GLOBAL ULD TRACER

A Seamless and Comprehensive Tracking Solution for Cargo ULDs

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Almost 35% of global cargo is transported by air, according to the International Air Transport Association (IATA). In addition, it is estimated that more than one million Unit Load Devices (ULDs) are in service for air freight operations. The investment in ULDs is expected to grow from US$ 1.98 billion in 2020 to US$ 2.67 billion in 2027 to address the growth in freight volume.

The airlines industry spends approximately US$ 330 million annually to repair ULDs and at least US$ 1 billion to replace damaged ones. Moreover, units that suffer damages at outstation locations are rarely returned to the base station on time for servicing. Further, 5%-7% of total ULDs are reported missing, which costs the airlines industry an additional US$ 50-70 million

annually. ULD planners need to ensure that the right type of ULD is available for every planned cargo load and scheduled flight. The shortage of ULDs compels operators and ground management teams to procure more units to fulfill committed freight contracts. This results in ~ 10%-15% surplus ULD inventory for a majority of carriers..
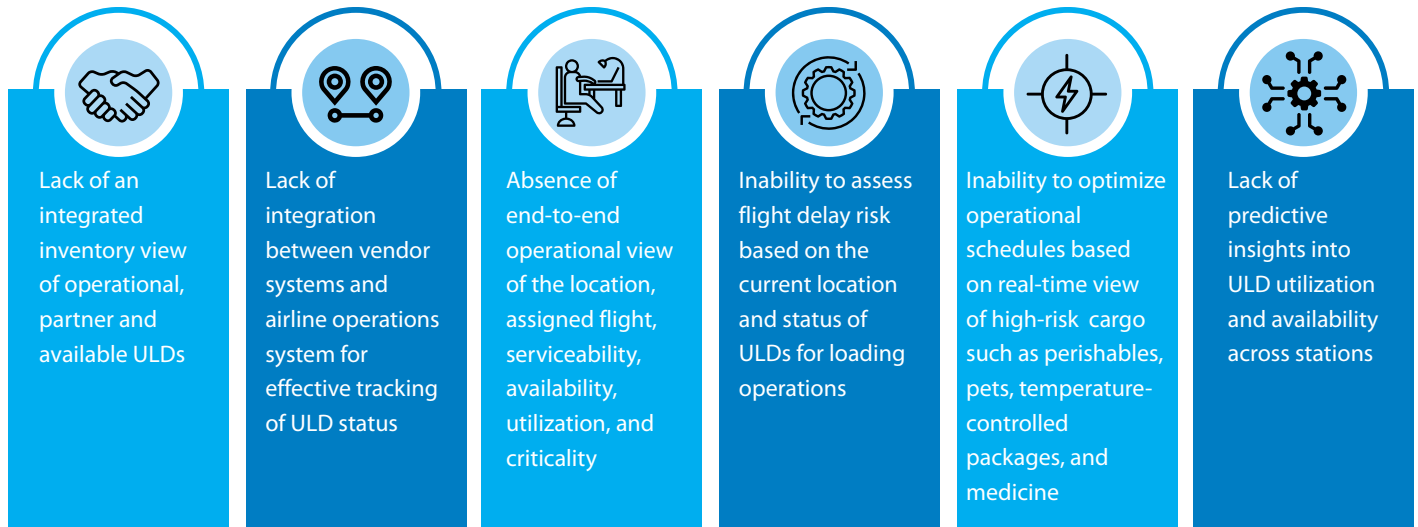
Challenges in ULD management

The lack of visibility across the network is the primary reason for over-investment and under-utilization of ULDs. While the movement of cargo is tracked throughout the journey, it often ceases after unloading. This is because tracking systems focus on items listed in airway bills, not container IDs. Empty ULDs piled up at warehouses and obscure corners

of airports remain unattended for long periods. Very often, ULDs are exchanged between freight forwarders and airlines. Multi-fold transfer between third parties at various transshipment hubs compounds the issue further. Moreover, ULDs are sometimes held by third-parties due to the non-availability of appropriate return shipments to the base location.

The imbalance in ULD inventory escalates costs for airlines. In extreme cases, non-availability of ULDs leads to cancellation of flights, and airlines are required to compensate for unplanned warehouse storage, missed connecting flights, and delay in delivery.

