



# Asset Leadership Network

Market Perspectives on Asset Management 4.0

DECEMBER 2, 2019

# Agenda

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BCG credentials

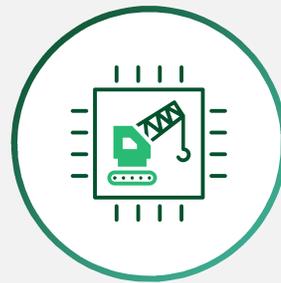
# Introductions



Leading BCG Public Sector, Financial Institutions industry verticals for Core Tech and Digital



Leader in Army National Guard (Armor, Infantry, Cyber)



Experienced professional in Digital / IT Asset Management

Matthew Leybold  
Boston Consulting Group  
Core Technology and Digital  
NYC



Excited to partner with US Federal Government thought leaders!

AM 4.0 represents the **evolution** towards a more **data-oriented decision-making process**, to improve asset performance and productivity



## = Operations + Analytics + Digital

- Lean Operations
- Operations Excellence

- Predictive Models
- Machine Learning & AI
- IoT processing

- UI/UX interfaces
- Digital fronts

● ————— Focus areas ————— ●



Decisions based on simulations/predictions and AI/machine learning vs. on human experience and historical trends



Business optimization based on simulated outcomes



Better asset health control thanks to new data sources and detection systems that boost data-driven processes

# The evolution of Asset Management



Optimal decision making based on Data and Advanced Analytics integrated in an industrialized ecosystem ("Formula 1" model)

## Asset Management



- Non-centralized local knowledge
- Decisions based on workers' experience
- Application of historic policies
- Quality and safety driven decision making



- Classification and normalization of processes
- Definition of centralized policies (ie: Asset Health Index)
- Preliminary consideration of economic impact
- Low sophistication of decisions, which remain in the field



- Centralized decision making
- Deployment of policies based on asset's analysis
- Economic factor taken into consideration
- Structured investment prioritization based on criticality and profitability



- Optimal decision making based on simulations and desired outcomes
- Remote control and real time monitoring of assets
- Deployment of digital sensors
- Creation of user interfaces



# There is a major impetus for change, but also opportunity to push forward the topic

## Why is AM 4.0 relevant now?



### Huge potential to find new opportunities through Use Cases

- Current status of asset related decisions are on average poor, both for decentralized and centralized assets
- Broad spectrum of opportunities for industrial players to improve its assets outcomes



### Timing is perfect

- Improvement of asset related decisions not available until now
  - Limited data collection until recently
  - Limited capability to exploit massive amounts of data until now
  - Limited available skills (Data Science)
- Technical debt is high, and legacy modernization is beginning now
- Relatively limited expertise and industry standards developed yet in an area with important network effects



### Increased Stakeholders' pressure on our business partners

- Stakeholders are putting more pressure on industrial companies to achieve better Asset Management outcomes
  - *Shareholders* want increased returns
  - *Clients* want better QoS and speed to market
  - *Regulators* want better safety & quality at lower costs
  - *Workers* want safety improvements

# There is opportunity to generate value in every stage of the Asset Management Lifecycle

+10% NPV

Up to -50% project cost

+6% asset availability  
-20% maintenance cost

+4% product quality  
-15% non-tech losses

-15% replacement cost

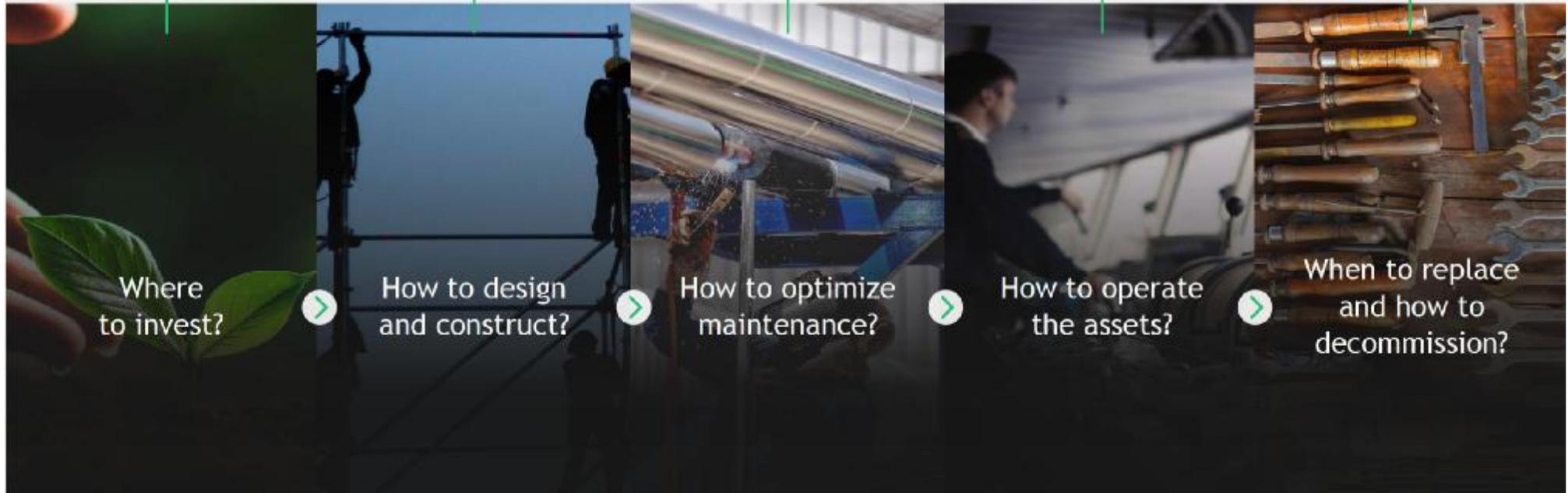
Where to invest?

