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3D model for Tengah town wins top tech award

It will help buildings there be constructed in a way that maximises thermal comfort

Vanessa Liu

Future residents of new Tengah town can take comfort in the fact that their smart homes will be cool by design as the days get hotter as a result of climate change.

The buildings in Singapore's first smart-enabled town will be constructed in a way that maximises thermal comfort.

This has been possible because researchers here have created a three-dimensional simulation model that can map buildings in the estate virtually and forecast how environmental factors can affect heat comfort for residents.

The Integrated Environmental Modeller (IEM) does this by studying different environmental factors, such as solar heat gain, wind flow and air temperature as well as their combined effects on the surrounding urban landscape like roads, rooftops and facades of buildings, bodies of water and vegetation.

Although there are other environment modellers on the market, the team's IEM is the first to take into account multiple factors, such as wind flow, solar heat gain and air temperatures, that affect thermal comfort simultaneously.

The IEM helps urban planners to design open spaces and optimise building layouts and orientation to promote natural ventilation within the town, said the Housing Board (HDB).

Having been previously used on a smaller scale in the planning of areas in Punggol, the IEM will be employed on a townwide level for the first time in Tengah.

Yesterday, the team, made up of researchers from the Agency for Science, Technology and Research (A*Star) and HDB who created the IEM, was given the President's Technology Award.

Dr Poh Hee Joo, senior scientist at A*Star's Institute of High Performance Computing, said: "With this model, we are able to look at the urban ventilation, or breathability of a city. This interaction of solar heat gain and wind flow is very important in a highly urbanised place like Singapore."

The President's Science and Technology Awards are the highest form of recognition for research scientists and engineers here. President Halimah Yacob presented the awards at a ceremony at the Istana yesterday.

At the same ceremony, Minister for Trade and Industry Chan Chun Sing also presented the Young Scientist Award to Dr Charles Lim and Dr Shao Huilin, both researchers from the National University of Singapore, for work contributing to quantum cyber security and patient care, respectively.

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Organised by the Singapore National Academy of Science and supported by A*Star, the award is given to scientists under the age of 35 who have demonstrated potential in their field of research.

Mr Chan noted that science and technology were "existential to (Singapore's) survival as a country" and investments in talent would not pay dividends in the short term.

"In fact, for many scientists who are present here today, you've committed your life to this area of work, and your achievements are the result of consistent investment and consistent collaboration across all fields," he said in a speech.

He added that Singapore would ensure that it continued to attract a "fair share of the best and the brightest" talents to the country.

The President's Science Award was given to a team from the Singapore Eye Research Institute whose research led to a decrease in the prevalence and severity of myopia in children over the past 30 years.

Another recipient was Professor Toh Kim Chuan from the mathematics department at the National University of Singapore, who received the award for his work in the field of computational optimisation.

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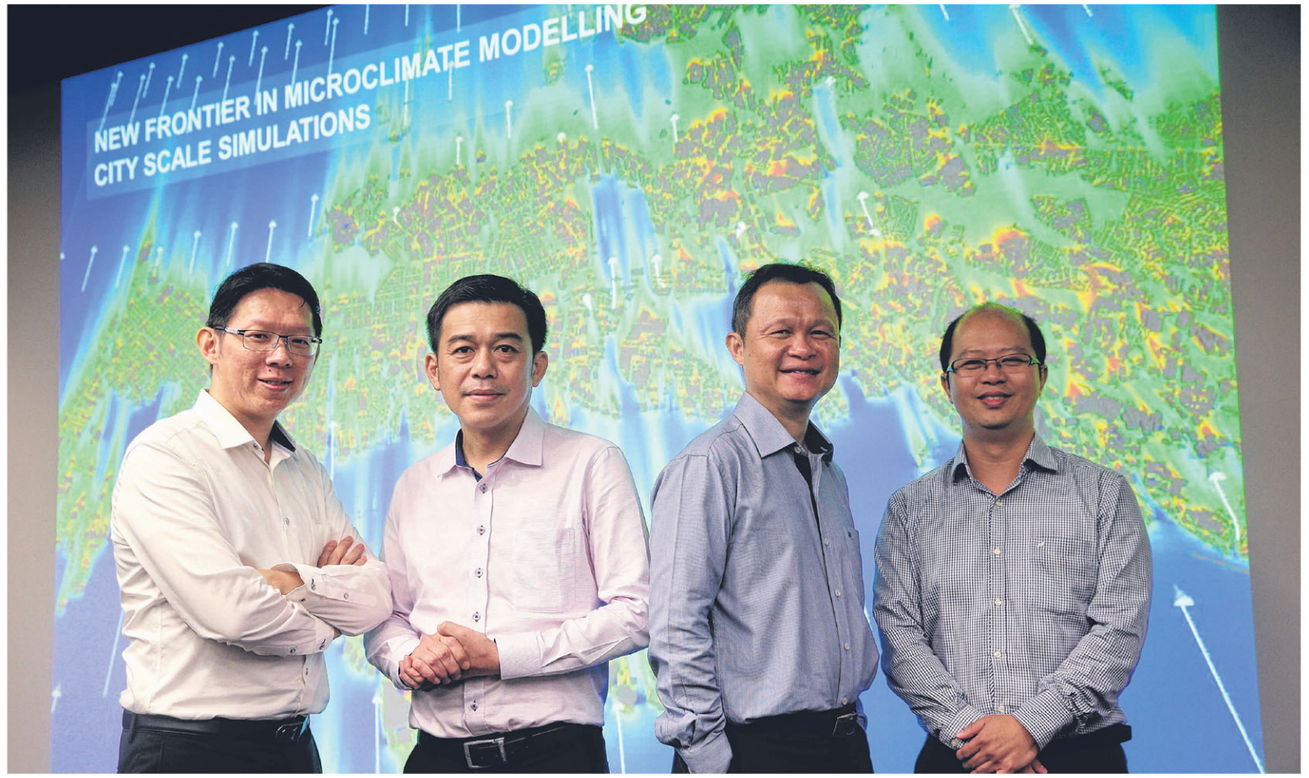

A*Star's Institute of High Performance Computing senior scientists Poh Hee Joo (third from far left) and Koh Wee Shing (far left) with other members of the team that won the President's Technology Award, Mr Tan Sze Tiong, director of the Housing Board's Centre of Excellence for Environmental Sustainability Research (second from far left), and Mr Fachmin Folianto, senior research engineer at A*Star's Institute for Infocomm Research. ST PHOTO: JASON QUAH