DECAL 2.0 Briefing

26 January 2026

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Challenge 4: Zero Waste Industries - Enhancing waste segregation to bolster recycling efficiency

Background

Despite the provision of recycling bins, contamination from non-recyclable waste is a persistent issue. This reduces the effectiveness of recycling initiatives and increases downstream sorting costs. The core challenge is influencing user behavior at the point of disposal.

Desired Outcomes

Achieve at least 50% improvement in waste segregation at source by providing:
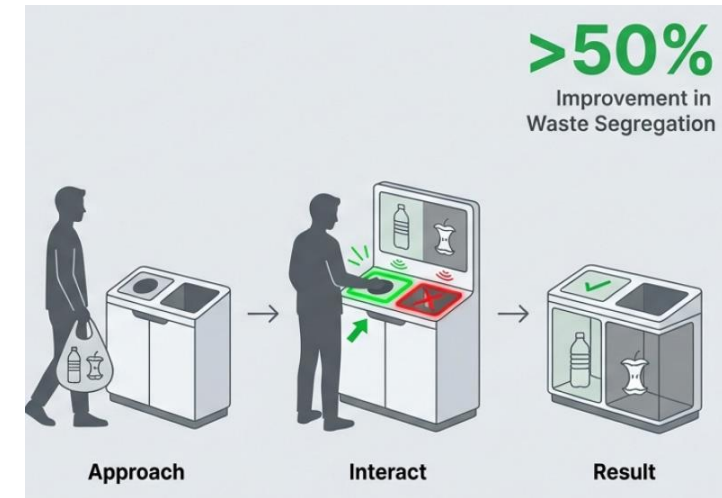- Pre-emptive mechanisms to guide and correct user behavior.
- A 'plug-and-play' solution that is easy to deploy and enables baseline waste profiling.

Key Requirements
- TRL 7 or above.
- Encourage and reinforce improved user behavior, rather than depending on it.
- Scalable and cost-effective

Test Sites
- Biopolis (Site visit: **4 Feb 26, 10am**).

Please scan for Challenge Statement 4 detail

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Points to note

- The solution shall incorporate AI capability to detect and send alerts for wrong disposal, automatically sort recyclables, identify contaminated waste and reject from stream into a separate receptacle.

- The system will be capable of weighing each types of recyclables on site and have automated data collection and analysis.

- Drive incentive programme for recyclables disposed.

Sungei Kadut Eco-District

Thank you.

Technology Readiness Level (TRL)

TRL	Description	Definition
0	Idea	Unproven concept, no testing has been performed
1	Basic Research	Basic principles postulated and observed but no experimental proof available
2	Applied Research	Concept and application have been formulated
3	Critical Function	First Laboratory test completed; proof of concept
4	Concept Validation	Small Scale Prototype built in a laboratory environment; technology validated in laboratory
5	Validation of Integrated System	Component and/or validation in a relevant environment
6	Verification of Integrated System	System model or prototype tested in intended environment close to expected performance
7	Demonstration System	Operating in operational environment at pre-commercial scale
8	System Completed and Qualified	Manufacturing issues solved
9	Full commercial application	Technology available for consumers