

OCTOBER 2021

# Uptake Overview

Data-driven Decision Making, Maintenance Analytics  
and Predictive Insights for Asset-Intensive Industries





UPTAKE

## Introduction

**UPTAKE®** &  AASC CO., LTD.  
AI products for factories  
and plants



## MISSION STATEMENT

**Our mission is to provide asset-intensive companies the scalable, secure ability to connect their machines, people and data together to rapidly unlock AI-enabled industrial intelligence to optimize costs, manage risks and increase revenue assurance (in a sustainable way).**



# Digital Transformation



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## Quality and Cost Management

Ensuring conformance to defined quality management processes, while reducing operating costs

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## Safety and Sustainability

Uncover abnormal conditions with a risk-based approach to ensure compliance and maximize uptime whilst reducing emissions

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## Operational Resiliency

Understand impacts and dependencies to evaluate CAPEX vs. OPEX costs, asset reliability, and forecasted lifespan

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## Aging workforce

Institutional knowledge takes years to build & can leave overnight. AI aids decision support for smarter workforces

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## Autonomous and Remote Operations

Monitor asset performance, utilization, and efficiency from anywhere

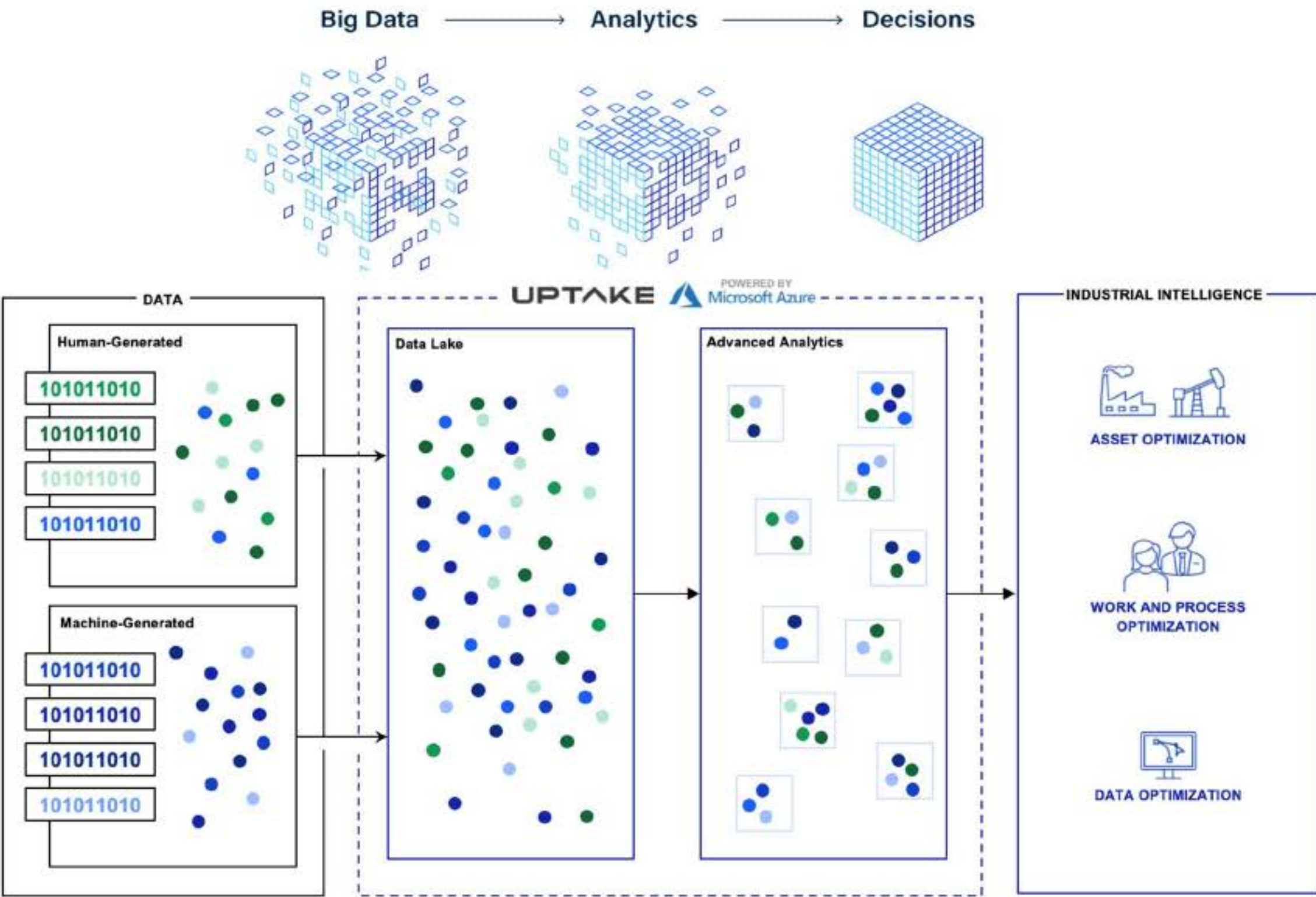
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## Infrastructure Interoperability

