BOEING

Global Services

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

Angela Saffin

Portfolio Leader, Analytics Solutions, Digital Aviation Solutions

Connected Aviation Intelligence Summit 2023

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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.

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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

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OPPORTUNITIES

Predictive maintenance

Fuel efficiency

Emissions reduction

Enhanced safety

Increased fleet reliability

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CHALLENGES

Time-consuming data processing

Inconsistent methods and tools

Manual curation and distribution

Duplicative efforts

Dated, complicated analysis tools

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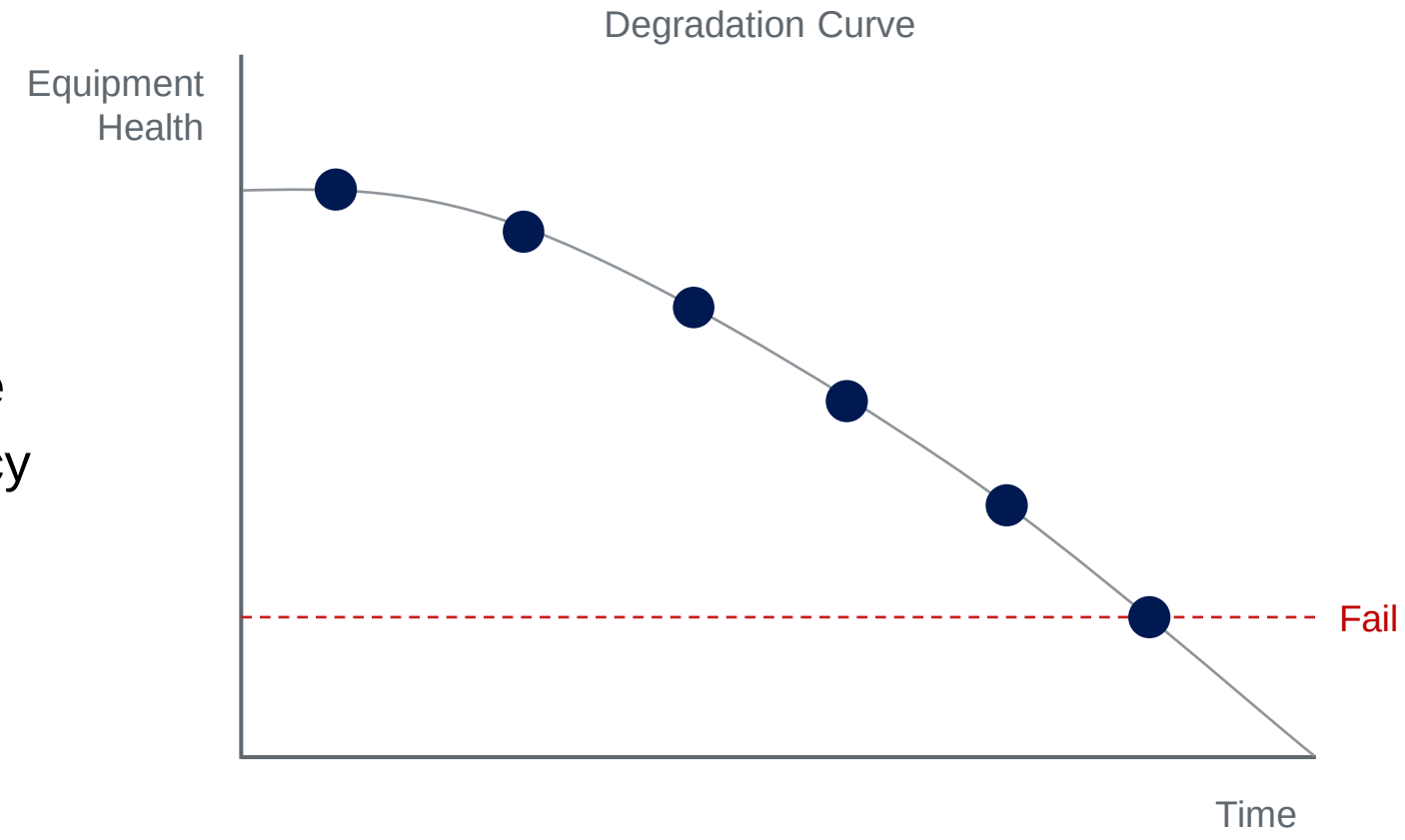
Predictive Maintenance Objective