How to design and construct?

How to optimize maintenance?

How to operate the assets?

When to replace and how to decommission?



# Huge potential for AM 4.0 Transformation in a variety of asset intensive sectors

Embedded / integrated technologies<sup>1</sup>

Distributed assets



Power, gas and oil T&D



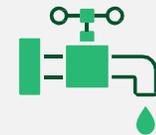
Infrastructures (roads, railway...)



Telcos



Cities



Water

Centralized assets



Factories



Oil upstream



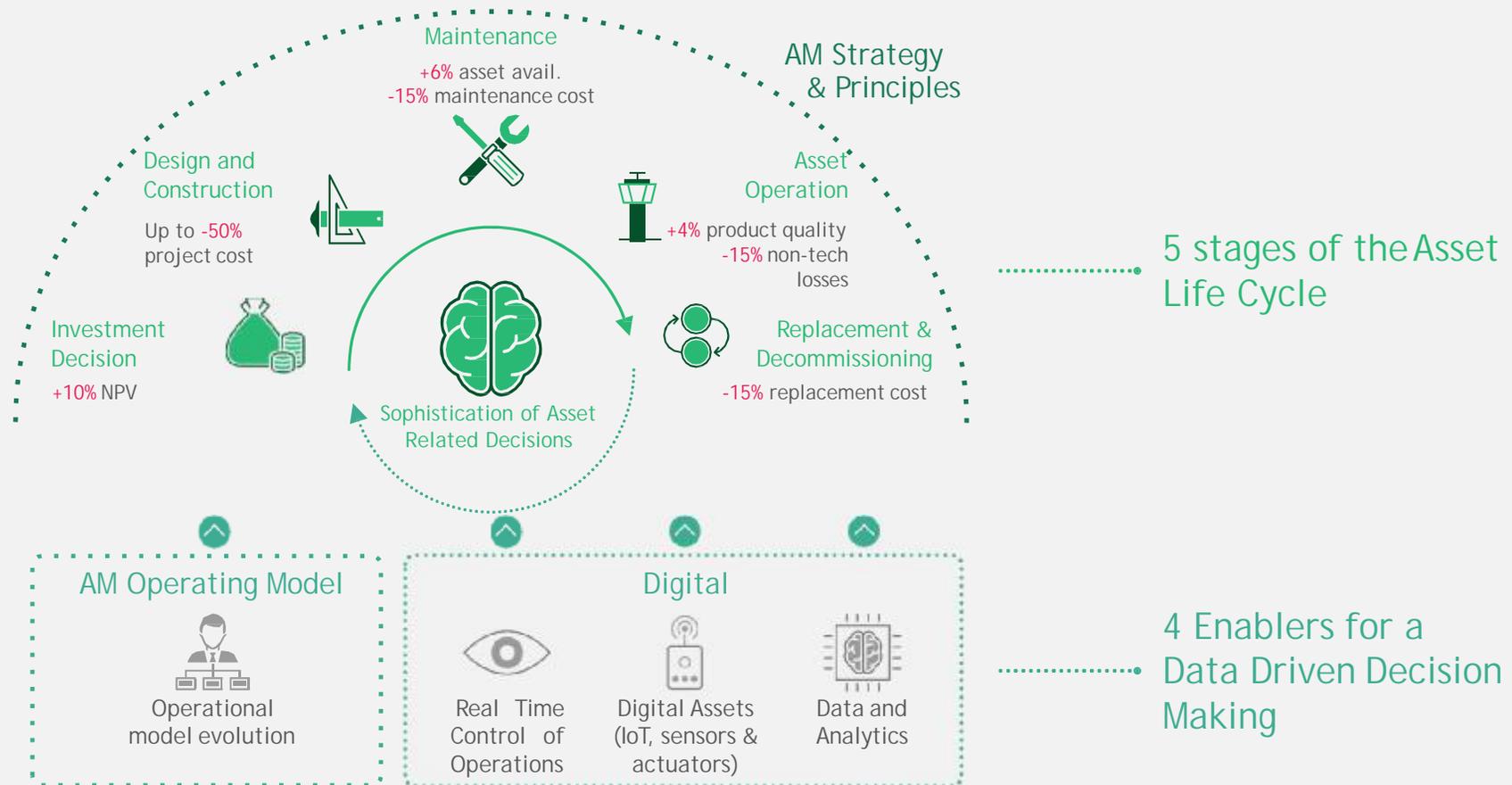
Petro chemistry



Aviation, trains and other vehicles

1. e.g. Mobile / security endpoints, embedded technologies on larger platforms (e.g. RFID tags)

# Pillars of BCG's Asset Management 4.0 approach



# Asset Management and relevant digital trends

## Strategic and guiding principles

- 1 Increased regulatory scrutiny and controls (e.g. FRB, FedRAMP)
- 2 Shift towards a Data & Digital Platform (DDP): "out of the box" / configurable vs. customizable
- 3 Heavy cybersecurity emphasis and integration



## Core technology

- 4 Shift towards cloud-based platforms and bolt ons
- 5 End-to-end integration of Logistics / Asset Management and Core functions (e.g. Finance, HR, ERP integration)
- 6 Embrace of Intelligent Technologies (IoT, AI/ML, advanced analytics)



## Case Study #1: Top 3 US Bank achieving regulatory compliance and digital asset management



### Enterprise

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### Assets and Digital



# Case Study #1: Top 3 US Bank achieving regulatory compliance and digital asset management

## Client and challenges



Top US Bank subject to numerous items of regulatory non-compliance



Legacy asset management environment for property & technology assets



Highly manual processes, lack of end-to-end transparency & data lineage

## Approach

Established the foundation for next gen asset management with end-to-end automation

Modernized the core platform with leading enterprise platforms (AWS, SAP, ServiceNow)

Automated discovery and integrations for real time asset control and traceability

Integrated with cybersecurity and Fusion Center to increase enterprise control & reduce the attack surface

Leveraged innovative technologies e.g. corporate properties with "Industrial IoT"

## Impact

Significantly improved operational resiliency

Achieved comprehensive regulatory compliance

Successfully deployed a new core asset and service management platform

Automated discovery and inventory management for total asset landscape, both physical and digital assets

