

Post Event Summary: Thematic Session 2

Smart Building: Achieving Sustainable Buildings

The second thematic session “Smart Building: Achieving Sustainable Buildings” of the SocialInnovation Regional Forum (SIRF2020), organized by Jockey Club Design Institute for Social Innovation (JCDISI) under the PolyU Jockey Club “Operation SoInno” project (“SOINNO”), has concluded on 23 Oct 2020 at 2:30 pm. Four speakers shared smart building case studies from Hong Kong, Mainland China and around the world, discussing the topic of mitigating building stock ageing and improving liveability. They introduced smart technology for building revitalisation, suggesting ways to realise sustainable housing. The sharing session made clear that innovative building revitalisation programmes can encourage the elderly to adopt a more active lifestyle. The forum was live-streamed on the SIRF website and a Mainland streaming platform. Audiences can watch the forum online and interact with the speakers. The live-stream attracted 300 participants from the public.

Mr Ling Kar-Kan, Director of JCDISI gave a warm welcome to the guests and audiences. He pointed out that in 2016, Hong Kong had 1,100 private housing units over 70 years old. The number of old housing units will increase drastically to 326,000 in 2046, a 300-fold increase. He emphasized that demolition is not a well-rounded solution. Instead, Mr Ling calls for the consideration of building restoration, coupled with elderly-centric modifications to improve the living quality of the older generation and make the living environment more comfortable and convenient for them. Currently, there is no existing readymade solution for age-friendly intervention, therefore urban planners, architects and professionals from other fields must collaborate to devise a feasible solution.



Mr Ling Kar-Kan, Director of JCDISI

The Convenor of Steering Committee for Hong Kong Smart Green Building Design Best Practice Guidebook Including Interfacing with Smart City, **Hong Kong Green Building Council, Dr Benny Chow**, shared global case studies of green smart technologies that improve physical and mental wellbeing while increasing productivity. Dr Chow introduced technologies from six aspects: architecture design and operation, health and wellbeing, energy efficiency, material and wastes management, water management, and transportation. Examples include adjusting air conditioning through crowd data obtained from the Internet of Things to achieve energy saving; and smart green car parks that help users locate vacant spots to reduce the carbon footprint from unnecessary driving. Dr Chow exemplified through local and international cases, such as the revitalisation of the century-old Empire Building to further illustrate the meaning and application of green smart building. Although the revitalisation project involved a large amount of investment, the building now conserves 8% of its original energy consumption, saving nearly \$44 billion USD. The project recovered its cost in just three years. Other cases discussed include The EDGE in the Netherlands, Hong Kong's private housing project Double Cove, and K11. Dr Chow believes that the future development of green smart buildings require government support, to connect different stakeholders and facilitate good communication among different sectors, such as through open-sourcing big data. Hong Kong Green Building Council will publish a smart green building design guideline and launch a public education programme to raise public awareness.



Dr Benny Chow, Convenor of Steering Committee for Hong Kong Smart Green Building Design Best Practice Guidebook Including Interfacing with Smart City, Hong Kong Green Building Council

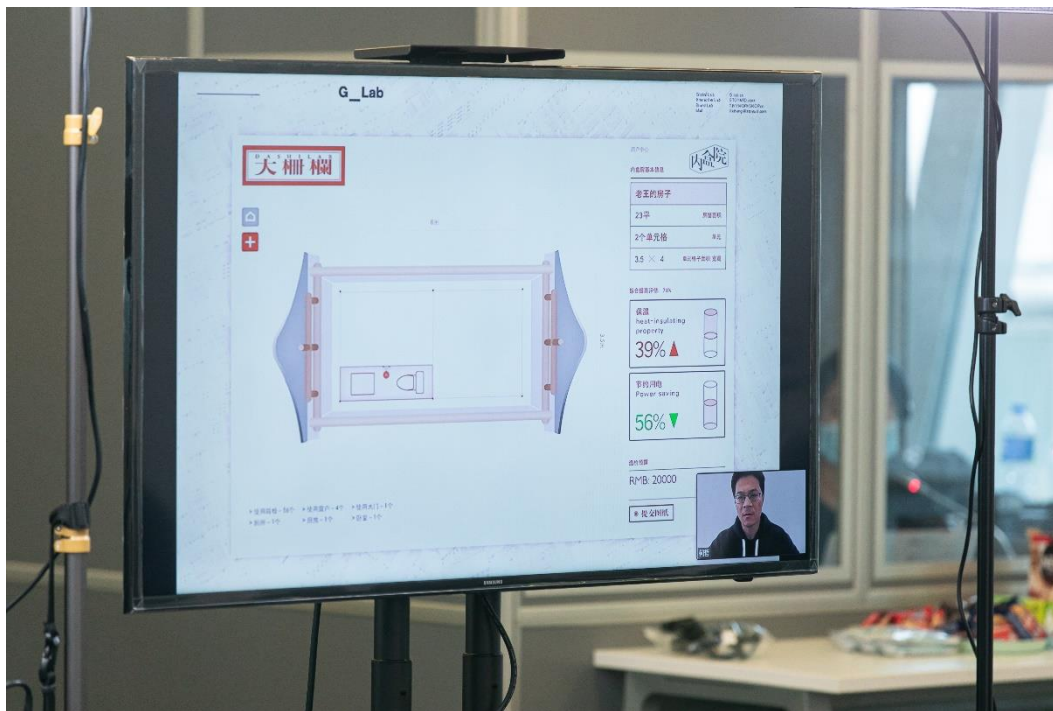
Mr Jacky Chan, Associate Director and Advanced Digital Engineering (ADE) Leader, **Arup**, introduced the AI-powered smart architecture management platform Neuron. Neuron acts as a building's 'brain' and enables data-driven building operation and maintenance. Neuron uses the Internet of Things to collect data about the building through various means, aiding decision-makers in adopting better-informed building management strategies. The platform has won multiple international awards and is widely applied in many fields and different districts, such as One Taikoo Place. Taking advantage of the big data collected, the team will draw on useful information to improve indoor climate moderation and monitor the condition of amenities using algorithms and AI-powered predictive models, enabling the building to save approximately 10% of its energy consumption. The regional data platform of the Electrical and Mechanical Service Department also facilitates information sharing across a network of buildings, enabling a better understanding of facility conditions, evaluation of the potential risks caused by inclement weather and natural disasters, and proposals for preventive restoration measures. The system helps prevent economic loss and injuries as a result of malfunctioning facilities.