Leverage open data formats based on industry standards and best practices



# Enterprise Data Lacks Operations Context [\(Video LINK\)](#)





# Leading Brands Prefer Uptake



## Liberate and Centralize OT Data

Unify data across mixed fleets and liberate it in the cloud for a full view of the enterprise.



## Real-Time Data Visualization

Visualize data in real time from anywhere at any time.



## Predictive Maintenance Insights

Easily Access Cost Saving Insights and PM Strategies.



## Advanced Analytics Capabilities

Become proactive with Asset, Operations and Data Optimization.

DAIMLER







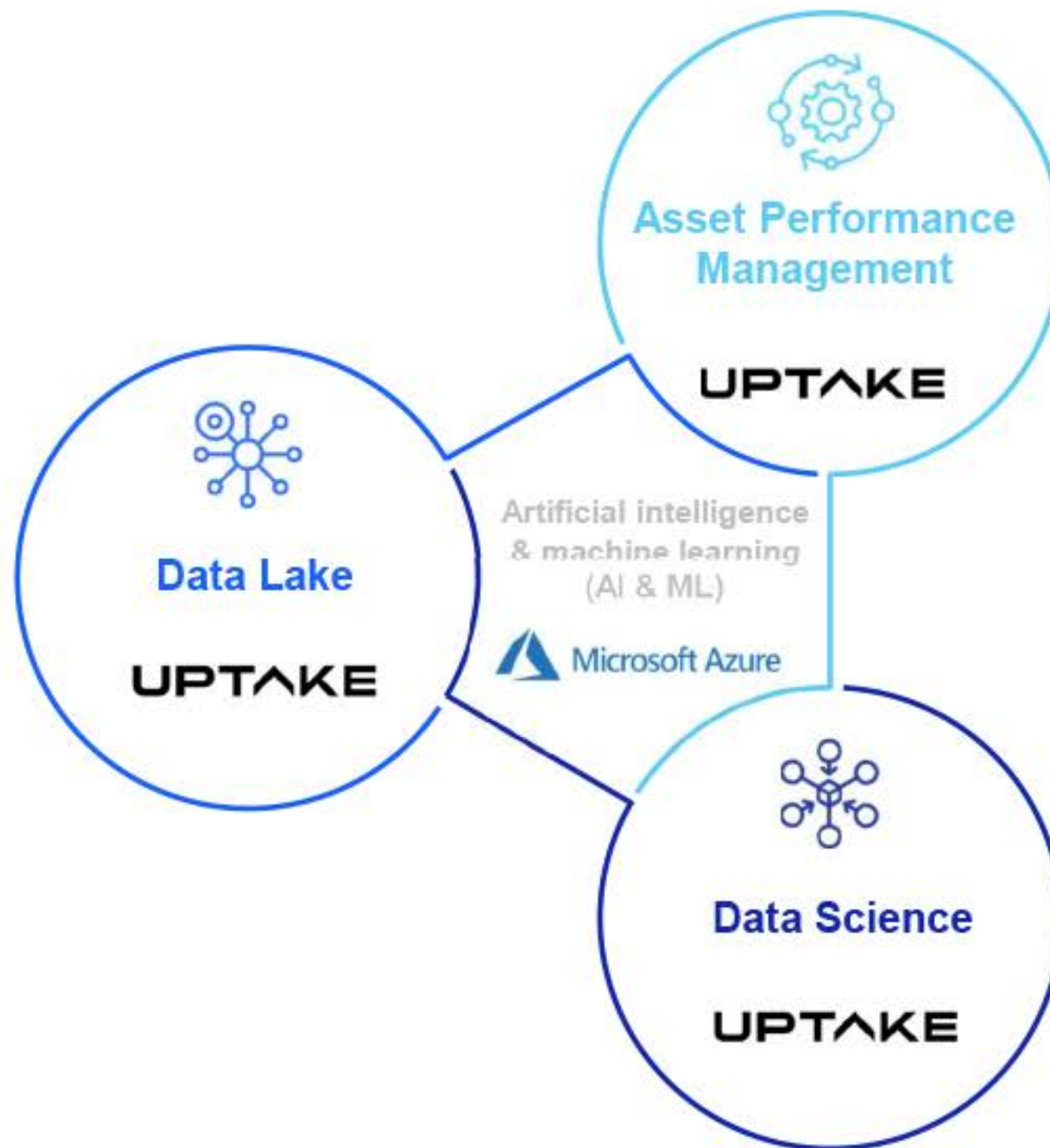
UPTAKE

## Content & Expertise



## Three areas of impact to unlock industrial intelligence.

- *Cybersecure*
- *Cost-effective*
- *Rapidly scalable*