Achieved 24 hour cycle for refresh of all enterprise assets

Achieve real time discovery and control of "platinum" assets

Established PoC for enterprise adoption of IoT for industrial use cases



Heavy Maintenance



Integrated Logistics & Supply



Component Repair



Engineering



Operational Needs

# Case Study #2: Complex logistics system supporting platform readiness

**\$36B**

Value of platform inventory

**\$2.1B**

Annual Cost of Operations

**190K**

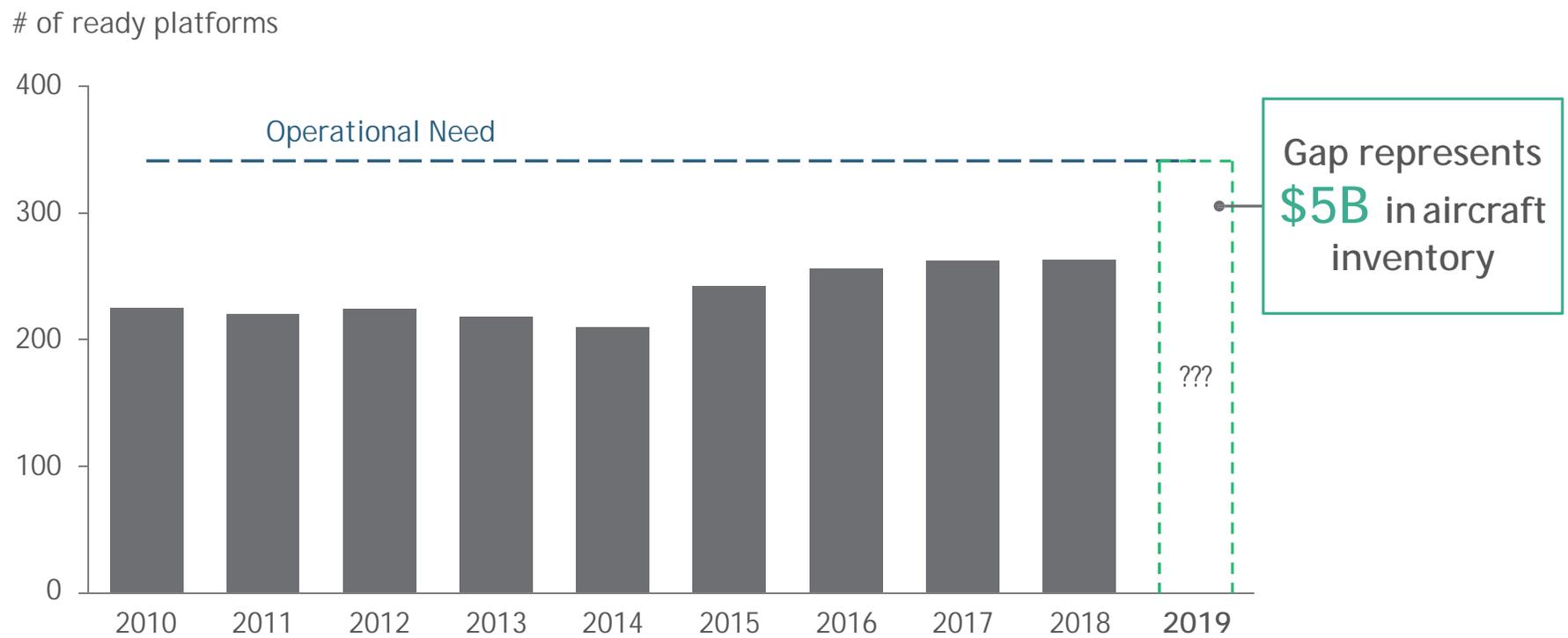
Enterprise Personnel

**120K**

Annual Platform Hours

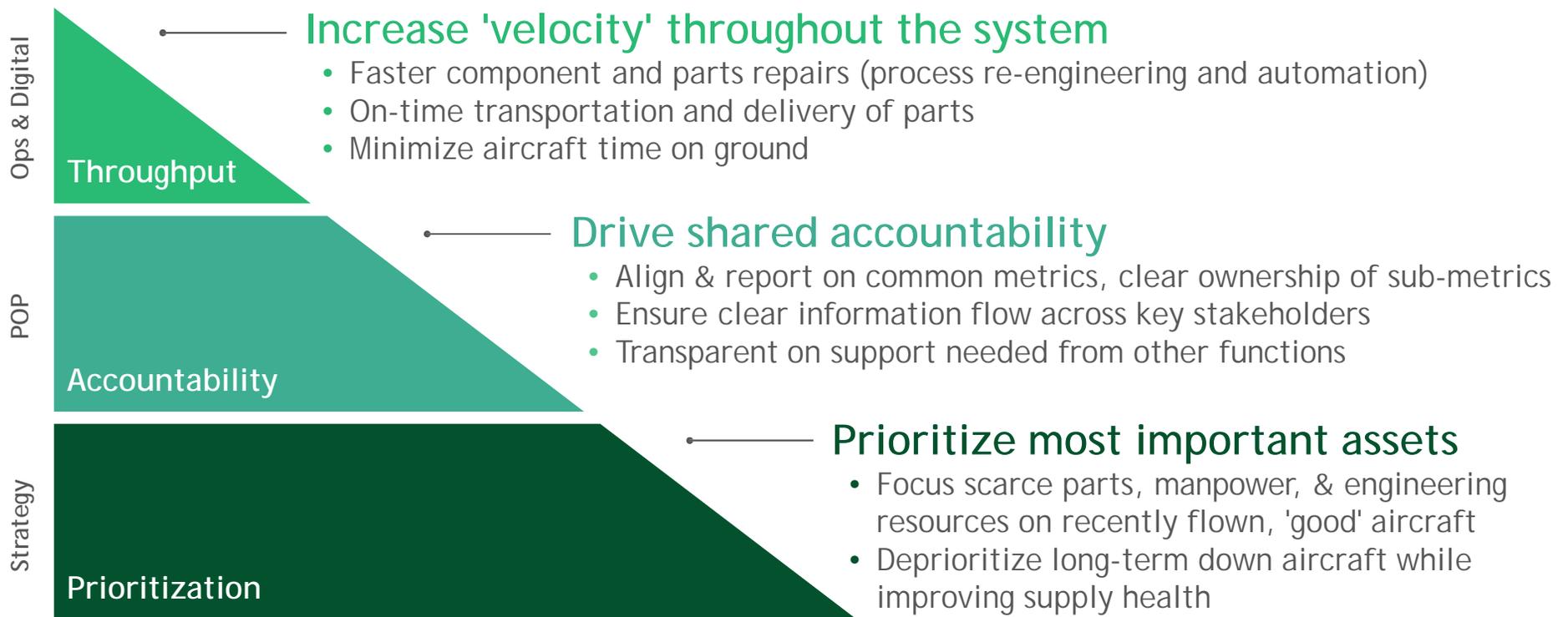
Source: Client Budget Appropriations, BCG Analysis

