



Cool Ideas Enterprise Open Innovation Challenge Statement

A. Problem Statement/Title:

Develop a solution that allows for integrated digital project delivery (i.e. the tracking, monitoring and management of construction materials from production, delivery, to site installation). The solution should be able to be integrated and updated in a common data environment (CDE), offering timely and consolidated updates to project stakeholders.

B. Background of the Problem:

Precast components are frequently used as construction materials at building sites. These components are produced in a precast factory, and there are various types of components for different building sites. The current method of tracking precast components at factories is done manually, such as through tied paper tags or hand-drawn markings on the components. To prepare for delivery to building sites, the workers have to manually search for the correct types of precast components from their storage yard for delivery. The process is manual and could be made more efficient with digital tools.

Upon delivery, precast components are received by workers on site for storage. Subsequently, the workers will have to manually search for the precast components with the correct paper tags or markings to hoist on to the building blocks. However, these paper tags could be displaced during handling, and markings can fade off. As such, the current manual method of monitoring and tracking of precast components is inefficient and time-consuming. In addition, there is no common platform for precasters and building contractors to share information which can improve efficiency.

Given the above, there is a need to embrace advanced tracking technology, and digitalise the management of construction materials from production to site installation. As such, we are looking for solutions which allows for integrated digital project delivery.

C. Technical Requirements / Performance Criteria:

- I. Allow project stakeholders to track, monitor and manage the flow of precast components from production to delivery and construction.
- II. Able to be integrated into HDB's CDE systems (or any other appointed management system), to automate the updating and exchanging of information pertaining to the construction materials flow.
- III. Automate the tracking of flow of precast components, without any human intervention. For example, when the prefabricated components are produced, delivered, installed, returned, etc., the system should be able to automatically track and update to the HDB CDE, and at the same time to notify key stakeholders.
- IV. Update and track the real time location of the precast components (For example, tracking the location of storage at factory, in transit delivery, delivered at site, storage at site, cross border tracking capability, etc.). The location provided must be accurate (e.g. within +/- 100mm for the tracking of components at site storage and installation at site, to facilitate hoisting) in order to facilitate the tracking.
- V. Notify and prompt users during the automated stock taking process, if the wrong components are delivered. Delivery orders should be generated automatically and sent out to relevant users to facilitate billing.
- VI. Able to demonstrate and improve the current management of logistics in a typical construction project, such as by providing required real-time, daily, monthly and yearly data for construction materials in inventory, production, and delivery. The solution should be practical and cost-effective, and easily integrated into construction projects and systems.