

# TRANSFORM EXPERIENCE. TRANSFORM BUSINESS.

Predictive Services for  
Aircraft Engines with SAP  
Cloud Platform and IoT

# MRO in Aerospace Industry is Moving Towards Predictive Maintenance

## Current State

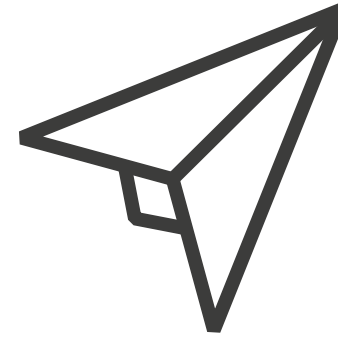


- All reporting, diagnosis, planning and servicing happen on ground
- Siloed and disparate resources/systems
- Unavailability of spare- parts and skilled labor
- Manual or basic automation procedures and documentation
- Costly delays and possible cancellations
- Interrupted Airplane Service Availability



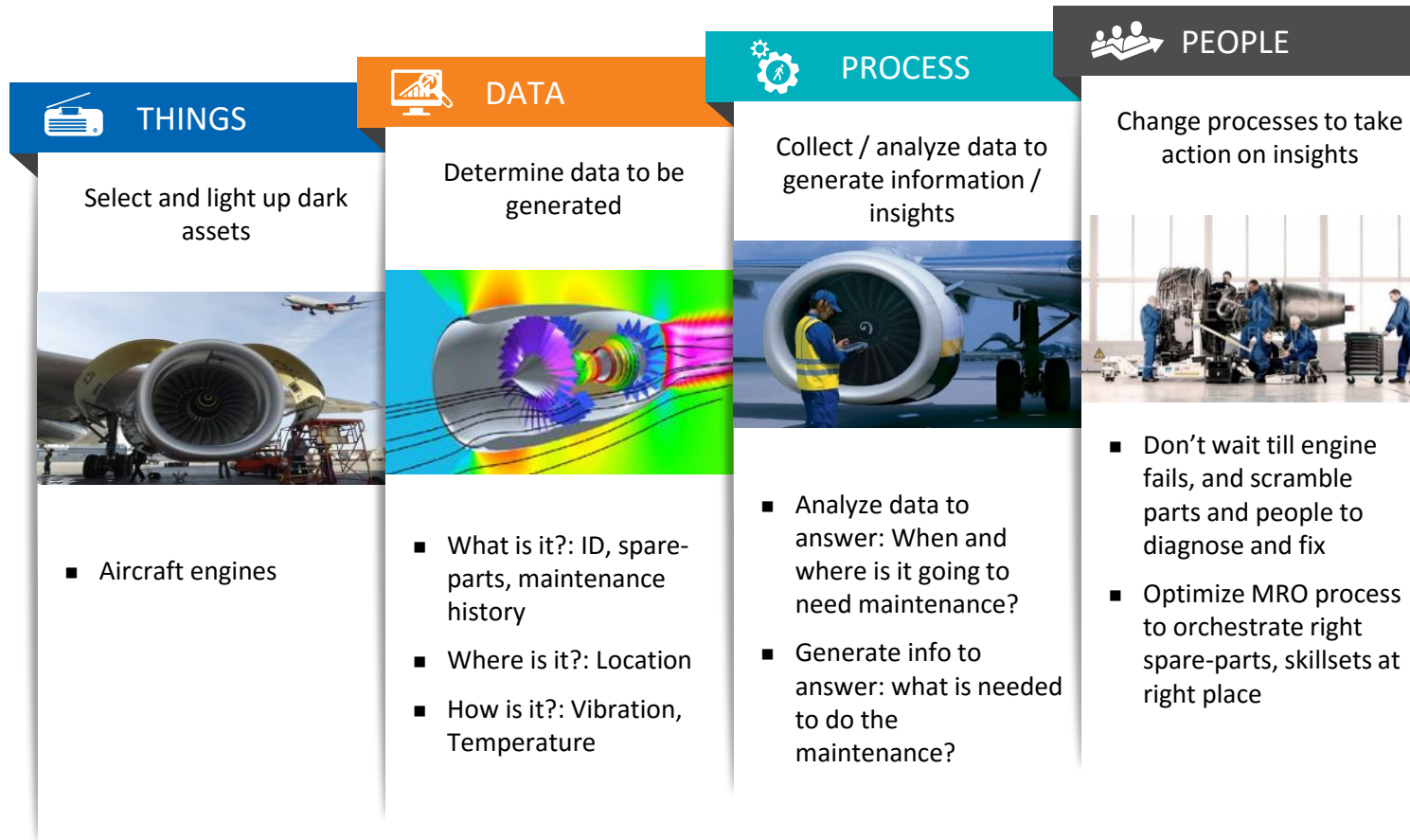
“The daily cost of a grounded A380 Airbus to be **\$1,250,000**”

