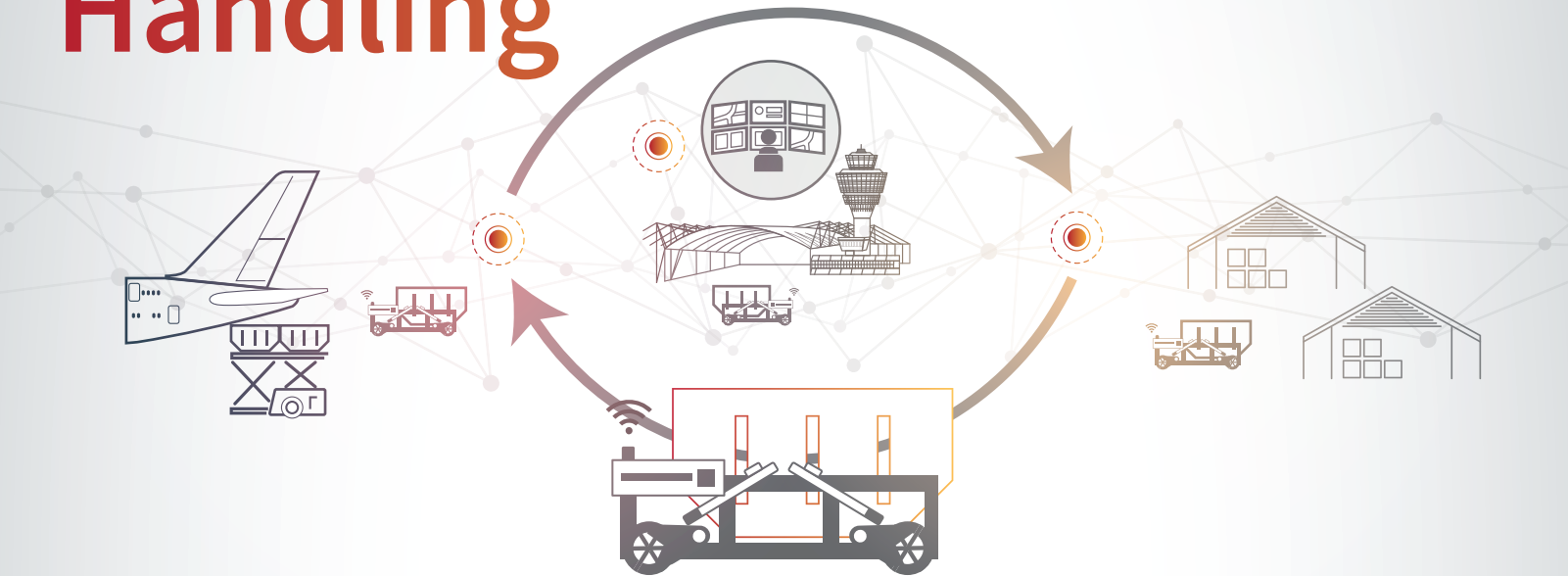


# Autonomous Air Cargo Handling



## The Challenge and Our Solution

In air cargo ground handling, robotic solutions have seen limited adoption due to the need for flexibility in corresponding processes. This contrasts sharply with seaports and manufacturing facilities, where robotic fleets have been enhancing operations for decades.

**Subproject C, Autonomous Air Cargo Handling**, addresses these challenges by integrating analyses and test results from previous DTAC subprojects, now **concentrating on the entire material flow at airports**.

### Key Initiatives Include:

- ▶ Building on previous findings from testing **five different robotic solutions** at two partner airports.
- ▶ Developing and testing a **new robotic solution alongside control software** for handling built-up air cargo containers (ULDs).
- ▶ **Simulating robotic airport fleets** to optimize material flow and alleviate investment hesitancy among stakeholders.



A short video showcasing the previous robotic DTAC tests is available on YouTube!



## Key Benefits and Expected Outcomes

By enhancing automation in air cargo ground operations, we aim to achieve measurable improvements, including:

- ▶ Identifying the potentials and limitations of state-of-the-art robotic autonomy functions in airport environments.
- ▶ Defining requirements for new robotic solutions across the entire airport process chain to ensure efficient ULD handling.
- ▶ Obtaining results and prototyping insights from lab and field testing, validating process optimization through robot deployment.
- ▶ Gaining insights into the integration of standardized communication protocols (VDA 5050) for heterogeneous robot fleets at airports.
- ▶ Determining the optimal robotic fleet size for a given number of planes or cargo to be handled.



## Partners

 **Fraunhofer**  
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 **FRANKFURT  
UNIVERSITY  
OF APPLIED SCIENCES**
 **Fraport**
 **LEIPZIG-HALLE  
AIRPORT**
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