

Singapore

HDB inks agreements worth S\$10.7m to boost construction productivity, bring communities together

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SINGAPORE: Housing Board void decks of the future could be equipped with WiFi-enabled workspaces for residents to study or hold workshops.

Such facilities will be looked into as part of the Housing and Development Board's (HDB) research collaboration with the Singapore University of Technology and Design (SUTD).

It is one of two agreements HDB signed on Thursday (Sep 7), including one with the Nanyang Technological University (NTU).

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BUILDING STRONGER COMMUNITIES

The agreement with SUTD is for a study called the New Urban Kampung research programme. It will use a data-driven approach to better understand residents' preferences and help build stronger communities, said HDB.

For instance, researchers will go beyond traditional demographics to study emerging lifestyle trends and sentiments towards the community. This will be done through looking at data from traditional census and surveys, as well as big data from sensors placed around estates.

Such information may help planners and architects come up with more customised improvements for an estate, such as WiFi-enabled workspaces at void decks to serve a digitally connected generation, said HDB.

Another aim of the study is to find new ways of incorporating community-centric design into estates, said HDB.

Using data from sensors, researchers may be able to monitor how residents interact within the precinct's existing design, then come up with ways to promote a sense of community.

For example, motion sensors on smart lighting could help HDB better understand how residents move around and utilise an estate's community spaces, and work towards redesigning the areas that are under-utilised.

If data shows that residents in a particular estate are fond of cycling, customised cycling apps could be introduced in the estate.

Other aspects of the study will look at improving the way HDB assesses the quality of life of its residents, beyond traditional basic indicators such as healthcare, sanitation and safety. It will also study the use of data in environmental modelling tools, to assess the effectiveness of sustainability-driven initiatives in towns and estates and resident receptiveness before each project is test-bedded.

"Besides the hardware, the heartware is also very important. So we are combining our social science as well as technology as well as big data to really look into different kind of scales of data from interviewing, participatory approach, through mobile apps - all these we can actually integrate through the use of technology and the understanding of social science in the HDB context," said Assistant Professor Chong Keng Hua, of SUTD's Social Urban Research Groups.

"We already have done a lot of groundwork in the past few years. So now the challenge is how to integrate all this to provide a more holistic and integrated platform for these community empowerment projects."

IMPROVING WORK SITE PRODUCTIVITY AND SAFETY

Under the collaboration worth S\$4.7 million with NTU, a smart system will be developed to allow industry partners to share data and "synergise" construction processes through a central digital platform, said HDB.

The world's first Smart Integrated Construction System (SICS) is aimed at transforming traditional construction processes and boosting productivity.

For instance, industry partners in the entire construction supply chain would be able to log real-time information and progress updates on a particular project.

"This streamlines information and speeds up data-sharing among the different partners including architects, contractors, pre-casters and construction material suppliers, enabling them to better keep track of budgets and timelines," said HDB.

Researchers will also look into a supporting system that allows the logistics of construction inventory to be managed virtually.

Building components could be attached with smart sensors with geo-tagging capabilities, so that contractors can manage when the parts arrive at the work site, as well as quickly identify any lapses such as incorrect deliveries.

Smart sensors will also support a crane system - designed in conjunction with local firm HOPE Technik and the Dutch company Witteveen+Bos - that calculates the quickest and safest hoisting paths for building components on site to "mitigate potential collisions and swaying", said HDB. The initial prototype will be able to hoist materials up to two storeys high.

NTU's Vice President of Research Professor Lam Khin Yong cautioned that challenges might remain towards wider adoption of any developed system due to the training needed to work with the system. However, he hopes that these ideas will eventually be introduced to the construction industry.

"Our professors are keen not only to work on the basic part of the research programme, but also on its translational nature. And this gives the professors an opportunity to test their ideas, and hopefully it will result in some implementation in the construction industry," said Professor Lam.

The studies by NTU and SUTD will go on for three years.

DESIGNING AND BUILDING THE NEXT GENERATION OF PUBLIC HOUSING

Speaking about the agreements alongside other efforts at the International Housing Forum on Thursday, Minister for National Development Lawrence Wong said HDB cannot rest on its laurels despite successfully housing a nation for the past 50 years.

"The greatest risk in any successful venture is that of complacency – we assume that the formula has worked well in the past and so we can operate on that same formula, everybody operates on autopilot, and we continue with the status quo," said Mr Wong.

"So the task for us now – and us being HDB and all of us here in Singapore looking at the future – is to look ahead and see how we can design and build the next generation of HDB homes – homes that are better, smarter and more sustainable for Singaporeans."

The International Housing Forum is a two-day event on the theme of 'Sustainable Planning, Inclusive Communities'. Participants will discuss ways to advance the United Nations' New Urban Agenda through policy, planning, design and technological interventions.

Additional reporting by Loke Kok Fai.

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