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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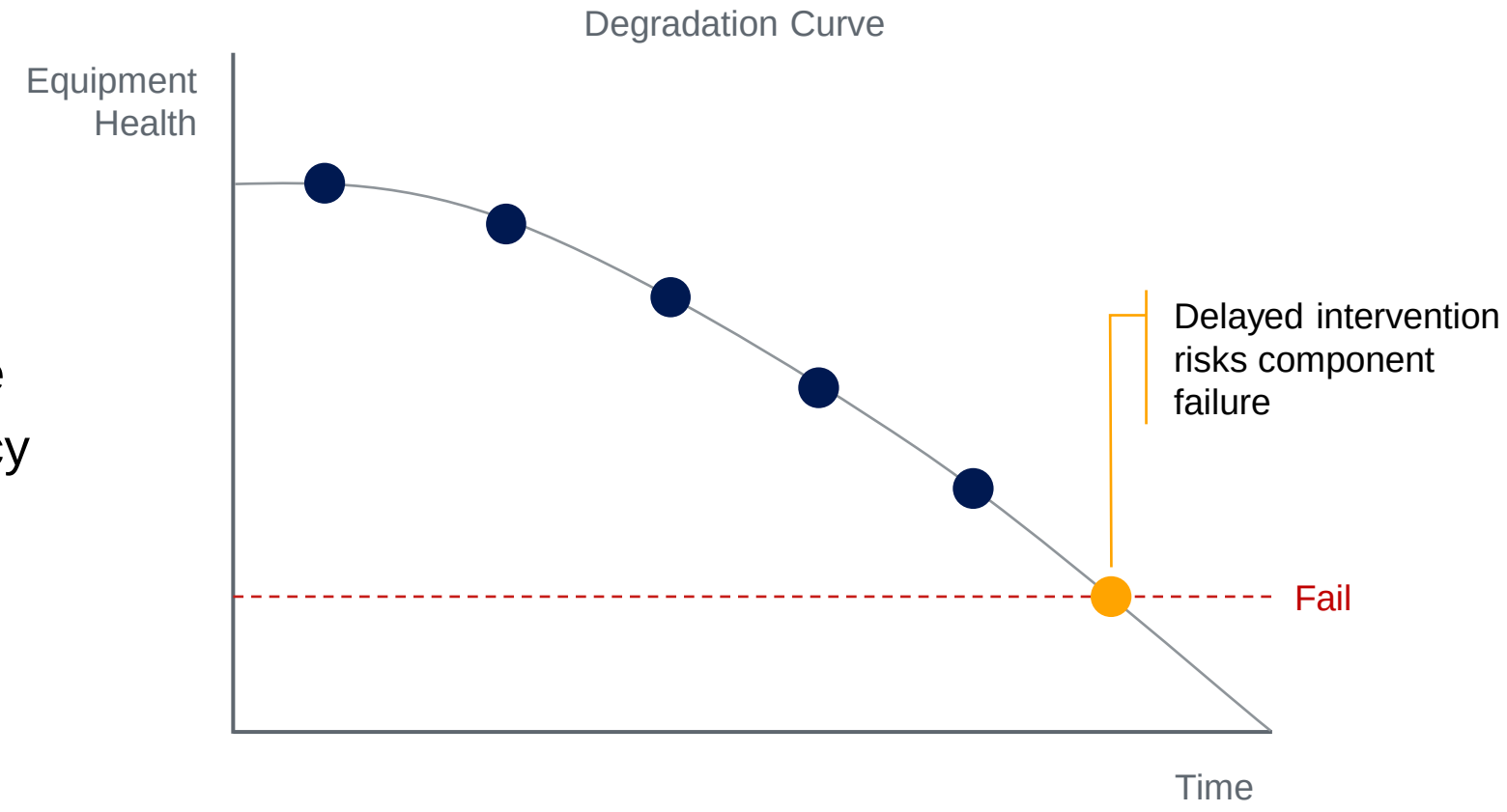

