

AUTOMATED GOODS DELIVERY WITHIN TRAIN STATION RETAIL SPACE

CONTEXT

This challenge is organised by Stellar Lifestyle, a business arm of SMRT Corporation Limited, with their partner Japan East Railway Company (JR East) to address challenges faced by retail and transit operators in Singapore and Japan.

- Stellar Lifestyle is the largest managing agent of retail and advertising spaces in Singapore's rail network and their growing portfolio includes mall management and outdoor media & digital engagement platforms. They have invested in new businesses such as co-working spaces, unmanned concepts and dark stores, with a vision to grow them into a new core.
- JR East is the operator for trains including Shinkansen (high speed bullet train) in eastern Japan. It is the largest passenger railway company in Japan, serving about 13 million passengers daily. JR East Group also operates a variety of lifestyle businesses such as shopping malls, retail shops, restaurants, hotels, as well as office building management. Outside Japan, JR East has a presence for its lifestyle business unit with the establishment of Japan Rail Cafe in Singapore and Taiwan.

Through this joint innovation programme, Stellar Lifestyle and JR East are seeking solutions to support online transformation, online-to-offline customer engagement, develop a vibrant environment inside train stations to improve commuter experiences, and introduce new last-mile robotics delivery platforms for retailers and F&B merchants, within SMRT and JR East-operated train stations.

SMRT train stations were not built to support the current use of space for retail activities. Stations are not equipped with loading bays or cargo lift infrastructure to service retail spaces which are typically located underground (e.g. Esplanade and Dhoby Ghaut). This has inconvenienced Stellar Lifestyle's tenants, as their logistic partners have to use either passenger lifts or fast-moving escalators to deliver supplies. Delivery runs happen during weekdays, which may result in jams/delays, commuter flow bottlenecks and safety issues. The lack of proper infrastructure also leads to more time wasted on deliveries to tenants within the train stations' retail space.

In order to serve their tenants better, Stellar Lifestyle and JR East want to find innovative technology solution(s) that can ease the logistics of heavy goods and large volume deliveries within the existing station infrastructure. Since escalators and lifts are frequently used by commuters, Stellar Lifestyle is looking into potential solutions that may be able to leverage their wide and under-utilised staircases (e.g. either mechanically aid and ease human labor, or completely automate transportation of deliveries via the staircase).

PROBLEM STATEMENT

How might we create a manpower-saving, safe and scalable technical solution to transport large volumes of heavy goods via the staircases of SMRT train stations?

WHAT ARE WE LOOKING FOR?

Stellar Lifestyle and JR East are open to new innovations as well as re-configuration of existing solutions (e.g. use of vertical/diagonal platform lifts, robot trolleys/stair-climbers) to solve/automate/ease any part of the delivery challenge all the way from the delivery vehicle to the retail space.

The solution should take into consideration:

- Limitations of existing infrastructure. As the physical infrastructure cannot be changed (e.g. adding new cargo lifts), the solution should look to improve the delivery process within the existing infrastructure.
- Operational safety. The solution should demonstrate how it can provide a more efficient and streamlined delivery process without disruption commuter flow, or how it might consider real-time human traffic flow before it is operated.
- Weight and movability. The weight and movability (e.g. ability to make a 180-degree turn to allow greater maneuverability at various train stations) of the proposed solution should be considered so that it is easily operated by one delivery person.
- Load capacity. The solution should be able to determine the maximum weight of goods it can carry based on the type and size of deliveries that will be made, and notify the user if there is an overload.
- Increase in efficiency. The overall time taken for delivery using the solution should not exceed the current time taken with manual labor.
- Multi-functionality. The solution could be developed with multiple functions other than delivery of goods (e.g. to support passengers with commuting difficulties, such as the disabled and elderly, to navigate down the stairs with ease).
- Scalable. The solution should be able to accommodate different sizes and dimensions of staircases.

There are no restrictions on the geographical location of the problem solvers who may choose to apply to this challenge. However, the prototype must be demonstrated in Singapore.

POSSIBLE USE CASES

1. Enhanced delivery by logistics company. James, a delivery staff, delivers supplies to ABC Florist, a SMRT tenant located in the underground retail space of Esplanade Xchange every Monday. Currently, he parks his delivery truck park on the ground level and uses a trolley to deliver the goods manually to the tenant. Due to the limited infrastructure, James has to make multiple trips to-and-fro, which is time-consuming.

