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Maintenance scheduling and predictive analytics

This workflow automatically monitors aircraft component health data, predicts maintenance needs using AI analytics, and schedules optimal maintenance windows while ensuring regulatory compliance and parts availability.

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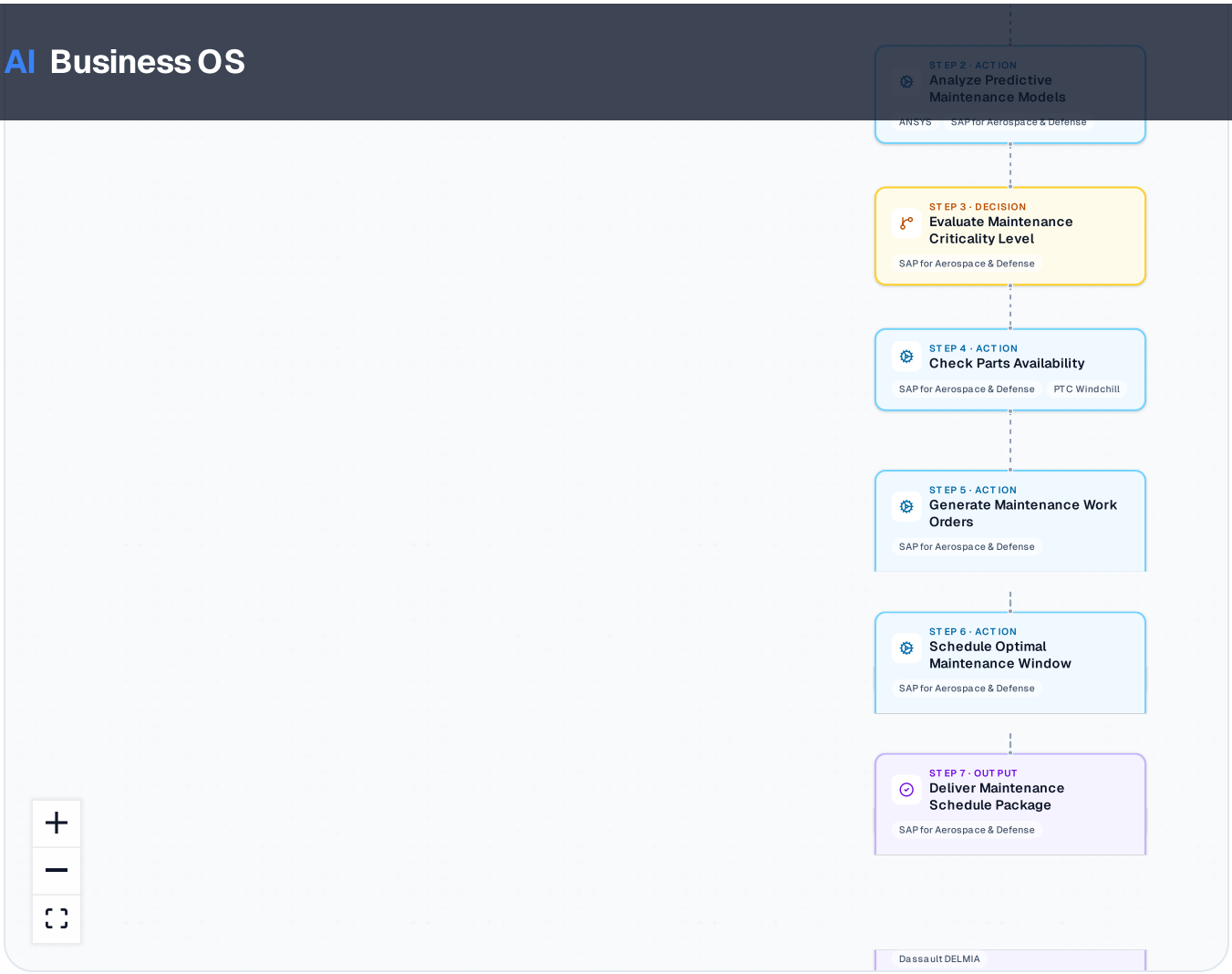
WORKFLOW TRIGGER

Aircraft sensor data indicates component performance threshold deviation or scheduled health check interval reached

Visual Flow

Each node represents an automated step. Connections show how data and decisions move through the workflow.



Step-by-Step Breakdown

Detailed explanation of each automated stage in the workflow.

1

TRIGGER

Detect Component Health Alert

Aircraft sensors transmit real-time performance data indicating component wear patterns or threshold deviations. System captures and validates

incoming telemetry data for analysis.

ANSYS SAP for Aerospace & Defense

2

ACTION

Analyze Predictive Maintenance Models

AI algorithms process historical performance data and current sensor readings to predict component failure probability and remaining useful life. Advanced analytics generate maintenance recommendations with confidence intervals.

ANSYS SAP for Aerospace & Defense

3

DECISION

Evaluate Maintenance Criticality Level

System determines if predicted maintenance is critical (immediate action required), scheduled (planned maintenance window), or monitoring (continued observation needed). Decision branches workflow based on urgency assessment.

SAP for Aerospace & Defense

4

ACTION

Check Parts Availability

System queries inventory management and supplier databases to verify required component availability and lead times. Automatically initiates procurement processes if parts need ordering.

SAP for Aerospace & Defense PTC Windchill

5

ACTION

Generate Maintenance Work Orders

Creates detailed maintenance work packages including required parts, labor hours, certified technician assignments, and regulatory compliance checklists. Integrates with maintenance planning systems.

SAP for Aerospace & Defense | Dassault DELMIA

6

ACTION

Schedule Optimal Maintenance Window

AI optimization engine schedules maintenance based on aircraft utilization, maintenance bay availability, technician schedules, and operational priorities. Minimizes aircraft downtime while ensuring safety compliance.

SAP for Aerospace & Defense | Dassault DELMIA

7

OUTPUT

Deliver Maintenance Schedule Package

Generates comprehensive maintenance schedule with work orders, parts lists, compliance documentation, and performance tracking dashboards. Distributes to maintenance teams and operations planning.

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Outputs

- Optimized maintenance schedules with minimized aircraft downtime
- Predictive analytics reports with component failure probability assessments
- Automated work orders with parts procurement and technician assignments

Key Metrics

- Mean Time Between Failures (MTBF) improvement percentage
- Aircraft availability rate
- Maintenance cost per flight hour

Tools & Integrations

- ANSYS
- SAP for Aerospace & Defense
- PTC Windchill
- Dassault DELMIA

AI Business OS