- Source Airbus China



“ Global MRO spend in 2014 was valued at **\$62.1billion**, excluding overhead. This represented around **9%** of total operational costs. With a **3.8%** increase per annum, the spend is estimated to reach **\$90 billion** in 2024. ”

# IoT Accelerates the Pace to the Future



- ⊙ Predictive fault reporting, diagnosis, planning
- ⊙ Light solution (e.g. micro services) with ability to integrate with existing systems
- ⊙ Role-based reports and dashboards
- ⊙ Integrated resources (human as well as material) with auto assignment to a maintenance activity
- ⊙ Optimized maintenance expenditure and aircraft services

## KEY TO THE VALUE CREATION:

IoT implementation that goes beyond just connecting things but transforms business processes and people practices

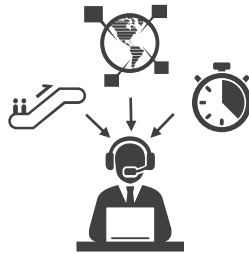


# Solution: Predictive Maintenance, Track and Trace

Predictive Analytics + Track and trace for **On Time Delivery, Reduced Maintenance & Aircraft On Ground time.**

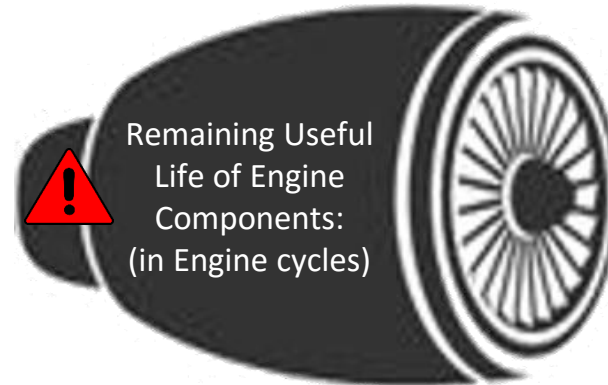
1

Data is gathered from various sources such as Aircraft, GIS, Weather, Histogram, Airport/Hangars which is analysed in the cognition enabled predictive maintenance model



2

Cognitive event modeling predicts very low Remaining Useful Life(RUL) for an Engine Part.



3

Global Field Support & Analysis Center and spare part supplier is notified about the event. System recommends optimized steps to coordinate movement of required parts and technical resources based on :-

- aircraft schedule
- severity of predicted event
- parts
- technician location



4

Spare parts are identified and shipped. Engineer(s) with right skillset is /are auto assigned for the maintenance activity



5

Technician fixes the event with the help of detailed information and required spare parts provided to him prior to the predicted failure time.



6

Maintenance is completed in a shorter period of time reducing the maintenance/ Aircraft on Ground (AOG) time.