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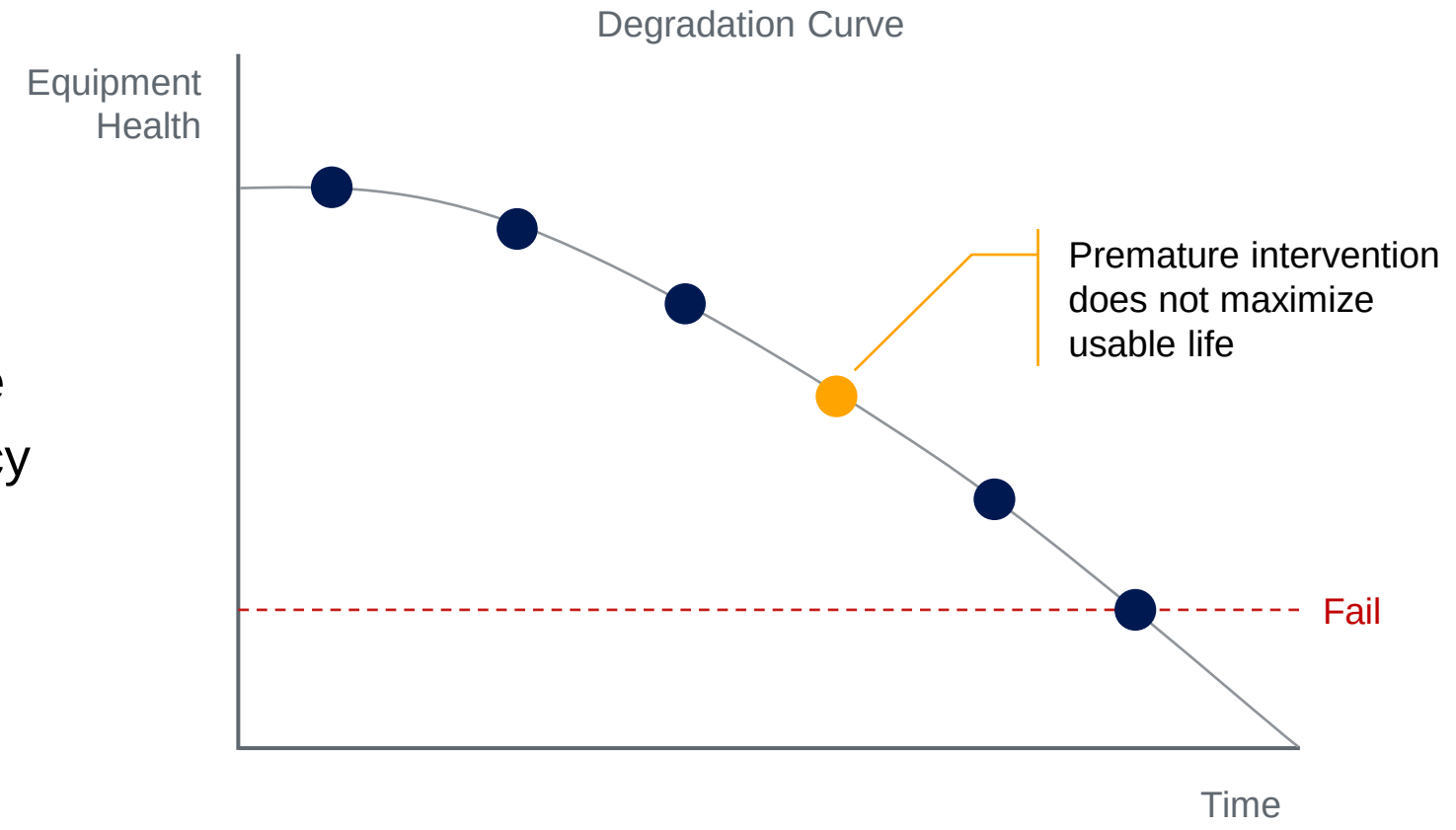

