Augmenting Laboratory Department operations with autonomous delivery technology

A. Problem Statement (Current State)
Currently, lab specimens are delivered manually to the lab staff responsible for testing the specimens within clinical laboratory premises.

At peak capacity, thousands of specimens may need to be tested daily. To streamline the process, specimens can be batched and tested together whenever possible to help reduce the number of deliveries required.

However, batching specimens can lead to delays in providing test results and may not follow a first-in, first-out principle.

As such, clinical laboratories are seeking innovative solutions to partially or fully automate the transport of specimens from one section of the lab to another. This route will involve going through automated door(s) which is opened using an induction sensor. The proposed tech-augmented specimen delivery solution should improve the manual and labour-intensive process that occurs daily.

B. Challenge Statement
How might we transport lab specimens, following the first-in first-out principle, in a safe and prompt manner to be tested within the clinical laboratory premises?

C. What Are We Looking For? (To-Be State)

1. Join us in the search for technology-enabled solutions to achieve the desired state of

a. **Enhanced productivity and efficiency** – reduce or completely remove the lab staff's involvement in transferring specimens within the clinical laboratory premises.

b. **Time savings** – through cutting down unnecessary movement, i.e. motion waste, by staff.

2. Overall performance requirements:

a. **Intuitive user experience:** All lab staff must be able to quickly self-help with the solution(s) with minimal guidance.

b. **Scalable:** The proposed solutions must be easily scaled across Singapore's healthcare clusters following successful trials and refinements.

c. **Well-secured:** Any recommended solutions must undergo regular risk assessment and adhere to the cybersecurity standards to secure private health data and protected health information.

d. **Cost-effective:** The proposed solutions must be cost-effective to support their scaling across hospitals and other potential healthcare settings.