Causes of inefficiency in ULD management

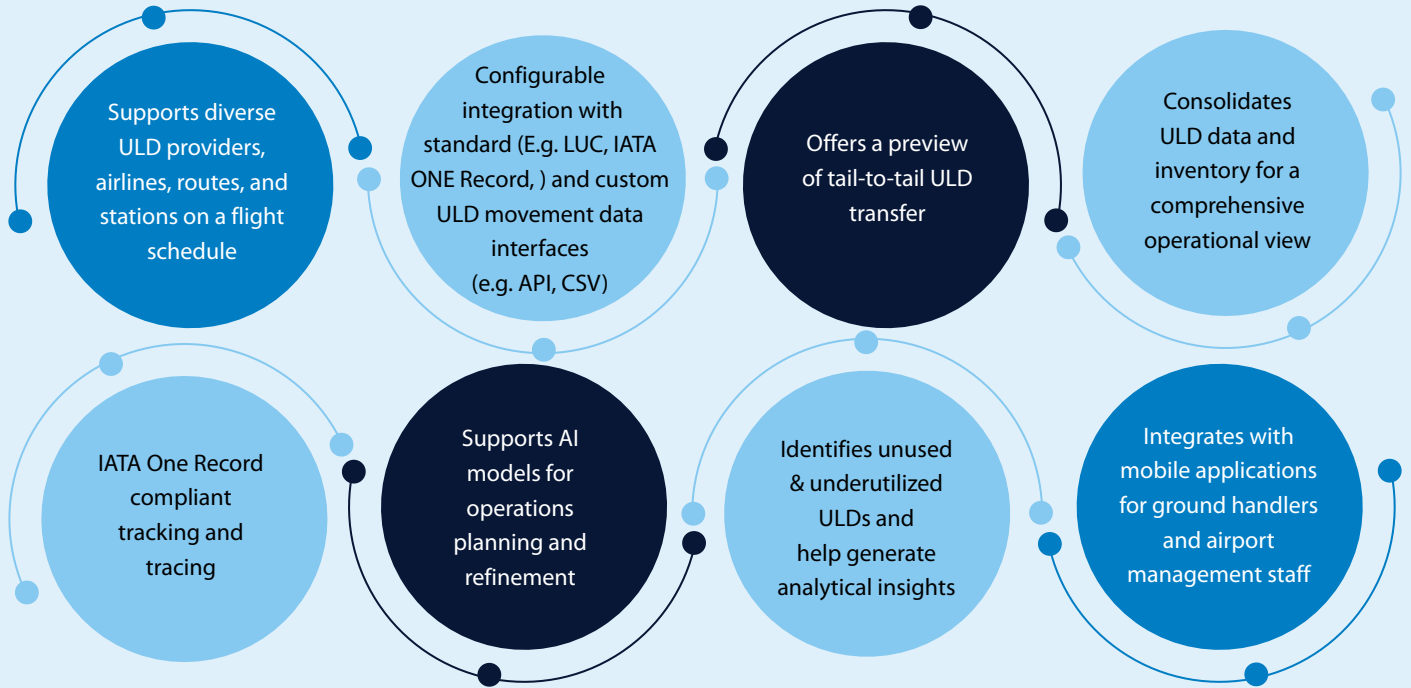| Lack of an integrated inventory view of operational, partner and available ULDs | Lack of integration between vendor systems and airline operations system for effective tracking of ULD status | Absence of end-to-end operational view of the location, assigned flight, serviceability, availability, utilization, and criticality | Inability to assess flight delay risk based on the current location and status of ULDs for loading operations | Inability to optimize operational schedules based on real-time view of high-risk cargo such as perishables, pets, temperature-controlled packages, and medicine | Lack of predictive insights into ULD utilization and availability across stations |

