design Guidelines
打造基於自然的未來：基於自然的解決方案設計指引

In the wake of the pressing Nature Emergency and the relentless Climate Crisis, our planet stands at a critical juncture where the very fabric of our ecosystems is unraveling before our eyes. The interplay between these two crises underscores the urgent need for a paradigm shift in how we address environmental challenges.

Nature-based solutions emerge as a beacon of hope in this tumultuous landscape, offering a sustainable pathway to mitigate the impacts of these crises. By harnessing the power of nature, we can not only restore our ecosystems but also bolster resilience against the adverse effects of climate change.

Establishing robust design guidelines and performance indicators is paramount in realizing the full potential of nature-based solutions. These frameworks not only ensure the effectiveness of our interventions but also provide a blueprint for sustainable development that harmonizes with the natural world.

在迫在眉睫的「自然緊急狀態」和持續不斷的氣候危機的雙重打擊下，我們的地球正處於一個關鍵時刻，生態系統的結構正在面臨崩潰。這兩場危機的相互作用突顯了我們應對環境挑戰的模式轉變的迫切性。

基於自然的解決方案在此背景下成為一盞希望的燈塔，為減輕這些危機的影響提供了一條可持續的途徑。透過利用大自然的力量，我們不僅可以恢復生態系統，還可以增強抵禦氣候變遷不利影響的韌性。

建立健全的設計指引和績效指標對於充分發揮基於自然的解決方案的潛力至關重要。這些框架不僅確保了我們介入措施的有效性，也為與自然世界和諧相處的永續發展提供了藍圖。

11:20am – 11:40am	**Green Innovation:** **Rewiring Industry DNA at Existing Public Hospital Building** **綠色創新：重塑公立醫院在現有建築行業的基因**
 機電工程署 EMSD	Mr WAN Wing Kit, Victor is a member of Chartered Institution of Building Services Engineers. He possessed over 7 years of experience in project management, operation and maintenance of various government buildings. As an engineer in the Health Sector Division of Electrical and Mechanical Services Department, he not only fulfills his regular duties but also leads a team of technical officers and inspectors to explore and implement innovative solutions aimed at achieving carbon neutrality in health-care facilities. 雲永傑先生為英國特許屋宇裝備工程師學會的會員。他在各類政府建築物的項目管理、營運和維護方面的工作擁有超過 7 年的經驗。作為機電工程署衛生工程部二的工程師，他除了負責日常職責外，還帶領一支技術人員和督察團隊，旨在為醫療機構探索和實施創新解決方案，以實現碳中和的目標。

Green Innovation: Rewiring Industry DNA at Existing Public Hospital Building
綠色創新：重塑公立醫院在現有建築行業的基因

In recent years, the government has been actively promoting decarbonization policies, encouraging industries to adopt more green solutions in various retrofitting projects. This not only addresses the impacts of climate change but also enhances the efficiency of building services equipment, particularly in the facilities such as hospitals that require long-term operation. However, the industry continues to rely on traditional retrofitting methods for aging equipment, leading to prolonged project completion timeline that affect the round-the-clock operation of health-care premises and limit the potential to leverage energy-saving measures for a brighter future.

Confronted with the pressing challenges of climate change and stringent retrofitting timelines, how should we respond? To answer this issue, we would like to share our experience to rewire the traditional industry DNA through an innovative “all-in-one” solution being implemented in an air-cooled chiller retrofitting project at a local public hospital. The highlighted project successfully integrated a range of advanced technologies across its life-cycle - from design, installation to operation stages - including low GWP refrigerant (R1234ze), MiMEP method, BIM & BIM-AM, Open-BIM and AI technology, to promulgate sustainability, productivity and carbon neutrality.

