ULD Tracking and Management

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OPERATIONAL CONTEXT

ULD (Unit Load Device) refers to standard container and pallet systems used in air cargo and baggage transportation.

ULDs are manufactured in dimensions and shapes suitable for the aircraft's cargo compartment; this ensures the correct placement, protection, and transportation of cargo.

How Are ULDs Used In Operations?

ULDs are an indispensable element of operations, jointly used by many stakeholders such as airlines, ground service providers, cargo terminals, logistics providers and maintenance organizations. They are used not only for onboard carriage but also as part of terminal, warehouse, ground handling and transfer processes.

1. **Preparation:** Loads are consolidated into a ULD in accordance with the flight plan, forming a single transport unit.
2. **Transport:** The prepared ULDs are loaded onto dollies and transported by tugs/tractors.
3. **Aircraft Loading:** ULDs are positioned in their designated aircraft locations and secured for flight.
4. **Unloading**: When the aircraft lands at the destination airport, ULDs are unloaded; the cargo is separated and directed to delivery, transfer, or onward-connection processes.
5. **Storage and Reuse:** Emptied ULDs are cleared of remaining materials, sorted into damaged and serviceable units and stored in designated areas to be ready for the next flight.

TURKISH AIRLINES TERMINAL

How Might We Canvas

Who?

who are the stakeholders that get effected?

The ULD Control Unit, Station Managers, Ground Handling Service Providers, and Cargo Units are directly impacted. Flight Operations Teams are indirectly impacted.

What?

what is the problem that needs to be solved?

Tracking the location and stock information of ULDs through different digital systems and barcode-supported processes makes it difficult to track ULDs with high accuracy.

Why?

why is this problem worth solving?

Inaccurate and incomplete stock data leads to operational disruptions, flight delays, and higher costs, and results in inefficient ULD planning.

How?

how can this problem be eliminated?

By automating end-to-end tracking of ULDs, creating a single reliable data source among stakeholders, and establishing real-time monitoring and alert systems for inventory levels.

Challenge:

How might we enable reliable global tracking of ULDs' location and inventory data, independent of manual processes and shared across all stakeholders?