Make Machine-Learning and Predictive Maintenance Part of Your Daily Operation

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Data-Informed Decision-Making

Data-informed insights broaden perception, deepen understanding and illuminate solutions.

Reduce Risk | Decrease Costs | Increase Performance

Analytics enable organizations to optimize operations and better prepare for the future.
Keys to Data-Driven Insights

**DATA**

30X
more data on newest wide bodies than previous generations

**PEOPLE**

T to π
Broad engineering skills and deep domain knowledge + data science expertise

**TECHNOLOGY**

Innovation
Analytics, machine learning, artificial intelligence
Keys to Data-Driven Insights

DATA

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OPPORTUNITIES

Predictive maintenance
Fuel efficiency
Emissions reduction
Enhanced safety
Increased fleet reliability

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**TECHNOLOGY**
- **Innovation**
  - Analytics, machine learning, artificial intelligence

**CHALLENGES**
- Time-consuming data processing
- Inconsistent methods and tools
- Manual curation and distribution
- Duplicative efforts
- Dated, complicated analysis tools
Predictive Maintenance Objective

Identify the optimum time to intervene to prevent unscheduled maintenance and maximize usable condition.

- Leverage data to accurately predict component failure
- Schedule proactive maintenance to maximize operational efficiency
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Steps for Effective Predictive Maintenance

**PREDICT**
What will happen?
Develop and deploy prognostics to identify and prevent future issues

**ANALYZE**
What is happening?
Identify aircraft and fleet issues and analyze solution effectiveness

**ACT**
Take prescribed mx action to minimize or avoid disruption

**ALERT**
How and when to act?
Learn when and how to address upcoming needs

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Boeing Predictive Maintenance Solutions

**ANALYZE**
- **AHM**
  - Boeing analysis of global fleet data to identify trends

**PREDICT**
- **AHM**
  - AHM Custom Analysis
  - AHM Custom Alerts

**ALERT**
- **AHM**
  - AHM Custom Alerts
  - AHM Dashboard
  - Central repository and distribution of maintenance alerts

**ACT**
- **TB**
  - Toolbox - Document Management System
  - Cloud / mobile troubleshooting & procedural task information

**Flight Data Analytics**
- **SSA**
  - Self-Service Analytics
  - Self-directed analysis and benchmarking of performance

**Insight Accelerator**
- Tailored prognostics developed by customer using Augmented Analytics
Boeing Predictive Maintenance Solutions

**ANALYZE**

- **AHM**
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- **AHM Custom Analysis**

**PREDICT**

- **AHM**
  - Thousands of predictive alerts generated by Boeing

- **AHM Custom Alerts**

**ALERT**

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  - Central repository and distribution of maintenance alerts

- **AHM Dashboard**

**ACT**

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  - Cloud / mobile troubleshooting & procedural task information

**Flight Data Analytics**

- **Self-Service Analytics**
  - Self-directed analysis and benchmarking of performance

**Flight Data Analytics - Customer-driven**

- **Insight Accelerator**
  - Tailored prognostics developed by customer using Augmented Analytics
Augmented analytics is the use of enabling technologies such as machine learning and AI to assist with data preparation, insight generation and insight explanation ...

It also augments the expert and citizen data scientists by automating many aspects of data science, machine learning, and AI model development, management and deployment.”

~ Gartner
Insight Accelerator leverages Augmented Analytics to guide the Engineering Analyst in discovering, testing, and deploying prognostic algorithms for predictive maintenance.
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- **Fuse** historical full flight data, maintenance actions, and other data sources
- **Analyze** thousands of flights
- **Develop** prognostic algorithms
- **Test, tune, and compare** multiple prognostic algorithms against historical data
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- **Fuse** historical full flight data, maintenance actions, and other data sources
- **Analyze** thousands of flights
- **Develop** prognostic algorithms
- **Test, tune, and compare** multiple prognostic algorithms against historical data
- **Deploy** alerts for optimal maintenance
Boeing Predictive Maintenance Solutions

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- SSA - Self-Service Analytics
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Flight Data Analytics

Customer-driven

- SSA - Self-Service Analytics
  - Boeing-driven Boeing Predictive Maintenance Solutions

- AHM - AHM Custom Analysis
  - Boeing Predictive Maintenance Solutions

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The foundation of analytics empowerment

**Faster Time to Insight**

“Analysis projects that used to take us months to complete can now be done in a few days.”
- *Insight Accelerator Customer*

**More Insights**

- Higher rate of prognostic discovery from the analysis team

**Higher Quality Insights**

- Prognostics operationalized with over 90% precision and recall
- Component inspection costs reduced by over 80%
The foundation of analytics empowerment

Secure, authorized data connectivity with governance

Data analytics tools and applications for optimizing operations

Software applications designed to boost individual and group performance

Organizational processes designed to maximize the ROI for the Analytics Empowered Airline