Elevator Cleanliness Detection

Elevate Cleanliness, Elevate Experience:
Quick Response for Better Transit.

Problem

Sound Transit invests heavily in maintaining its elevators, with a budget of $555 million over 20 years. Despite this, unexpected cleanliness issues arise that negatively impact passenger satisfaction and accessibility, especially for elderly and disabled individuals. Current methods for detecting and addressing these issues are slow and inefficient, leading to prolonged downtimes, increased maintenance costs and decreased rider satisfaction and comfort.

Value Proposition

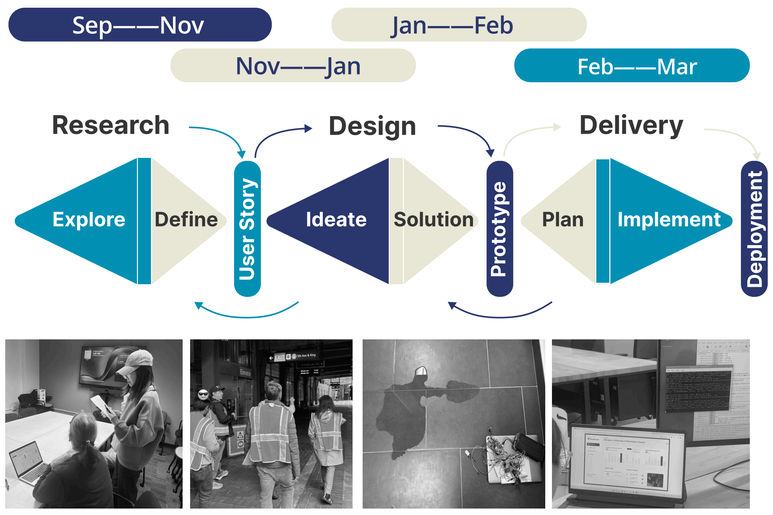
Enhances the speed and accuracy of cleanliness detection.

Reduces downtime and maintenance costs by addressing issues promptly before they escalate.

Improves passenger experience by maintaining high cleanliness standards.

Design Process

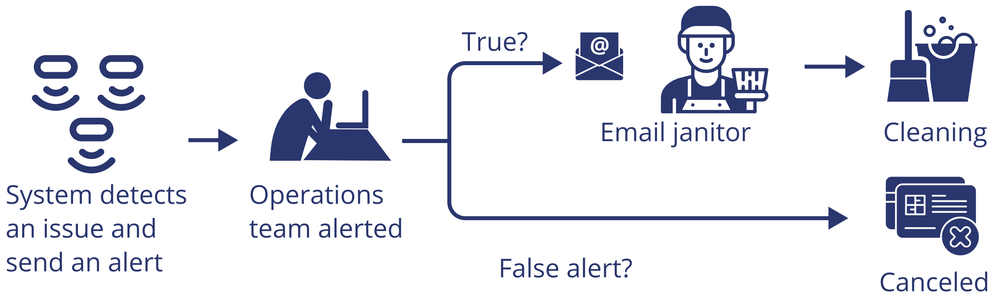
We evaluated existing cleaning challenges in elevators through secondary research, conducted surveys and interviews, observed conditions directly, evaluated existing technologies, and created a multi-sensor IoT system.

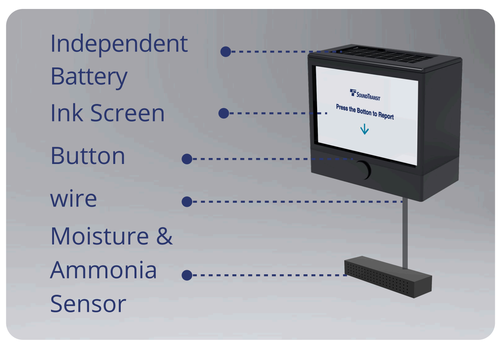


Solution

Our proposed solution is an integrated sensor-based system that enables the detection and reporting of cleanliness issues within elevators. It utilizes a combination of odor and moisture sensors, to monitor the conditions of elevators.

