

Construction site of the future

On Tuesday, an Industry Transformation Map to lift the construction sector – which is the worst performing in Singapore and is set to grow by only 0.3 per cent this year – was unveiled. It aims to push the industry towards more automation, digital technology and sustainable design. Research is underway to create or improve various tools that are part of the construction process. The Straits Times looks at some of these.

1 SMART CRANE

- With more prefab components on the way, the Nanyang Technological University (NTU) and Kimly Construction are looking at improving a remote-controlled smart crane capable of tracking and stacking units from the time of their creation to when they arrive on site.

- These will rely on each component having its own **Radio Frequency Identification tag**, as well as a host of cameras, satellite tracking and microchips.

- Among other things, it will **improve safety by reducing “blind lifting” situations** that those in traditional cranes often come across.

- It will also result in **10 to 20 per cent** productivity gain for those in site logistics, and shave off a third of the time needed for inventory checking.

2 DRONES

- Construction firms, developers – and research institutions are using commercial drones and modifying them to **monitor and inspect buildings as they are being built.**

- A property firm, for example, takes photos of its sites during construction to carry out photogrammetry – or the use of

photography to survey and map – to ascertain measurements between objects. The process of giving real-time updates is being tried out at the Paya Lebar Quarter.

- Meanwhile, the National University of Singapore and tech firm Tectus Dreamlab are working on a drone that does not rely on satellites or the global positioning system, so that it can travel indoors to inspect building quality.

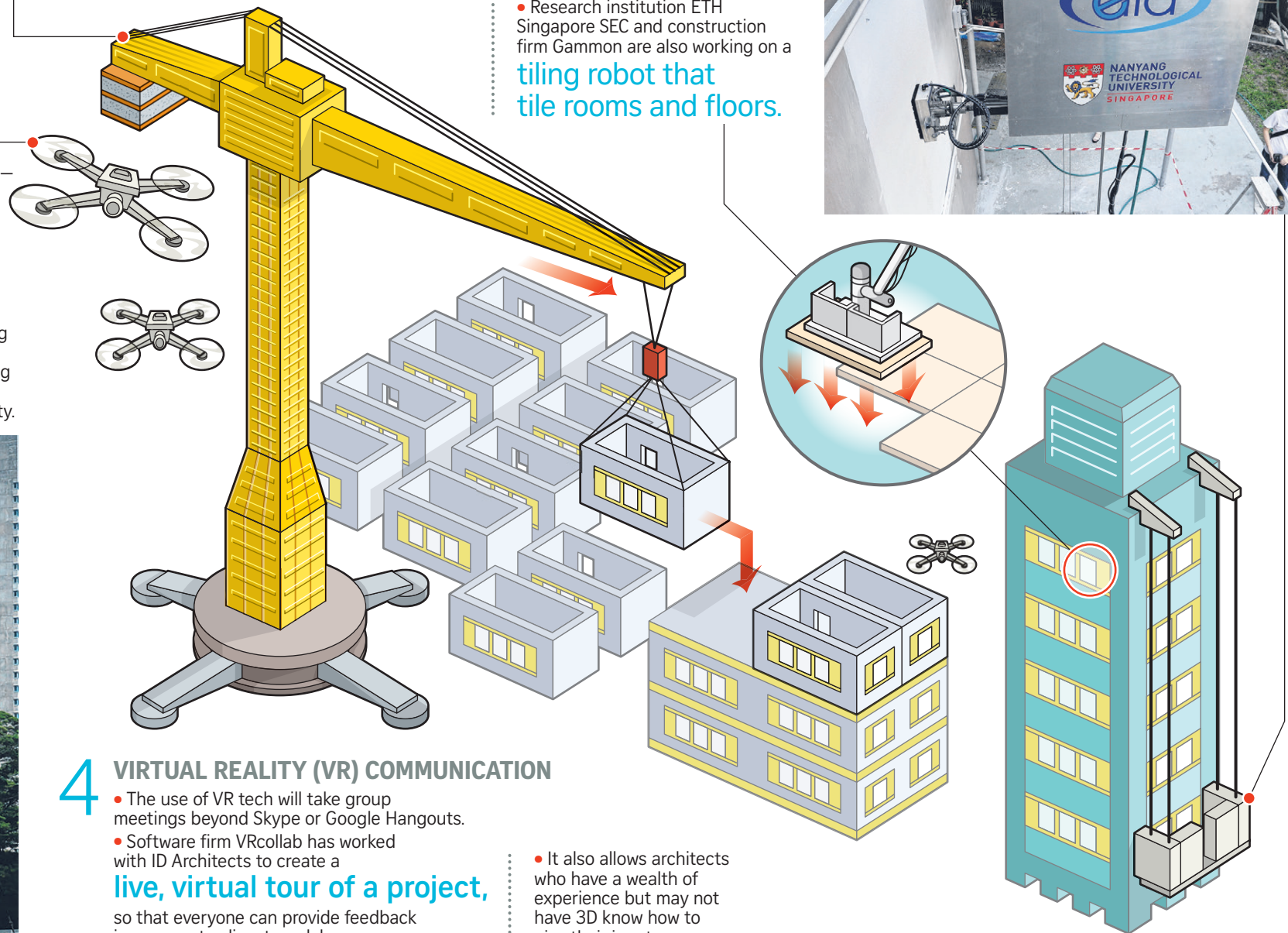


3 ROBOTICS

- The use of robotics to reduce manpower needs and safety risks, speed up tasks and ensure more consistent quality is in the works.

- For example, Singapore electronics company Elid Technology worked with NTU to create an **automated gondola system** that can clean and paint high-rise buildings (far right). It not only cuts the number of workers needed to wash or paint a building facade from five to two, but it also ensures that both of them do not have to be on the gondola.

- Engineering firm Pod Structures is also working on an **intelligent lifting system** that can automatically – instead of manually – adjust the balance for heavier prefab units as they are being stacked. This is especially useful for tall buildings, where wind may affect the balance of the units.
- Research institution ETH Singapore SEC and construction firm Gammon are also working on a **tiling robot that tile rooms and floors.**



4 VIRTUAL REALITY (VR) COMMUNICATION

- The use of VR tech will take group meetings beyond Skype or Google Hangouts.

- Software firm VRcollab has worked with ID Architects to create a **live, virtual tour of a project**, so that everyone can provide feedback in an easy-to-digest model.

- It also allows architects who have a wealth of experience but may not have 3D know how to give their input.