Uptake's Asset Strategy Library™ is the greatest informer of cost-optimized maintenance strategies.

critical asset types covered

universal failure modes spanning  
all known operating contexts

preventive maintenance tasks and intervals organized by operating context

as found reportable conditions

more than 32 years and 1,000 reliability  
professional engineering of experience

compared to traditional PM strategies

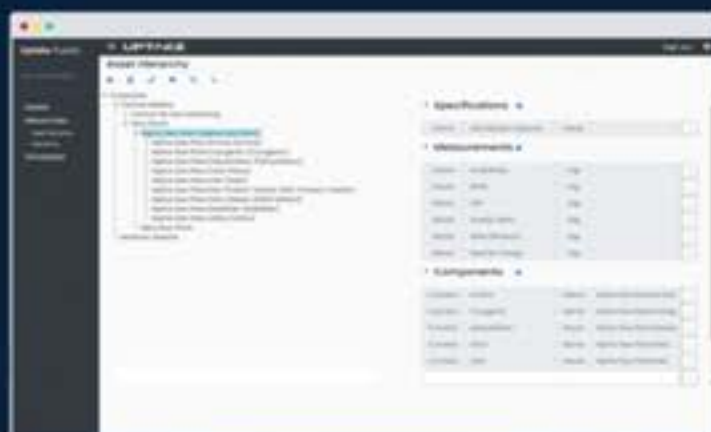
as measured by MTBF





# Uptake Fusion

Liberate OT data and turn it into industrial intelligence. Make your data accessible to all stakeholders anytime, anywhere.



# ASL Explorer

Leverage more than 32 years and 1,000 Reliability Engineering Experience.

Access the world's largest failure database. Optimize PM and repair costs.