Work Flow

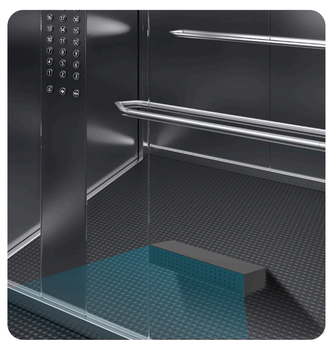




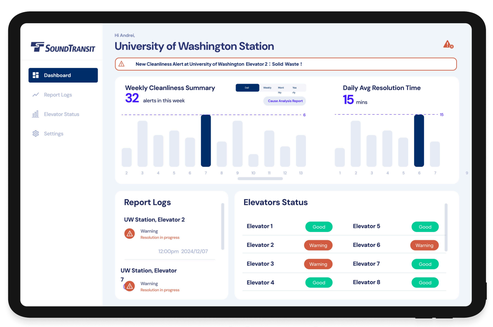
Product Structure

Hardware Overview

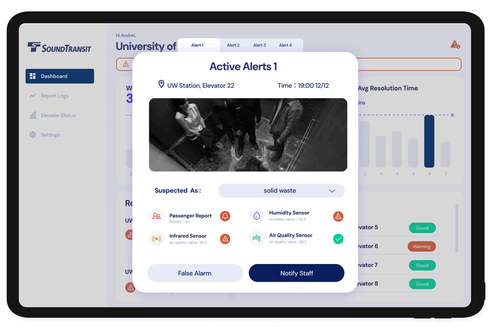
Screen & Report button



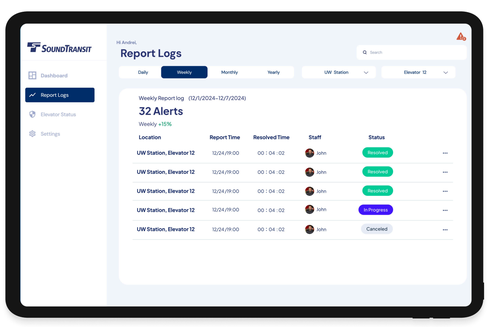
sensors



Dashboard

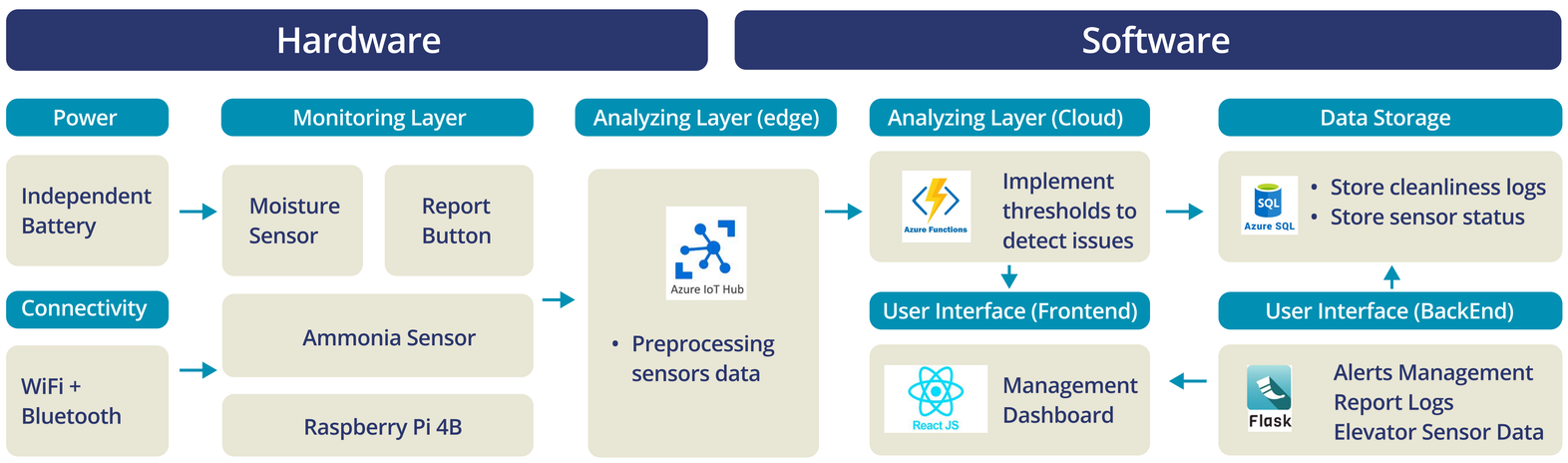


Active Alert



Report Logs

Hardware & Software Diagram



UNIVERSITY of WASHINGTON | GLOBAL INNOVATION EXCHANGE

This project is sponsored and mentored by SOUNDTRANSIT

Group 8
Jingyi Jia, Yuwei He, Chaney He
MSTI,March 2025