Mr Jacky Chan, Associate Director and Advanced Digital Engineering (ADE) Leader, Arup

Mr Zhe He, Co-Founder and Principal of the Beijing-based **People's Architecture Office**, the first B corp-certified architecture firm in Asia, shared innovative solutions to building revitalisation and urban renewal. The People's Architecture Office adopts restorative intervention and active intervention as strategies to repair old houses. The strategies emphasize a non-destructive way of conserving the original architectural system, and drive positive social impact through a bottom-up approach. Mr He refers to the strategies as 'urban intervention', which he categorises into four approaches: plug-in micro revitalisation, temporary

and mobile intervention, human-environment interaction and the reuse of existing materials. He also introduced four different scenarios of building revitalisation. The 'inner box' adopts a modular plug-in approach to help preserve the original spatial layout of a Qing-dynasty courtyard house. The 'plug-in housing' project expands and improves on the 'inner box', adding flexible modular configuration which is time-saving and customizable, resulting in a low-cost and highly comfortable revitalized living environment. The 'plug-in tower' and 'people's canopy' are examples of public space revitalisation. These new explorations in architecture derives from the needs of residents, lengthening the 'lives' of ageing buildings while fostering a sense of community.



Mr Zhe He, Co-Founder / Principal, People's Architecture Office

Mr Ben Lui, Executive Director (Operations), **Urban Renewal Authority**, shared his beliefs on the healthy ageing of buildings. Through his analysis of building ageing now and in the future, he believes that demolition and reconstruction cannot completely solve the problem of building ageing. He proposes smart restoration and maintenance as a strategy to lengthen the lives of buildings, improve the life quality of their residents and reduce environmental impact. On the question of how restoration can be done aptly, he argues that timely restoration and preventive maintenance are crucial. One of the main tasks of the URA is to facilitate building rehabilitation, and through their research, summarise the difficulties faced by homeowners with the acronym 'KFC': the lack of knowledge (K), the lack of financial reserve (F), and the lack of capability (C). Through raising awareness among homeowners, URA aims to facilitate housing rehabilitation and foster a culture of preventative rehabilitation and setting aside financial reserve. Lastly, Mr Lui introduced one of URA's key rehabilitation projects, '618 Shanghai Street', discussing how its background, restorative process and application of smart green technologies contribute to its sustainable development. In the future, URA will continue to explore the notion of smart communities.



Mr Ben Lui, Executive Director (Operations), Urban Renewal Authority

The panel discussion was moderated by **Dr Calvin Luk**, Project Manager and Leader of Spatial Team, JCDISI. The online audience raised around 30 questions and comments. Their questions concerned areas such as types of architecture suitable for smart technology application, cost of smart modifications, the operational feasibility of the cloud platform Neuron, the cost of ‘plug-in houses’ and its synergy with the building site, and challenges in building rehabilitation, inviting enthusiastic response from the four speakers.



Dr Calvin Luk, Project Manager (Spatial) of JCDISI, moderating the panel discussion

Following the successful completion of the second thematic session of SIRF2020, the next session ‘Smart Neighbourhood & Community: Connecting All Without Boundaries’ will be live-streamed on the SIRF website on 6 Nov 2020 at 2:30 pm. We invite you to register and look forward to welcoming you in the upcoming session.