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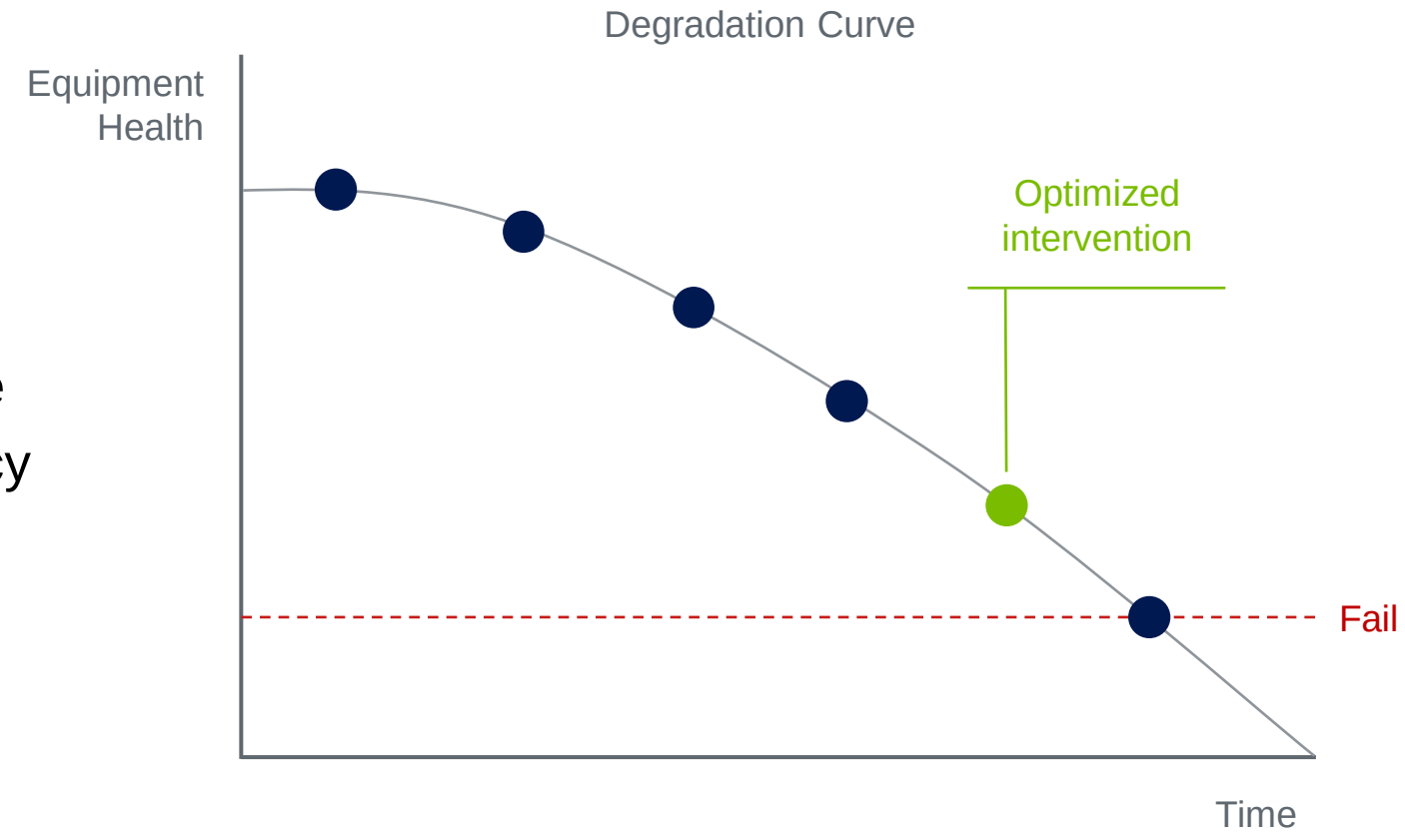