## Case Study #2: For past decade, client was unable to meet platform readiness targets



Source: Client data; BCG analysis

## Case Study #2: Transforming the enterprise with three core strategies



Source: Client data; BCG analysis

# Advanced analytics & Artificial intelligence to predict failures in the assets

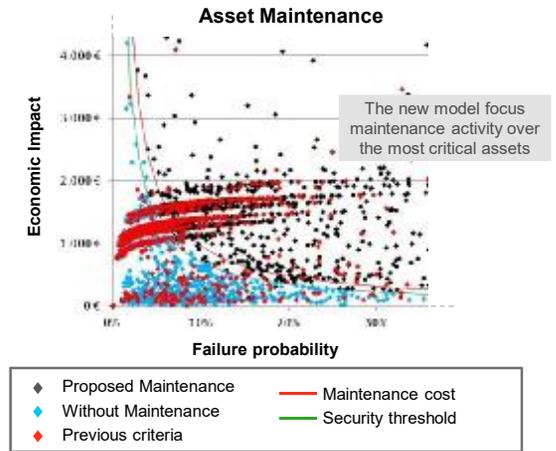
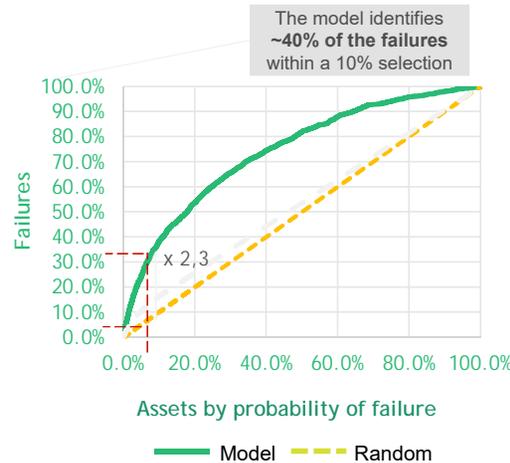


Case study #3:

Asset failure predictive model

- Asset "Static" data
- Historical maintenance
- Advance text-mining and relational analysis
- Asset incidents

- **Advanced analytics**
  - Logistic regression analyses
  - Decision trees
- **Machine Learning**
  - Random Forest
  - Neural Networks



20% reduction in corrective maintenance

# How do we get there? 3 ways to successfully deliver an Asset Management 4.0 transformation

AM 4.0 full transformation



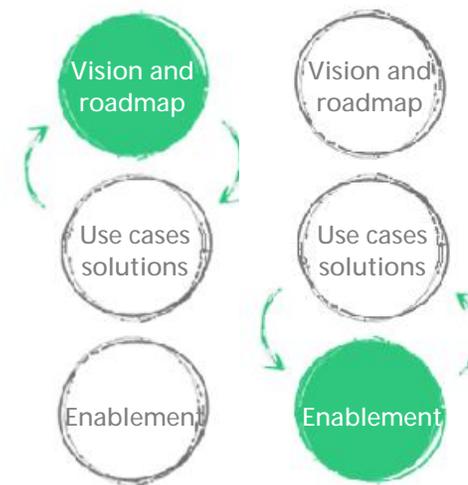
Top 3 US Bank

Use Case Proof of concept



US Logistics Company

Foundations setup



US Defense Agency

# Recap: key questions answered

1

What future asset management innovations have you learned that could improve mission execution?

Digital enablement

Intelligent technologies

Cross-agency integration

2

What are the impediments to achieving such innovations?

Legacy platforms & technology debt

Lack of end-to-end traceability across the asset management lifecycle

Lack of standards, controls and cross-agency integration

3

How can collaboration across agencies help you overcome such impediments?

Consortium

Collaboration & data sharing standards

Shared services for commoditized / non-competitive functions

Questions?