Business Context

Airline equipping all ULDs with tracking devices (daily updates).

Optimize ULD utilization via forecasting and allocation.

Objectives

Forecast ULD locations using geolocation, flight schedules, and luggage demand.

Recommend ULD allocation strategies (including empty repositioning / deadheading).

Key Functionalities

Tracking & Monitoring: geolocation dashboard, daily updates.

Forecasting Engine: historical + seasonal + bookings + external signals (weather, events, disruptions).

Recommendation Engine: per-flight ULD type mix, shortage prevention, network repositioning.

What-if simulations and configurable rules/thresholds.

Data Inputs

Internal: ULD tracking, flight schedules (planned + changes), ticketing/booking data, historical luggage by route.

External: weather forecasts, event calendars, disruption alerts (strikes, ATC, closures).

Outputs & Deliverables

Daily forecast of ULD demand/supply by airport and route.

Alerts for projected shortages/surpluses.

Recommended ULD loading plan per flight.

Deadheading/repositioning plan with cost–benefit.

Ops dashboards and exportable reports.

Constraints & Assumptions

Geolocation updates are once every 24 hours (baseline).

Multiple ULD types and statuses (in-service, OOS, damaged).

Integrations with booking, ops, and MRO systems.

KPIs / Success Metrics

Reduction in delays caused by ULD unavailability.

Lower deadheading spend per available ton-km.

Forecast error (MAPE) for ULD demand by station/route.

On-time departure % for baggage-related holds.

Clarifying Questions

What booking and flight-scheduling systems are in use (API access)?

Do we have historical baggage-load data by flight/route/season?

Is there a ULD master (types, counts, constraints, special containers)?

Should the system track and predict ULD maintenance/repair cycles (OOS)?

Objective trade-offs: cost vs. resilience/safety stock?

Include cargo volumes in demand forecasts?

Planning horizon: day-of-ops, 7-day, 30-day?

Primary users: network ops center, stations, or both?

Manual override workflow needed? audit trail?

Integrate with load-planning tools vs. decision-support only?

Success criteria/KPIs to sign-off MVP?

Budget and timeline constraints for MVP/Phase 1?