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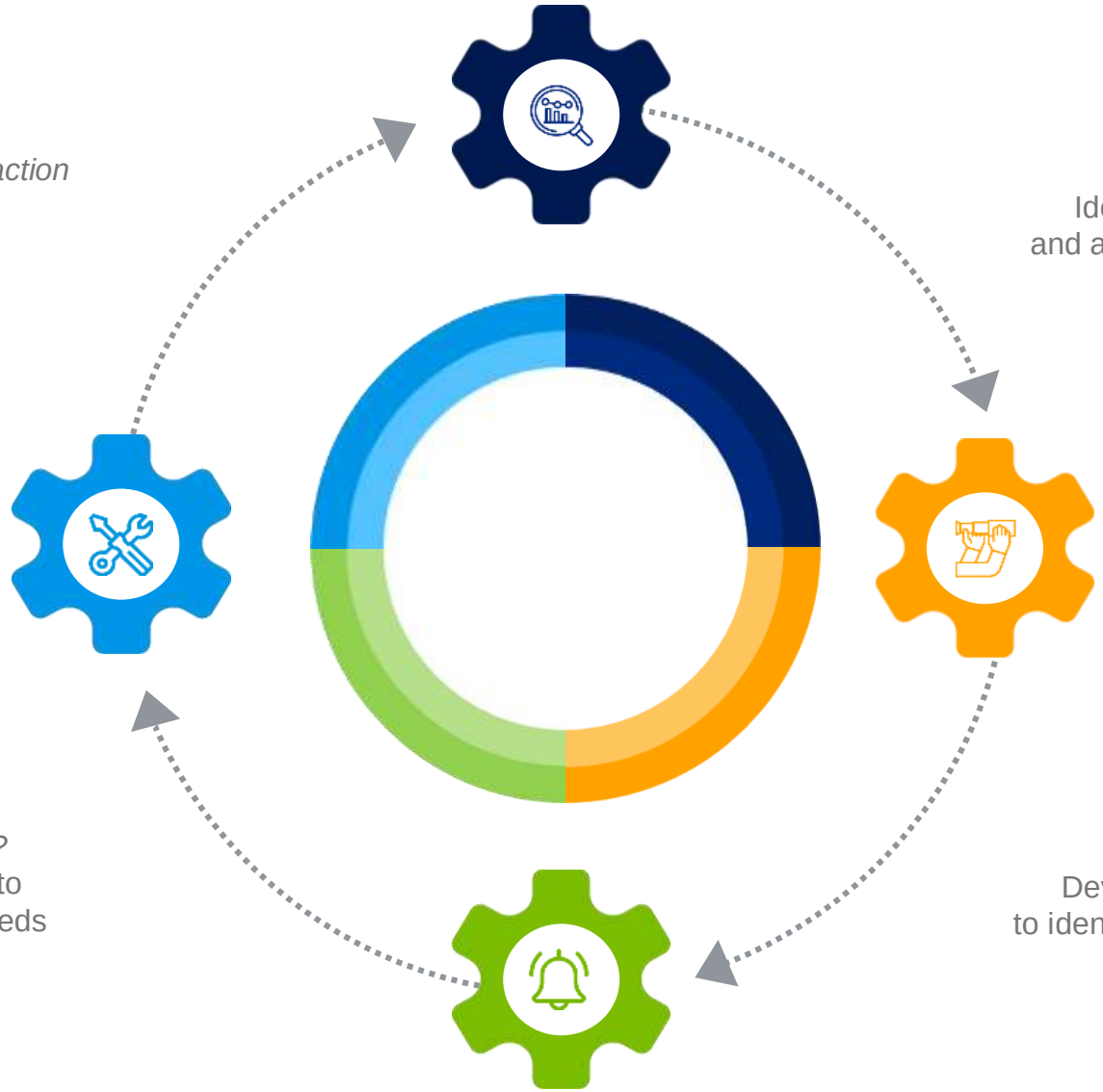
Steps for Effective Predictive Maintenance



