GuocoLand Launches Strategic Partnerships with Local Enterprises in Latest Digitalisation Drive

- **More than 20 digital initiatives to be implemented over two years to improve productivity, efficiency and safety**
- **Line up of pilot projects to advance industry transformation process**

SINGAPORE, 15 July 2021 – GuocoLand Limited ("GuocoLand") and its subsidiaries (together with GuocoLand the "Group") today announced a series of strategic partnerships with local technology companies to accelerate the digitalisation of its business. As part of its digitalisation programme, the Group aims to implement more than 20 digital-related projects over the next two years in its efforts to strengthen its property investment and development businesses, affirming its position as an innovative, forward-looking real estate company.

The Group will collaborate with local enterprises **Airsquire**, **Groundup.ai**, **Operva AI**, **SpaceAge Labs** and **Doxa** on projects that will deploy artificial intelligence (AI), Internet of Things (IoT), drone technology and smart devices, amongst other innovations (see **Annex** for details). The collaborations, which were facilitated by Enterprise Singapore (ESG), will enable the Group to enhance its productivity and efficiency, improve workplace safety standards and mitigate manpower constraints over time. With the support of ESG, GuocoLand is also exploring more initiatives via partnerships with a number of local start-ups and SMEs on other pilot projects.

Besides improving the Group's performance and productivity, the partnerships will benefit its stakeholders, including consultants, contractors, buyers and tenants. GuocoLand's digitalisation drive will impact and uplift the entire value chain of the built environment sector, from design, procurement and contracts, construction methodology, site management and quality surveillance, to facility management.

Mr Cheng Hsing Yao (郑馨尧), Chief Executive Officer of GuocoLand Group, said: "The transformation of Singapore's built environment sector requires all organisations in the eco-system to play their part. As we studied the technologies available, we found many cutting-edge innovations being pioneered by local start-ups. We decided to support our home-grown companies and collaborate with them to co-create more innovative and sustainable solutions."

Strategic Partnerships and Pilot Projects with Top Local Enterprises

In an industry first, the Group will be deploying **Operva AI** in inspecting the façade of its residential developments. Utilising drone technology with infrared thermography and AI capabilities, this innovation could replace the traditional water test for detecting leakage in new buildings and aid in pre-emptive building maintenance of older buildings (see figure 1).

Figure 1: Operva AI utilises drone technology, infrared thermography and AI to detect air and water leakage in buildings. (For illustration purposes only. This does not represent the actual thermal profile of the building.)

Another application of AI in residential developments is the Group's partnership with **Groundup.ai** on monitoring the well-being of the elderly. Groundup.ai's predictive algorithm works in tandem with computer vision technology to predict potential falls or distresses based on the person's past movement patterns (see figure 2). The Group is exploring how such technology can be scaled and integrated into future residential developments to meet the needs of an ageing population.

Figure 2: Groundup.ai's predictive algorithm works in tandem with computer vision technology to predict potential falls or distresses based on the person's past movement patterns.

For commercial technology applications, the Group's partnership with **SpaceAge Labs** will utilise wireless IoT sensors, IoT cloud and machine learning to monitor water meters on each office floor and lights in hard-to-reach areas like the crown of Guoco Tower, which is Singapore's tallest building (see figure 3).
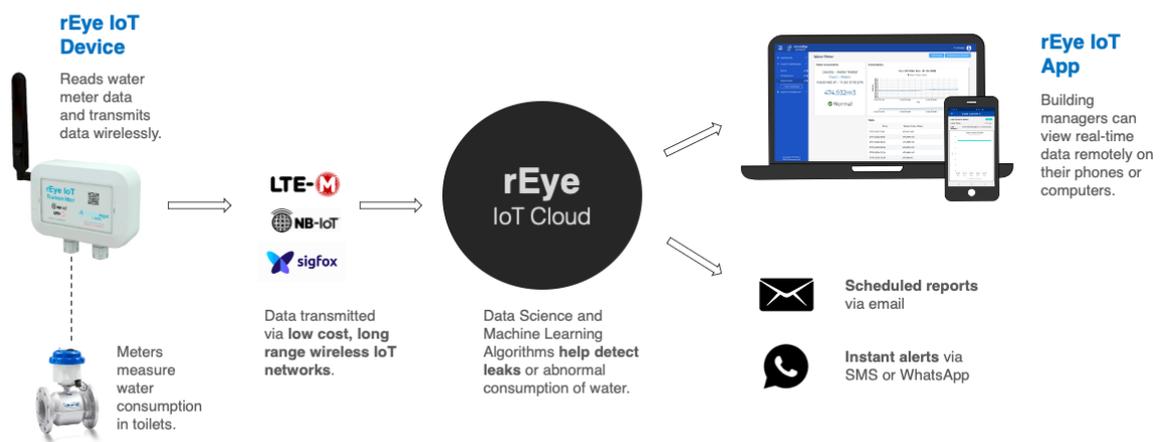

Figure 3: SpaceAge Labs utilises wireless IoT sensors, IoT cloud and machine learning to monitor water meters and lights in hard-to-reach areas. Its technology will be scaled up for implementation in an entire commercial building for the first time.

