Leveraging Data Analytics for Digital Strategy in Commercial Aviation

Airbus

Jayant SEN GUPTA
Central Research and Technology – Data Science
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Who? Where? Why?

WHO AM I?
• PhD in Computational Mechanics
• Applied Mathematics Department of Airbus Research Center
  ➢ Uncertainty Modelling & Propagation, PHM
• Operational Intelligence Department
  ➢ PHM and Data Science

WHERE DO I WORK?
• Airbus since 2005
• Central Research & Technology, part of Corporate Technical Office
• Located in Toulouse, France

WHY AM I HERE?
• PHM for 8 years
• Developed predictive solutions with Airbus Customer Services (AiRTHM)
• Moved towards Data Science 4 years ago
• Involved in many (Big) Data Analytics initiatives
What?

1. Pre-Departure Check
   Monitoring of selected sensible systems before the aircraft leaves the gate
   NEW

2. Flight Watch
   Continuous monitoring of critical messages to identify root cause during the flight

3. Predictive maintenance
   Long term and proactive follow-up of selected critical systems to anticipate potential failures

4. Preventive maintenance
   Prevent unscheduled events by monitoring and filtering of all preventive maintenance messages

Experience at Airbus

Multiple events (recurring problem)

Single event (severe impact)

Zero event (anticipate all OI)

Oi: Operational Interruptions
Get more data

Currently…
• ACARS
• Full Flight Data at station (A350, A380)
• Wireless
• Airline data (Ops, Tech logs, …)
• Supplier data (Shop Findings…)

Airbus Data Lake

FOMAX

Legacy

Raw Data ➔ Health Indicator ➔ Monitoring ➔ Alerts / Advice
Building Health Indicators / Damage Index

Multi-Functional Teams
- Health Engineer
- Data Analyst
- System Specialist
- IT Engineer
- Suppliers (starting)

1. Expertise-based
2. Automated Analysis
3. Multi-Functional Teams
4. Algorithms complexity
Integration with Operator / MRO

Maintenance Control Center (MCC)

Line Maintenance / Hangar Maintenance (MRO)

FUTURE

Advice sent to A/L

Spare Management

Dynamic Maintenance Planning

Optimization of Flight Ops

Alliance with MRO

Intimacy with Airlines
New ways of working with Skywise

\[ \text{Trust} = \frac{\text{Credibility} \times \text{Reliability} \times \text{Intimacy}}{\text{Self Orientation}} \]

- Take advantage of skills and knowledge of all stakeholders
- Business model
  - Shared value
- Better Integration with Operations
- Multi Functional Teams with Suppliers
Thank you