近年，政府正積極推動減碳政策，鼓勵行業在不同的翻新工程上應用更多綠色方案，除了應對氣候變化所帶來的影響，還可提高現有場所屋宇設備的效能，尤其在醫院等需要維持長期運作的建築物中。然而，工程行業仍然依靠傳統的改造翻新方法去更換老化設備，導致延長有關項目完成所需的時間，影響醫療場所的全天候運作，並限制了利用節能措施建設美好未來的潛力。

面對氣候變化的迫切挑戰及嚴格的改造翻新時間表，我們該如何應對？為了回答這些問題，我們將分享在一間公立醫院如何應用”多合一” 的創新方案於更換風冷式製冷機組的工程項目，從而打破傳統行業的既定做法。該項目成功在其生命周期內應用一系列的先進技術-由設計、安裝及營運整個生命周期-包括低全球暖化潛勢製冷劑（R1234ze）、機電裝備合成法、建築信息模擬技術與資產管理、開放式建築信息模擬和人工智能技術，旨在促進可持續性、生產力和碳中和。

11:40am – 12:00nn	**Two-Phase Immersion Cooling System for High Performance Computer Workstation – Enhancing Cooling Efficiency and Performance for Computer System through Innovation** **高性能電腦工作站兩相浸沒式冷卻系統—應用創新科技優化冷卻效能及強化電腦系統效能**
 民航處 Civil Aviation Department	Ir LEUNG is expert in electronics and system engineering with over 20-years experience in the field. He joined the Civil Aviation Department since 2012 and delivered various mega projects over the time, such as Air Traffic Management System, Digital Tower Facilities, Three-runway System, etc. Those systems utilizing the latest innovation technologies won various international awards, such as CANSO Global Safety Achievement Award, ACI Technology Innovation Awards, Geneva Invention Award, etc. 梁先生為電子及系統工程專家，在相關領域擁有逾二十年經驗。自 2012 年加入民航處以來，曾主導多項重大項目建設，包括新空管系統、數碼塔台設施及三跑道系統等。 其主持建設的多個系統採用前沿創新技術，屢獲國際殊榮，包括國際空管組織全球安全成就獎、國際機場協會科技創新獎、日內瓦國際發明展獎項等。

Two-Phase Immersion Cooling System for High Performance Computer Workstation – Enhancing Cooling Efficiency and Performance for Computer System through Innovation
高性能電腦工作站兩相浸沒式冷卻系統—應用創新科技優化冷卻效能及強化電腦系統效能

Behind the scene of the busy air traffic in Hong Kong, air traffic controllers and various airport stakeholders work closely together to ensure the safe and efficient operation of aircraft. In this process, the control tower simulator plays a vital role. The Civil Aviation Department's (CAD) control tower simulator (CTS) utilizes advanced image simulation technology and a 360-degree ultra-high-resolution projection system to replicate the operational environment of an airport control tower, providing training for air traffic control personnel.

During operation, the image generator of the CTS produces a significant amount of heat. To ensure efficient heat dissipation and energy savings, the CAD has designed a two-phase immersion cooling system, offering an effective cooling solution for high-performance computer workstations. By submerging the image generator in a sealed container filled with coolant, the evaporation process of the coolant enables direct and highly efficient heat dissipation. It aims to reduce or even eliminate the need for air conditioning, thereby lowering electricity consumption.

This system won the Gold Medal and Prize of the Republic and Canton of Geneva at the 50th International Exhibition of Inventions of Geneva, marking the first time for departments of the HKSARG to win this prestigious award. In this seminar, the speaker will provide an in-depth sharing on this two-phase immersion cooling system for high-performance computer workstations.

在繁忙的航空交通背後，航空交通管制員和機場各持份者緊密合作以確保航機安全高效運作。當中控制塔模擬器扮演着重要的角色。民航處的控制塔模擬器彩用了先進的影像仿真技術，透過 360 度超高解析度投影系統，模擬機場指揮塔的操作環境，為空管人員提供訓練。

控制塔模擬器的影像產生器在運作時會產生大量熱能。為提供高效散熱及節能，民航處設計兩相浸沒式冷卻技術為高性能電腦工作站帶來高效的散熱方案。將影像產生器在密封容器浸沒於冷卻液內運作，透過冷卻液的蒸發過程，提供直接和高效散熱的能力。望透過直接冷卻而減少或消除對空調的需求，從而減少電力消耗。