GuocoLand will also be deploying technology by **Airsquire** to capture 360-degree site progress inspection photos of projects under construction, enabling project managers to remotely check and compare construction progress virtually (see figure 4). The technology will be deployed at the site of Midtown Modern, the Group's latest development. Airsquire will also conduct a pilot test on the use of AI in producing an interactive 360-degree measurable virtual "street view" that allows project managers to easily compare what has been built with the Building Information Modelling (BIM) designs.

Figure 4: Airsquire's AirGo platform enables project managers to check and compare 360-degree site progress inspection photos of projects under construction and share them with the project team.

Four of the initial batch of digitalisation initiatives (by Airsquire, Groundup.ai, Operva AI and Doxa) are pilot projects which have the potential to progress to proof of concept, demonstrate new application in the built environment sector, and digitalise processes. For SpaceAge Labs, this will be the first time its technology is scaled up for tests and implementation in an entire commercial building.

Mr Cheng added: "We hope that these pilot projects will create game-changing technologies for the built environment sector and result in a faster and higher rate of industry adoption. Some of these innovations could even be exported to other countries and cities that face the same challenges as Singapore in sustainable urban development."

Innovation at Guoco Tower and other GuocoLand Digital Initiatives

Before these newly-announced projects, GuocoLand had been using some of the most advanced technologies in its properties and rolled out several innovative digital initiatives and solutions across its core businesses in Singapore.

Guoco Tower's state-of-the-art HVAC (heating, ventilation and air-conditioning) systems keep the indoor environment cool and healthy through high-performance air filters rated MERV 14 (Minimum Efficiency Reporting Value) with dust spot efficiency up to 95 per cent. In addition,

the filtered air goes through a process called Ultraviolet Germicidal Irradiation (UVGI) which kills 90 per cent of airborne pathogens.

More recently, several technologies in cleaning automation have been deployed to improve Guoco Tower's safety and wellness standards. **Neo** and **triooo** commercial cleaning robots are utilised for their floor maintenance and disinfection capability (see figure 5). Besides having an app-based control system that allows building managers to manage cleaning performance and gather real-time operational data remotely, these robots make cleaning more efficient, reducing time and resources while being more environmentally sustainable as less water and chemicals are used.
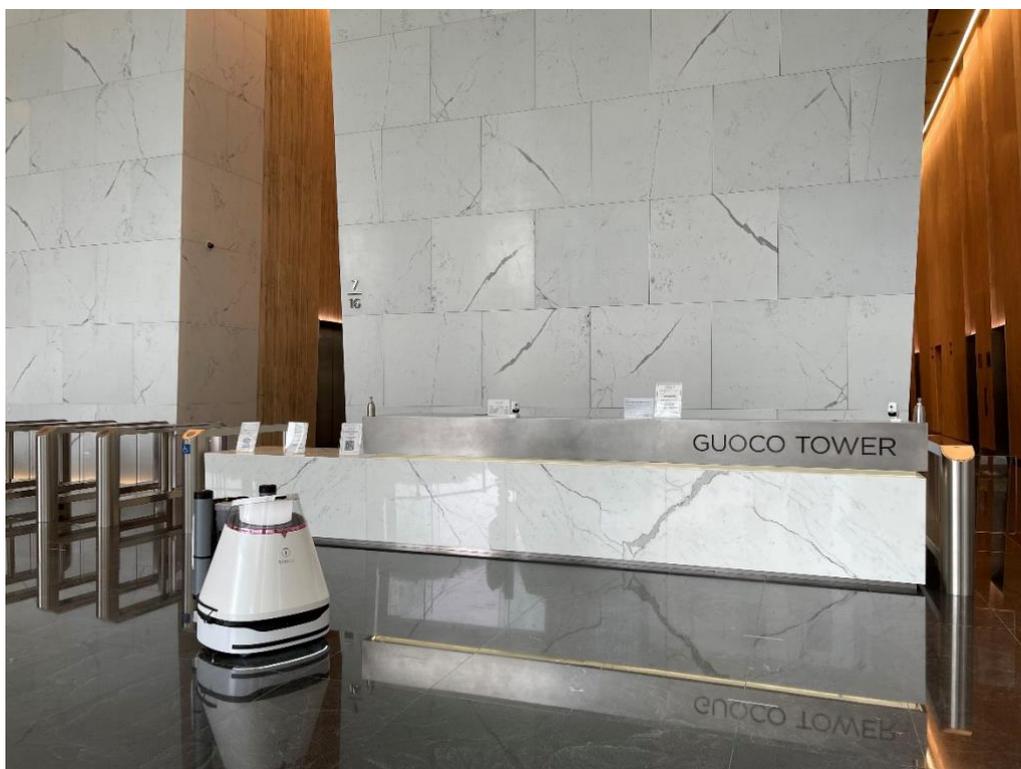

Figure 5: Guoco Tower uses the latest in cleaning automation, such as the triooo commercial cleaning robot, to ensure that the building's safety and wellness standards are maintained at the highest level.

