

AUTOMATED INVENTORY SCANNING SYSTEM FOR EFFICIENT OUTBOUND DISTRIBUTION

CHALLENGE OWNER

The Challenge Owner is a global leader in healthcare products, with a diverse portfolio including pharmaceuticals, medical technologies, and consumer health products. They have a history of more than 135 years and employ more than 130,000 employees globally. The scope of this challenge focuses on its Distribution Centre in Singapore, which is the Regional Distribution Centre (RDC) for the entire APAC region, focusing on MedTech products.

This sector wide ROS I Startup Challenge is organised by the ROS Industrial (ROS I) Consortium Asia Pacific and the Advanced Remanufacturing and Technology Centre (ARTC) which is led by the Agency for Science, Technology and Research (A*STAR), in partnership with Nanyang Technological University Singapore.

ROS Industrial Consortium Asia Pacific and its organising partner ARTC, aim to accelerate innovation in the robotics sector by focusing on the unique integration of cutting edge ROS capabilities in manufacturing. The challenge will feature 2 problem statements from the industry that will proliferate the adoption of Robot Operating System (ROS) based solutions in industrial applications. It will also facilitate collaboration between startups and ROS I's technical teams to provide joint innovative creations to leading global enterprises from ROS I's consortium.

To Note: Participants should approach this challenge with the intent to utilise A*STAR's intellectual property to resolve the problem statement and give due consideration to license, post challenge.

CONTEXT

The Challenge Owner's RDC is handled by third party logistics (3PL). It receives products from manufacturers around the region and ships all APAC orders from Singapore.

The current outbound distribution process is as follows:

1. When an order comes in, the operator will receive a list of Stock Keeping Units (SKUs) to be picked from the shelves of the warehouse.
2. Once picked, SKUs are placed in 122cm x 102cm trays and the operator will scan the barcodes on the SKUs using a handheld scanner. The barcodes can be either 1D or 2D.
3. The backend ERP system will verify the information received from the scanner (European Article Number, batch ID, expiry date) and will assign a Handling Unit (HU) to the SKUs. The HU is an identifier for the gaylord boxes which the SKUs will be packed into.
4. The operator does a visual inspection of the SKUs to ensure quality and packs them into a gaylord box with the assigned HU.
5. When a HU is fully loaded and there are still remaining SKUs to be packed, the operator will update the system. The system will assign the remaining products a new HU and the operator will open a new gaylord box and continue packing.
6. If there are rejects, (e.g. defective item) the operator will inform the ground manager for a decision on the next steps (e.g. discard, repair or replace).
7. There may be specific packing requirements (e.g., requirement for temperature checkers) for different cificID, expfor
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The current throughput of the RDC is approximately three million SKUs a year, or around 12,000 a day. Each order that goes through the outbound process could contain between 100 to 10,000 SKUs. Due to the high volume of orders, the RDC is currently unable to process orders for more than 12(v)6de)iv

Flexible and sensitive in detecting the barcodes. As the SKUs come in varied sizes and packaging, the barcodes on the products also differ in sizes and types (1D & 2D). The solution should be able to detect barcodes of different sizes and types without additional configuration between scans. The smallest

2. Detection of incorrect and unscanned items. James places the items he has picked into a tray and inputs the SKUs into the new system for scanning. Halfway through the scanning, the system prompts him that it has detected an error. The system informs him that there are three items which were not scanned and identifies the items for James. The system also identifies that there were two items which were picked incorrectly and did not belong to the order list. James picks out the unscanned items and rescans them. He then removes the two incorrect items and the system informs him that the scanning is now complete. He inspects the items visually and packs them for shipping.

WHAT'S IN IT FOR YOU

SGD50,000 of prize money for each winner of this challenge (see Award Model)

SGD150,000 A*STAR funding for technology development*

3 year ROS Industrial Consortium Membership

Access to IMDA's PIXEL corporate innovation hub and complimentary innovation consultancies (e.g. Design Thinking, Digital Storytelling) for the prototype development and commercialisation

Opportunity to commercialise solution for deployment and adoption by ROS Industrial consortium members

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?
	<u>Scalability</u> : Is there any evidence to suggest capacity to scale?

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

DEADLINE

All submissions must be made by 13 Sep 2024, 1600 hours (SGT/GMT +8). Challenge 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.