Maintenance Engineer

ACT

Take prescribed mx action to minimize or avoid disruption

ANALYZE

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

Reliability Engineer

Tech Services Engineer

ALERT

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

PREDICT

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

Engineering Analyst

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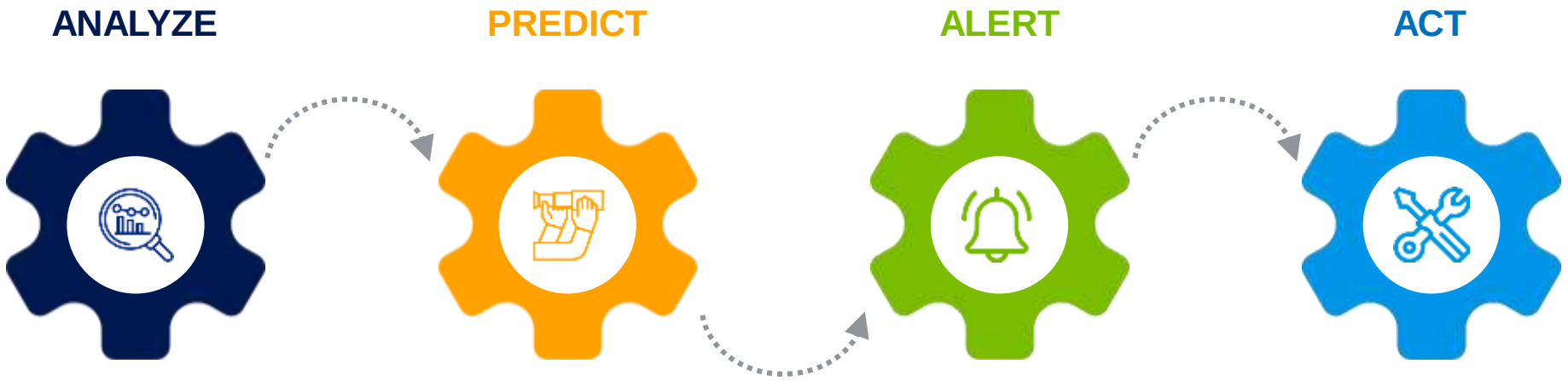
Boeing Predictive Maintenance Solutions



AHM-CAA
Boeing-driven

AHM — AHM Custom Analysis
Boeing analysis of global fleet data to identify trends

AHM — AHM Custom Alerts
Thousands of predictive alerts generated by Boeing

AHM — AHM Dashboard
Central repository and distribution of maintenance alerts

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

Flight Data Analytics
Customer-driven

SSA — Self-Service Analytics
Self-directed analysis and benchmarking of performance

IA — Insight Accelerator
Tailored prognostics developed by customer using Augmented Analytics

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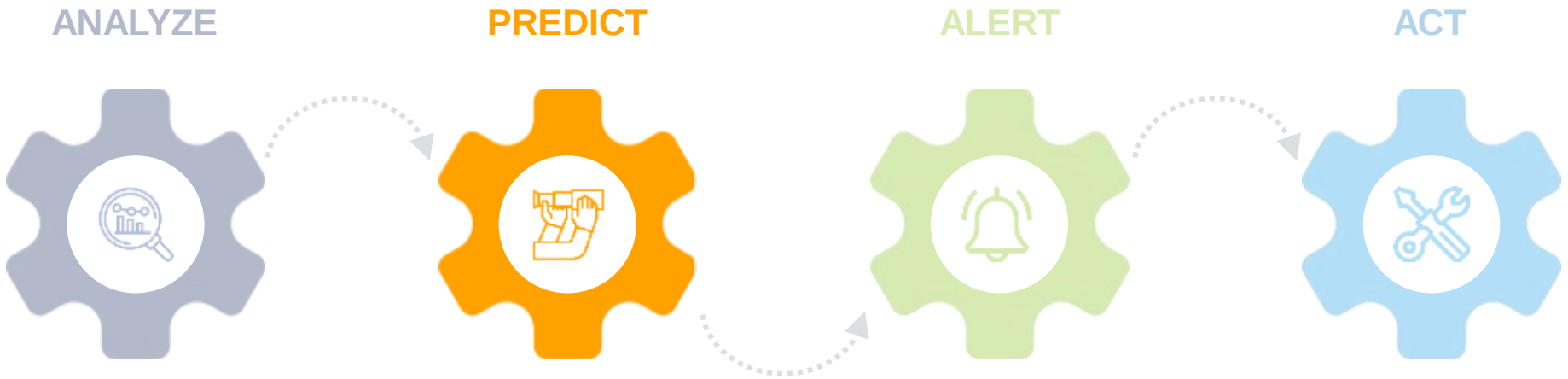

