

# Autonomous Vehicles and Robotic Solutions in Ground Operations



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# OPERATIONAL CONTEXT



Ground handling operations comprise high-tempo processes that require the simultaneous management of speed, safety, traceability, and resource efficiency. Within this framework, it is critically important to make baggage handling, loading and unloading, transfer processes, equipment and vehicle management, operational decision-support mechanisms, and airside movements more intelligent and more predictable.

Therefore, humanoid robots and autonomous mobility solutions are becoming increasingly important for conducting field operations in a more traceable and efficient manner.



## **In Which Areas Are We Seeking Autonomous Mobility And Robotic Transformation?**

Robotic mobility and autonomous systems can be evaluated across multiple use cases in ground handling operations. In this context, the main focus areas are as follows:

- Autonomous vehicles and mobility solutions for apron and ground handling processes,
- Retrofit-based autonomy for currently used vehicles,
- Robotic systems, particularly humanoid robots, that can support baggage operations, loading/unloading, and physical airside tasks,
- Humanoid solutions for specific operational steps that are repetitive, require on-site support, or require physical presence.

# How Might We Canvas

## Who?

who are the stakeholders that get effected?

Ground Handling Teams and all operational stakeholders affected by on-site mobility and process efficiency.

## What?

what is the problem that needs to be solved?

Physical operational steps in ground handling operations, as well as processes such as on-site vehicle use, require intensive human labor.

## Why?

why is this problem worth solving?

Dependence on human labor and coordination limits operational efficiency, makes standardization more difficult, and increases physical workload.

## How?

how can this problem be eliminated?

With autonomous vehicles tailored to ground handling processes and robotic systems that can perform physical operational tasks.

### Challenge:

How might we make ground handling processes that rely on manual coordination and physical labor more efficient and safer through robotic and autonomous system technologies?