

MEDIA FACTSHEET

ANNEX B

Innovating and Curating Better Automation and Technologies for Environmental Services

About INCUBATE

1 The National Environment Agency (NEA) signed Letters of Intent (LOI) with seven INCUBATE partners today to officiate the beginning of a series of trials that will be carried out at our partners' premises over the next few years. **Innovating and Curating Better Automation and Technologies for Environmental Services (INCUBATE)** embodies the partnership between the technology providers and services providers, premises owners, and the government, to collectively innovate and curate better technologies, solutions and innovations for the Environmental Services industry.

2 The signing ceremony was witnessed by Minister for the Environment and Water Resources (MEWR), Mr Masagos Zulkifli, and Mr Albert Chua, Permanent Secretary of MEWR, as senior representatives from each partner organisation commemorated this partnership at the launch event of the Environmental Services Industry Transformation Map. The list of organisations are as follows:

- Centre for Healthcare Assistive and Robotics Technology (CHART), Changi General Hospital
- Changi Airport Group
- City Developments Limited
- NTUC Club
- Robotics Automation Centre of Excellence
- Sports Hub
- The Esplanade

3 Through this partnership, the various stakeholders for the private premises will be able to collaborate with NEA in the following areas:

- Identify challenge statements of common interest in the areas of environmental services;
- Conduct trials for technology, solutions and innovations to address challenge statements, and study the feasibility of wide-scale adoption in their respective premises;
- Coordinate efforts and participate in joint projects to address challenge statements;
- Share information with each other and learnings from the trials; and
- Execute viable technologies, solutions and innovations in their respective premises when ready.

Projects to be piloted at INCUBATE sites

4 NEA has begun to explore project opportunities with the INCUBATE partners and will work with them to conduct trials or implement changes to enhance their work processes. Some examples of the upcoming project opportunities are as follows:

Centre for Healthcare Assistive and Robotics Technology, Changi General Hospital

- Use of assistive technology. For example, exoskeletons, to aid senior healthcare workers in the cleaning and waste management operations
- Use of robotics technology for autonomous or semi-autonomous cleaning, disinfection operations and building maintenance

City Developments Limited (CDL)

- Call for solutions for maintenance-related challenges such as autonomous façade cleaning
- Pilot in-sink grinders and on-site food waste digesters in serviced apartments to recycle food waste into compost which can be used as fertiliser for plants in the landscape area
- Implement an integrated facilities management approach to improve service delivery through smart monitoring, fault reporting and analytics
- Deploy robotics such as autonomous scrubbers for hard floor cleaning to achieve manpower savings
- Explore implementation of outcome-based contracting
- Application of traffic and ammonia sensor systems in toilets for more effective housekeeping and enhanced user experience
- Rodent monitoring system to reduce pest manifestation and improve hygiene
- Anti-smell tiles for urinal area in toilets to enhance user experience

Note: CDL will explore the above innovations and solutions for its retail and office buildings such as City Square Mall and Republic Plaza, as well as its Le Grove Serviced Apartments.

NTUC Club

- Deploy autonomous scrubbers around Downtown East
- Trial use of smart watches by partner service providers to evaluate trends and deploy manpower more efficiently
- Explore the implementation of technology such as smart bins and food waste digester to increase productivity and reduce costs
- Call for tender for outcome-based contracting

Sports Hub

- Explore the use of autonomous scrubbers and smart bins
- Call for solutions for maintenance-related challenges such as self-cleaning system for façade cleaning
- Deploy sensors to enable a targeted and effective control of rodent population through data analytics

Robotics Automation Centre for Excellence

- Explore collaboration with cleaning companies to adopt automation and cleaning solutions to be used within attractions and shopping malls
- Train and upskill the cleaning companies' staff to embrace the use of robotics and automation

List of signatories for INCUBATE signing ceremony

Signatories	Quotes
Professor Teo Eng Kiong, Chairman Medical Board, Changi General Hospital	<p>“At Changi General Hospital (CGH), our first priority is to ensure the safety and wellbeing of our patients and employees. We are committed to improving the hospital infection control practices, including cleaning and disinfection, as well as behavioural and environmental practices.</p> <p>To this end, CGH is pleased to partner with National Environment Agency to identify challenges in this area and develop solutions and innovations, fueled by technology that will enhance patient safety, reduce infection and allow our staff to carry out their meaningful work in a safer, smoother and easier manner.</p> <p>This collaboration is a significant milestone for us, serving as a platform to share best practices and to advance productivity standards by harnessing technology innovations while keeping the needs of our patients at the forefront.”</p>
Mr Jayson Goh, Managing Director, Airport Operations Management, Changi Airport Group	“Changi Airport is always exploring ways to enhance our efficiency in maintaining the best environment for our passengers. Being an INCUBATE partner enables Changi Airport to collaborate with industry partners to create game-changing solutions that can enhance both productivity and passenger experience.”
Mr Chia Ngiang Hong Group General Manager City Developments Limited	“CDL proactively adopts innovative technologies and solutions to continuously raise the operational efficiency and environmental performance of our properties. This also helps to further enhance the comfort and well-being of our customers and tenants. We are pleased to be an INCUBATE partner under the Environmental Services Industry Transformation Map. CDL will explore and pilot initiatives including robotics and smart technologies to increase the efficacy, productivity and quality of facilities management at our buildings such as City Square Mall, Le Grove Serviced Apartments and Republic Plaza. We hope that our pioneering efforts will help to pave the way for more innovations to transform the environmental services sector in Singapore.”

<p>Mr Lim Eng Lee, Chief Executive Officer, NTUC Club</p>	<p>“With the use of smart technology, we are able to provide guests at Downtown East with a better experience. The effective use of smart watches and autonomous scrubbers also means that jobs can be completed quicker and manpower can be deployed more efficiently. We can also collect data to study trends which helps us better plan and optimise our resources, and we are excited to implement other initiatives in due time.”</p>
<p>Mr Derrick Yap, Chief Executive Officer, Robotics Automation Centre of Excellence</p>	<p>“RACE collaboration with NEA will be a game-changer in the cleaning and waste management industry. This would allow cleaning companies to tap on RACE’s expertise in the development and adoption of robotics & automation cleaning solutions. RACE will also provide training to workers in cleaning companies so that workers can upgrade themselves in the use new robotics & automation technologies.”</p>
<p>Mr OON Jin Teik Acting Chief Executive Officer, Sports Hub</p>	<p>"Singapore Sports Hub constantly looks for more innovative ways to operate. We are delighted to collaborate with NEA to explore more efficient and sustainable ways to keep our environment and venues clean"</p>
<p>Ms Yvonne Tham, Assistant Chief Executive Officer, The Esplanade Co Ltd</p>	<p>“As Singapore’s national performing arts centre, Esplanade – Theatres on the Bay welcomes about four million visitors and two million audiences attending over 3,000 performances at the centre every year. As such, it is a constant challenge to upkeep our premises and maintain our property in tip-top condition amidst rising costs. As a not-for-profit organisation and a registered charity, we are always looking at making use of technology and innovation to better deploy our manpower and help our staff work more efficiently while saving precious resources such as water and electricity. Esplanade is hence thankful for the opportunity to be one of the INCUBATE partners and we look forward to working closely with the NEA and technology solution providers and integrators to come up with cost efficient ways to continually bring the best experiences to our visitors and patrons at Esplanade.”</p>

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