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Data-Empowered Airline

> 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

IA

Insight Accelerator leverages Augmented Analytics to guide the Engineering Analyst in discovering, testing, and deploying prognostic algorithms for predictive maintenance.

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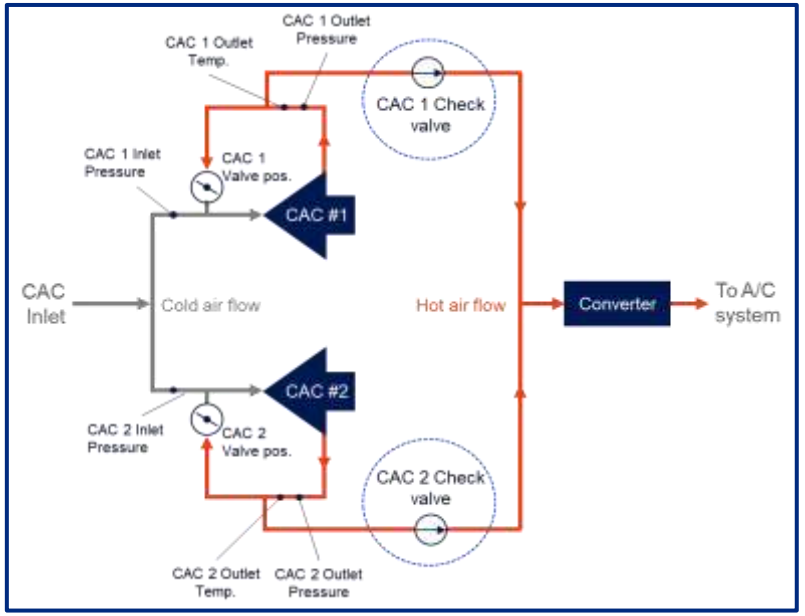
Develop prognostic algorithms



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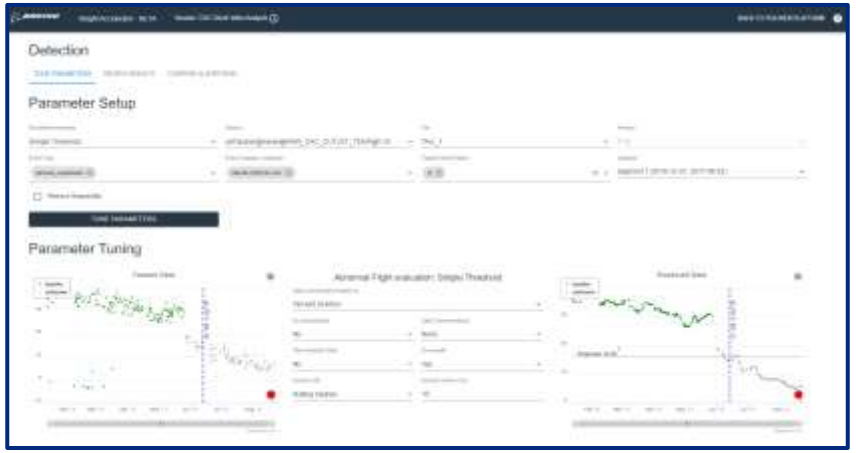
Develop prognostic algorithms