With the new solution, James will have access to a safe and secure delivery infrastructure, reducing the risk of injury and time taken for delivery. ABC Florist will also benefit from more reliable and predictable deliveries, enabling them to better serve their customers.

2. Servicing train station. David is a technical service personnel with SMRT. He sometimes needs to transport components and tools to the platform level of the station to do maintenance or upgrades.

With the new solution which can tap on non-moving escalators during non-peak period or after-hours, David is able to load his equipment onto it, and use it to transport what he needs for the maintenance work.

WHAT'S IN IT FOR YOU

- Up to SGD55,000 of prize money for each winner of this challenge (see Award Model)
- Access to IMDA's innovation consultancies (e.g. Design Thinking, Digital Storytelling, UI/UX) and PIXEL corporate innovation hub (e.g. hot-desking, project studios, ARVR, usability, 5G test labs) for prototyping and commercialisation
- Aside from grants, shortlisted innovators will be provided with the Innovation Support and Resource Package comprising of mentors, consultants, workshops, labs, co-working offices,

incubation platforms and more provided by SMRT, Singapore University of Technology and Design (SUTD), and East Japan Railway Company (JR East) detailed below

Figure 1: SMRT – HIVE by Stellar Lifestyle @ Esplanade & Staytion Co-working Spaces

 <p>Incubation Hub to help innovators validate, commercialize and scale</p> <ul style="list-style-type: none"> • Corporate Mentors • Subsidized Rent • HIVE Studio & Kitchen • Free & Extensive PR / Marketing 	 <p>Co-working Space as Office Solutions</p> <p>2023 Locations: Marsiling, Paya Lebar, Dhoby Ghaut, Woodlands, Jurong East</p> <p>Includes POC validation and commercialization opportunities</p> 
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Figure 2: SUTD Innovation & Entrepreneurship Programmes

Shortlisted innovators will be invited to participate in the SUTD ARISE Program and SUTD ESG Impact Lab. The ARISE Program consists of a series of workshops that facilitate innovators to bring their technology to venture creation. Participants will develop business strategies, operation plans, financial projections and pitching strategies during the workshops. The SUTD ESG Impact Lab is a series of masterclasses to develop the awareness of innovators on developments and opportunities in ESG and how they can achieve their corporate social responsibility goals.



Figure 3: JR East – Opportunities and Support to expand into the Japan Market

 <p>Language Barrier Support</p>	 <p>Mentorship for integration into the Japan Market</p>	 <p>POC Validation Platforms in the Japan Rail Club ecosystem</p>	 <p>Access free Co-working Spaces in SG</p>
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EVALUATION CRITERIA

The evaluation process shall take place over two stages. Proposals shall be evaluated based on the evaluation criteria set out for the first stage. Thereafter, shortlisted proposals shall be subjected to a second stage evaluation in the form of an interview / pitch, and the scoring shall be based on a re-defined assessment criteria for the selection of the challenge finalist(s).

Solution Fit (30%)	<u>Relevance</u> : To what extent does the proposed solution address the problem statement effectively?
Solution Readiness (30%)	<u>Maturity</u> : How ready is the proposed solution to go to the market? <u>Scalability</u> : Is there any evidence to suggest capacity to scale?
Solution Advantage (20%)	<u>Quality of Innovation</u> : Is the solution cost effective and truly innovative? Does it make use of new technologies in the market, and can it potentially generate new IP?
Company Profile (20%)	<u>Business Traction</u> : Does the product have user and revenue traction? <u>Team Experience</u> : Do the team members possess strong scientific/technical background?

AWARD MODEL

The prize money will be awarded to each selected finalist based on milestones agreed upon between Problem Owner(s) and the solver. Prize money will be inclusive of any applicable taxes and duties that any of the parties may incur.

Note that a finalist who is selected to undertake the prototype development process will be required to:

- Enter into an agreement with Problem Owner(s) that will include more detailed conditions pertaining to the prototype development;
- Complete grant application form(s) with Stellar Lifestyle and its partners that will require more financial and other related documents for potential co-funding support.

Teams with public research performers are required to seek an endorsement from their respective Innovation and Enterprise Office (IEO) and submit the IEO form together with the proposal.

DEADLINE

All submissions must be made by **9 June 2023, 1600 hours (SGT/GMT +8)**. Problem Owner(s) and IMDA may extend the deadline of the submission at their discretion. Late submissions on the OIP, or submissions via GeBIZ, will not be considered.