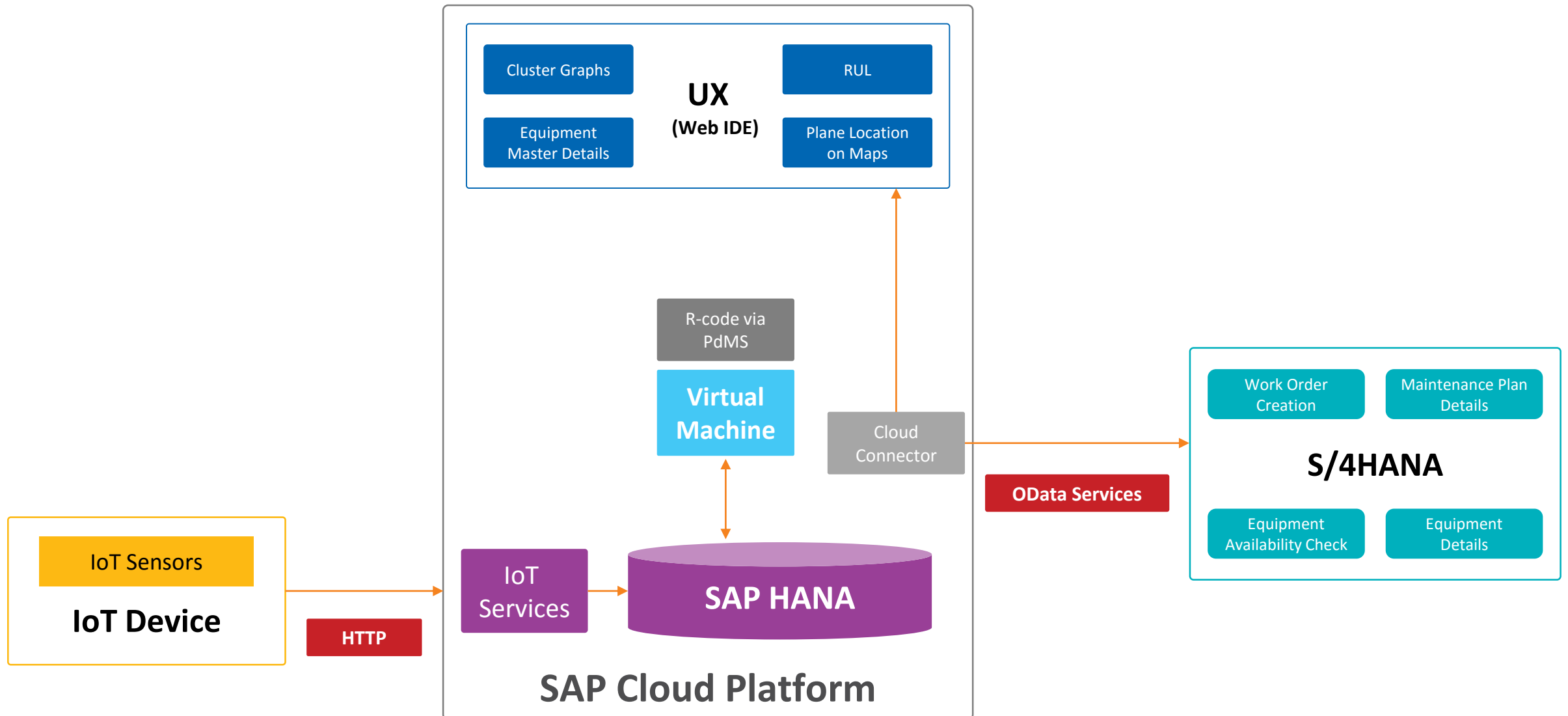


7

Airplane is ready to do what it is meant to do. Fly in the skies. Prevent/minimize the requirement of replacement airplane.



# HCL Aircraft Predictive Analytics - Solution Architecture



# ***HCL***

*Relationship*<sup>TM</sup>  
BEYOND THE CONTRACT

**\$7.3** BILLION ENTERPRISE | **115,000** IDEAPRENEURS | **32** COUNTRIES



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