A global tracking solution

Airlines, freight forwarders and ULD vendors can optimize inventory and rationalize costs by tracking movement of ULDs in real time. Visibility into the 'last known location' and a holistic view of ULD status across network as well as partner stations facilitates a proactive alert system to streamline ULD management.
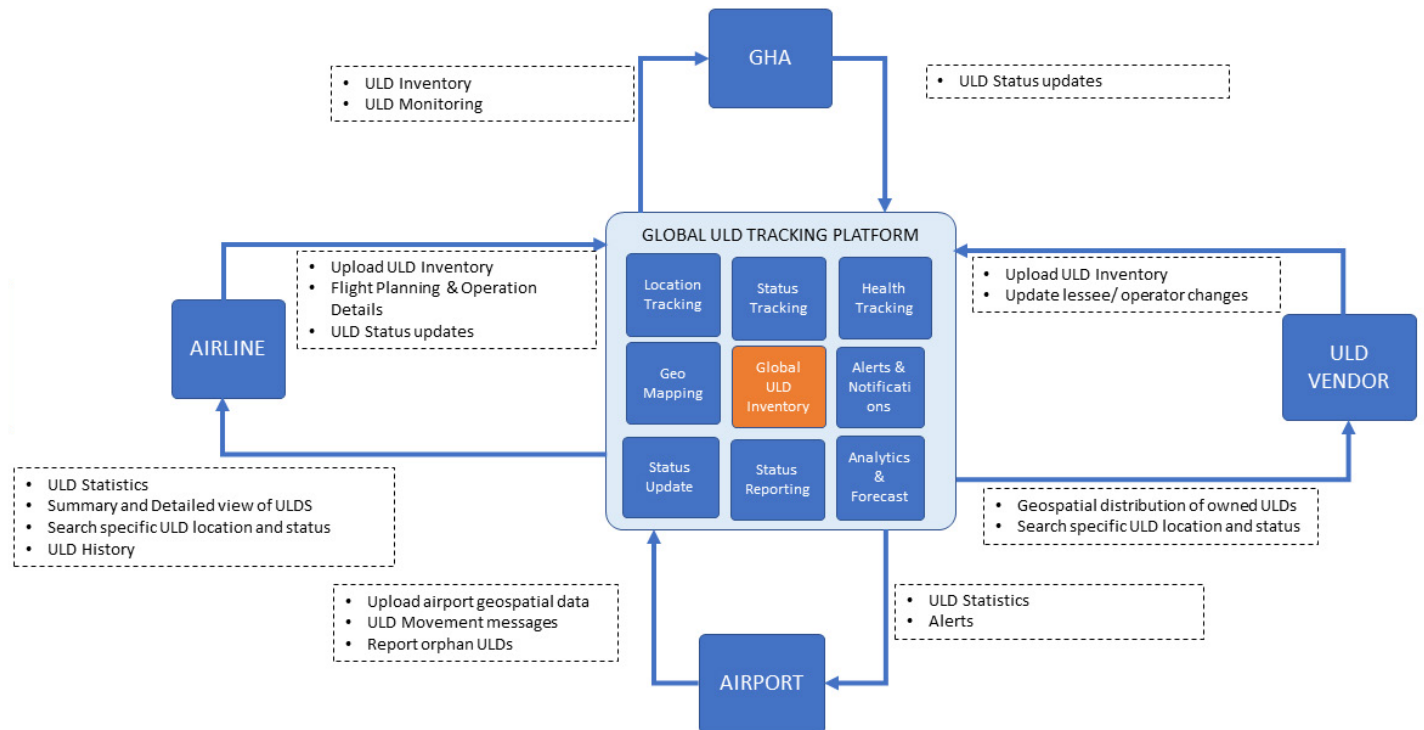
A global ULD tracking platform aggregates accurate, real-time ULD data and shares a consolidated status with stakeholders. Such a platform based on multi-tenant SaaS framework, integrates movement of each ULD between vendors, airlines and Ground Handling Agents (GHAs), and provides real-time updates on ULD status, health, condition, and location. Compliance with IATA ONE Record standard ensures

that the standardized and secured ULD data is exchanged between the global ULD Tracking platform and other stakeholders, providing a single view of the ULD data. The ability to track and trace ULDs anywhere in the world enables airlines and vendors to minimize ULD replacement costs as well as collateral damage due to nonavailability of ULDs at airports.

Features of a global ULD tracing solution

Supports diverse ULD providers, airlines, routes, and stations on a flight schedule

Configurable integration with standard (E.g. LUC, IATA ONE Record,) and custom ULD movement data interfaces (e.g. API, CSV)

Offers a preview of tail-to-tail ULD transfer

Consolidates ULD data and inventory for a comprehensive operational view

IATA One Record compliant tracking and tracing

Supports AI models for operations planning and refinement

Identifies unused & underutilized ULDs and help generate analytical insights

Integrates with mobile applications for ground handlers and airport management staff

Global ULD Tracking Platform – Operational Model

GHA

- ULD Inventory
- ULD Monitoring

- ULD Status updates

GLOBAL ULD TRACKING PLATFORM

Location Tracking	Status Tracking	Health Tracking
Geo Mapping	Global ULD Inventory	Alerts & Notifications
Status Update	Status Reporting	Analytics & Forecast

AIRLINE

- Upload ULD Inventory
- Flight Planning & Operation Details
- ULD Status updates

- ULD Statistics
- Summary and Detailed view of ULDS
- Search specific ULD location and status
- ULD History

ULD VENDOR

- Upload ULD Inventory
- Update lessee/ operator changes

- Geospatial distribution of owned ULDs
- Search specific ULD location and status

AIRPORT

- Upload airport geospatial data
- ULD Movement messages
- Report orphan ULDs

- ULD Statistics
- Alerts

Wireless technology-based tracking solutions address challenges of the air cargo industry effectively. Radio Frequency Identification (RFID) solutions track the location of ULDs accurately but are unviable due to high infrastructure cost. GPS and GSM-based solutions require continuous battery backup due to excessive power consumption. The safety concerns of Bluetooth Low Energy (BLE) devices are preventing large-scale installation at airports.

Wireless sensors and tags provide the most effective solution. Sensors can be attached to ULDs and other loading assets for accurate and automated tracking. It allows airlines to share real-time ULD data with partners across the network. In addition to real-time visibility into ULDs and consolidated tracking, advanced platforms recommend allocation of ULDs from the nearest airports in the event of a shortage at any given airport. Further, an interface established with the ULD servicing company enables GHAs and airlines to track ULDs returned to operations after repair and maintenance services.

Wireless ULD tracking platforms integrate ULD service providers, airlines, GHAs, and ULD suppliers to enhance global freight operations and rationalize costs across the value chain.

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