Test, tune, and compare multiple prognostic algorithms against historical data



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Develop prognostic algorithms

Test, tune, and compare multiple prognostic algorithms against historical data

Deploy alerts for optimal maintenance

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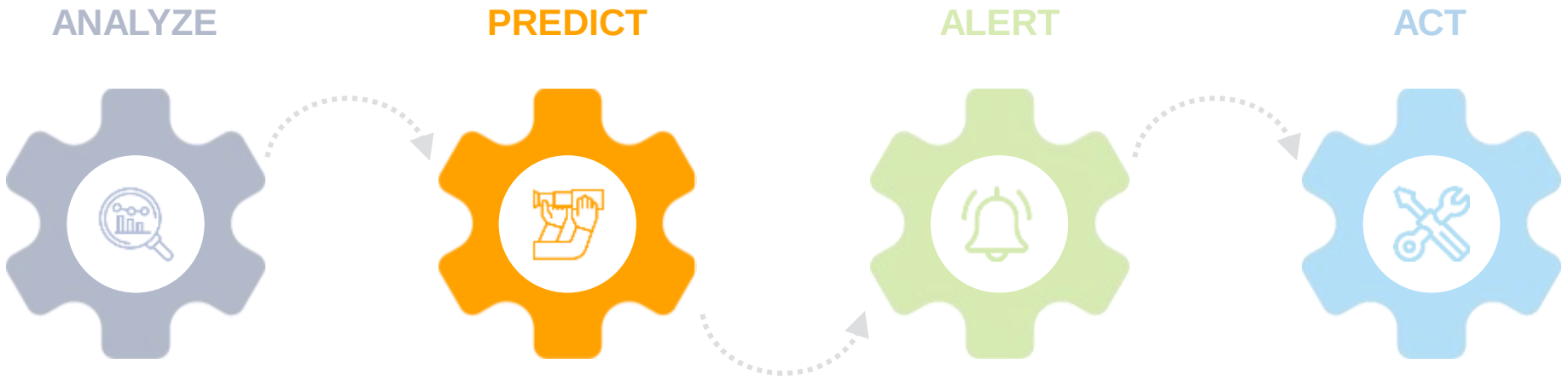

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The foundation of analytics empowerment

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%

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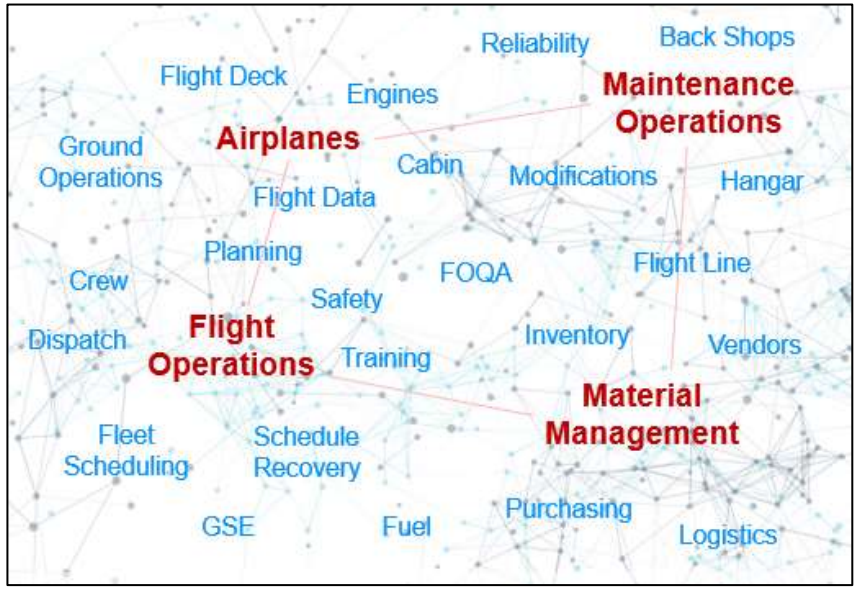

Secure, authorized data connectivity with governance

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

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