# Uptake Radar

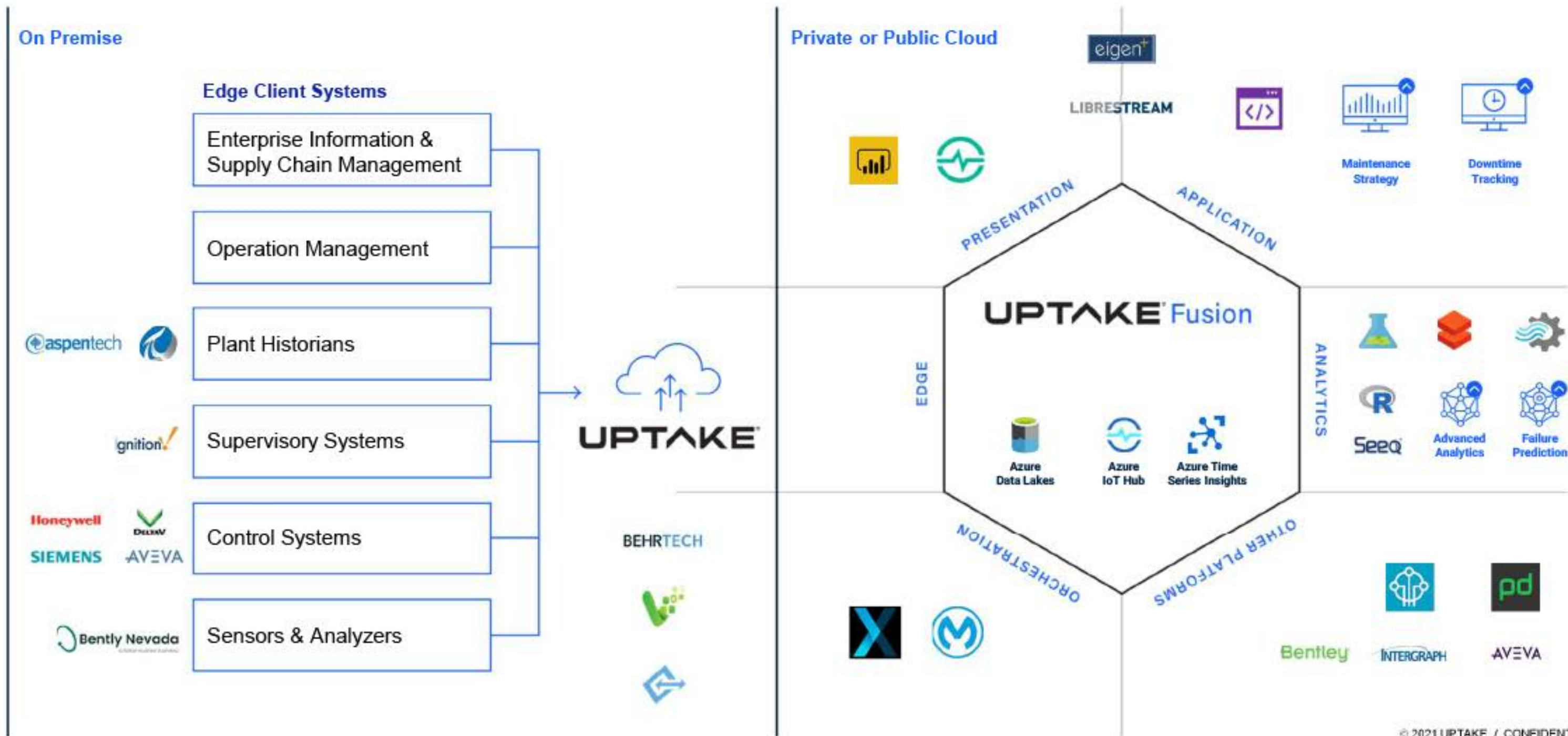
Organise your data and analyse it for actionable insights. Customise what matters to your business and predict failures before they occur.