A trial is ongoing at Guoco Tower to utilise indoor air quality sensors by air health company **uHoo** – another homegrown start-up – in keeping the workplace environment clean and healthy for occupants. uHoo's newly launched indoor environmental monitor measures and monitors at least 13 indoor environmental quality factors including temperature, relative humidity, carbon dioxide, various particle sizes, carbon monoxide, air pressure, light and sound. The monitors can be integrated with Guoco Tower's building management system to allow automation of the building's HVAC system to enhance comfort and safety while optimising energy use and reducing carbon footprint.

GuocoLand is also collaborating with IoT-enhanced lift maintenance company **WeMaintain**, who is currently in discussion with Building and Construction Authority (BCA) for lifts equipped with Remote Monitoring & Diagnostic capabilities to come under a testbed programme. The joint effort between GuocoLand, Hitachi Elevator Asia and WeMaintain will enhance the performance, transparency and safety of Guoco Tower's lifts through a proprietary predictive maintenance regime.

Homeowners at Martin Modern, GuocoLand's recently completed condominium, may conduct home inspections with ease on their mobile phones through the **Novade** app. In addition, the Group has developed an in-house bespoke eSignature platform jointly with Australian tech company **GetSignature** to improve productivity and traceability of signed documents and agreements.

Ms Jane Ong (王丽萍), Lead, Digitalisation Committee, GuocoLand, said, "We have always valued innovation in our products and services. COVID-19's disruption of the built environment sector has heightened the need to digitalise and innovate processes in creating our products and services. We recognise that, as a developer and building owner, we are the main procurer of products and services and hold a pivotal position in directing the development of the built environment sector."

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About GuocoLand Limited

GuocoLand Limited ("GuocoLand") is a public company listed on the Singapore Exchange since 1978. The principal business activities of its subsidiaries are property development, property investment, hotel operations and property management. GuocoLand and its subsidiaries (together with GuocoLand "GuocoLand Group") have established property operations in Singapore, China and Malaysia, comprising residential, hospitality, commercial and retail developments. In 2017, GuocoLand marked its expansion beyond Asia into the new markets of the United Kingdom and Australia through a strategic partnership in Eco World International Berhad with Eco World Development Group Berhad. As a premier property company, GuocoLand is focused on achieving scalability, sustainability and growth in its core markets through its property development, investment and management businesses. The parent company of GuocoLand is Guoco Group Limited, a company listed on the Main Board of The Stock Exchange of Hong Kong Limited. Guoco Group Limited is a member of the Hong Leong Group. As of 31 December 2020, the GuocoLand Group has total assets of S$11.0 billion and total equity attributable to equity holders of S$4.2 billion.

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ANNEX: Details of Strategic Partnerships with Local Technology Enterprises

Category	Company	System/ Technology	Details of Technology	Expected Outcomes
Quality Surveillance	Operva AI	Thermography; artificial intelligence; drone technology	Utilising drone technology, infrared thermography technology is used to scan and determine potential air and water leakage and defects on the exterior façade, including aluminium and glass. Artificial intelligence further boosts productivity with automated problem identification and the ability to conduct repetitive audits using similar criteria.	Streamlines inspection process and improves inspection and maintenance efficiency by up to four times.
Facilities Management	SpaceAge Labs	IoT sensors; IoT cloud; machine learning	SpaceAge Labs' RemoteEye (rEye) IoT sensors are utilised to monitor individual crown lights and water meters. Using machine learning, the rEye IoT Cloud learns regular consumption patterns and will alert building managers when the sensors detect faults in electrical loads such as crown lights and abnormalities in water usage, for example, from leaks. Building managers may also remotely monitor data through the rEye Lite Mobile App, with data being provided on an hourly basis.	Reduces staffing and downtime. Improves water utilisation efficiency through sensor data driven predictive maintenance.

Category	Company	System/ Technology	Details of Technology	Expected Outcomes
Construction Management	Airsquire	360-degree virtual sites technology; artificial intelligence	Airsquire's 360-degree virtual sites technology enables 360-degree imagery to be captured in near real-time and visualised via the cloud platform by the entire project team. The AI automatically reconstructs the 360-degree "street view" of the site to provide an immersive virtual experience for the users. The cloud viewer also enables the quick comparison of progress against BIM models. Project progress data may be stored like a time capsule beyond the construction period for defect warranty and facility management.	Increases productivity and provides a safer environment by mitigating risk and congestion from physical site visits.
Homes	Groundup.ai	Safety and fall predictive algorithm with computer vision technology	CCTV cameras are used to capture footage of daily activities. Proprietary AI model is then trained to predict potential falls or danger based on past trends and patterns of the person. Information of possible falls will be sent to the mobile device of the next-of-kin, decreasing reaction time to incidents.	Integrates smart homes and healthcare monitoring amidst Singapore's ageing population.
Procurement and Payment Processes	Doxa	End-to-end procurement solution	GuocoLand is exploring a procurement system with Doxa, as well as an application to streamline its facility management.	Providing a platform to eliminate human error and improve productivity.