這冷卻系統在今年瑞士日內瓦的第五十屆國際發明展中獲得金獎及日內瓦州特別大獎，是香港特區政府部門首次獲此殊榮。在此次講座中，講者將深入分享高性能電腦工作站兩相浸沒式冷卻系統。

12:00nn – 12:20pm	Smart Trunk Transfer Support System 智慧幹管輸水支援系統

水務署
Water Supplies Department

Ir LEUNG Chi Chung is a highly motivated Chief Electrical and Mechanical Engineer at the Water Supplies Department in Hong Kong SAR, with an impressive 29 years of experience. He is primarily responsible for the operation and maintenance of water treatment plants, raw water, seawater, and drinking water pumping stations, and various storage facilities, ensuring their efficient and stable operation. His areas of expertise include asset management, RCM (Reliability-Centered Maintenance), CMMS (Computerized Maintenance Management System), SCADA (Supervisory Control and Data Acquisition), and BIM (Building Information Modeling). He actively promotes the application of openBIM and openGIS to enhance engineering management efficiency.

Ir Leung upholds an innovative spirit, continuously promoting the digital transformation of the waterworks industry, creating significant value for Hong Kong's water development. His expertise and passion continue to shape his notable presence in the industry.

梁志聰工程師現任香港水務署總機電工程師，於水務工程領域累積了 29 年的豐富經驗。他主要負責水處理廠、原水、海水及飲用水抽水站與各類貯水設施的運作與維護，確保設施高效穩定運行。憑藉持續改善的專業精神，梁工程師在資產管理、以可靠性為中心的維護（RCM）、電腦化維修管理系統（CMMS）、監控與數據採集系統（SCADA）以及建築信息模型（BIM）等多個領域展現卓越能力，並積極推動 openBIM 與 openGIS 的應用，以提升工程管理效能。

梁工程師秉持創新精神，持續推動水務行業數字化轉型，為香港水務發展創造了顯著價值，並贏得了眾多資產與運營類 BIM 獎項。

Smart Trunk Transfer Support System 智能主幹輸水支援系統

The Dongjiang water supply system is the cornerstone of Hong Kong's water infrastructure, featuring a network of over 80 kilometers of pipelines and tunnels, connecting more than 16 water treatment plants and numerous 24-hour pumping stations and reservoirs. It supplies 70% to 80% of Hong Kong's water, ensuring a stable supply for over 7 million residents. To optimize system management, water transfer, and pump operations, the Water Supplies Department (WSD) developed the Smart Trunk Transfer Support System (STTSS). Utilizing big data, artificial intelligence, and machine learning, STTSS automatically generates optimized scheduling schemes, significantly reducing energy consumption and enhancing operational efficiency.

STTSS is an advanced system designed to address challenges such as climate change, energy consumption, and infrastructure maintenance. Through intelligent pump scheduling and operations, it improves system efficiency, reduces operational costs, and ensures supply stability. Developed in collaboration with universities and industry experts, STTSS integrates cutting-edge technology with practical value, supporting the digital transformation of Hong Kong's waterworks industry.

東江水供水系統是香港水務基礎設施的核心，擁有超過 80 公里的水管及輸水隧道網絡，連接 16 家以上水廠及多個全天候運作的抽水站與貯水設施。該系統供應香港 70%至 80%的用水，確保超過 700 萬居民的穩定供水。為優化系統管理及水調度與泵運作，水務署開發智能主幹輸水支援系統（STTSS），採用大數據、人工智能和機器學習技術，自動生成優化調度方案，顯著降低能源消耗並提升運維效率。

STTSS 是水務署為應對氣候變化、能源消耗及基建維護挑戰而設計的先進系統。通過智能化泵調度和運營，STTSS 提高系統效率，降低運營成本，確保供水穩定性。該系統由水務署與大學及行業專家合作開發，結合先進技術與實際應用價值，為香港水務行業的數字化轉型提供重要支持。