# Liberators of Actionable Insights

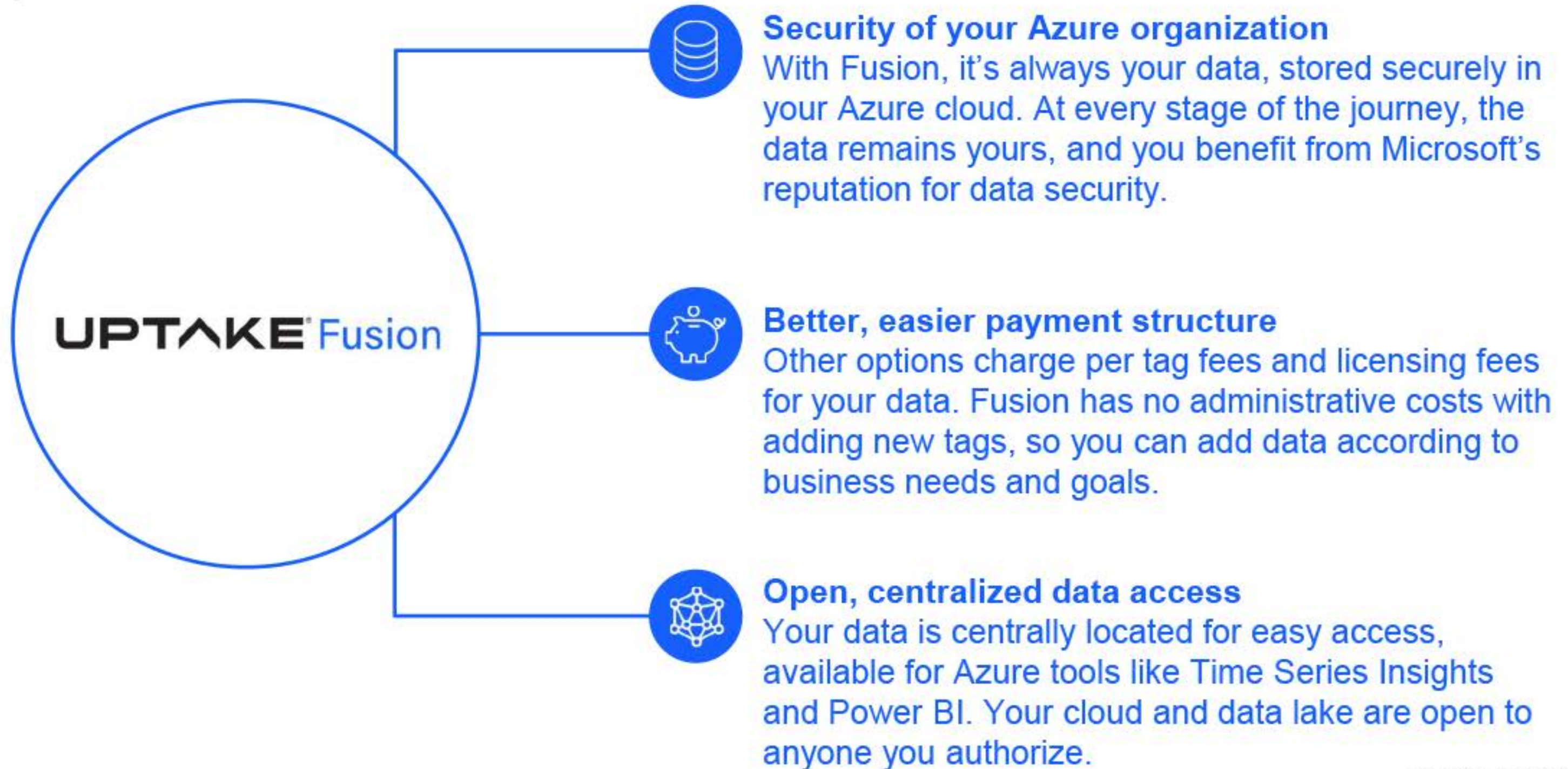
Elevating Data from Any Operational System for Every Data Consumer





# Uptake Fusion

## Key Differentiators

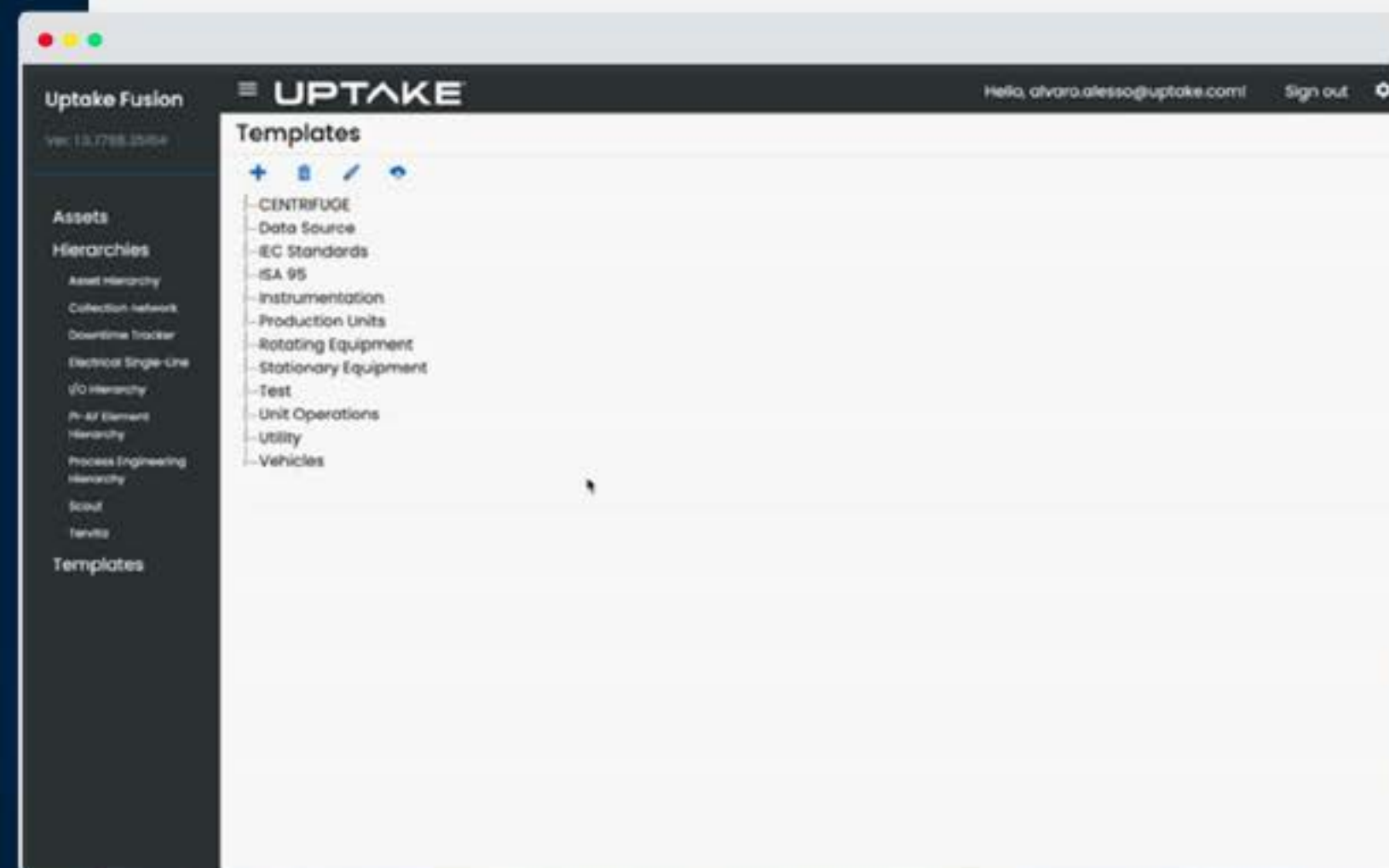




# Unified Data Management

## Liberate OT data and turn it into industrial intelligence

- Moving operational technology (OT) data from industrial sites to the cloud is challenging. Systems like DCs, PLCs, SCADA, and Historians make time-series or real-time data hard to access and share securely. It's time to liberate OT data.

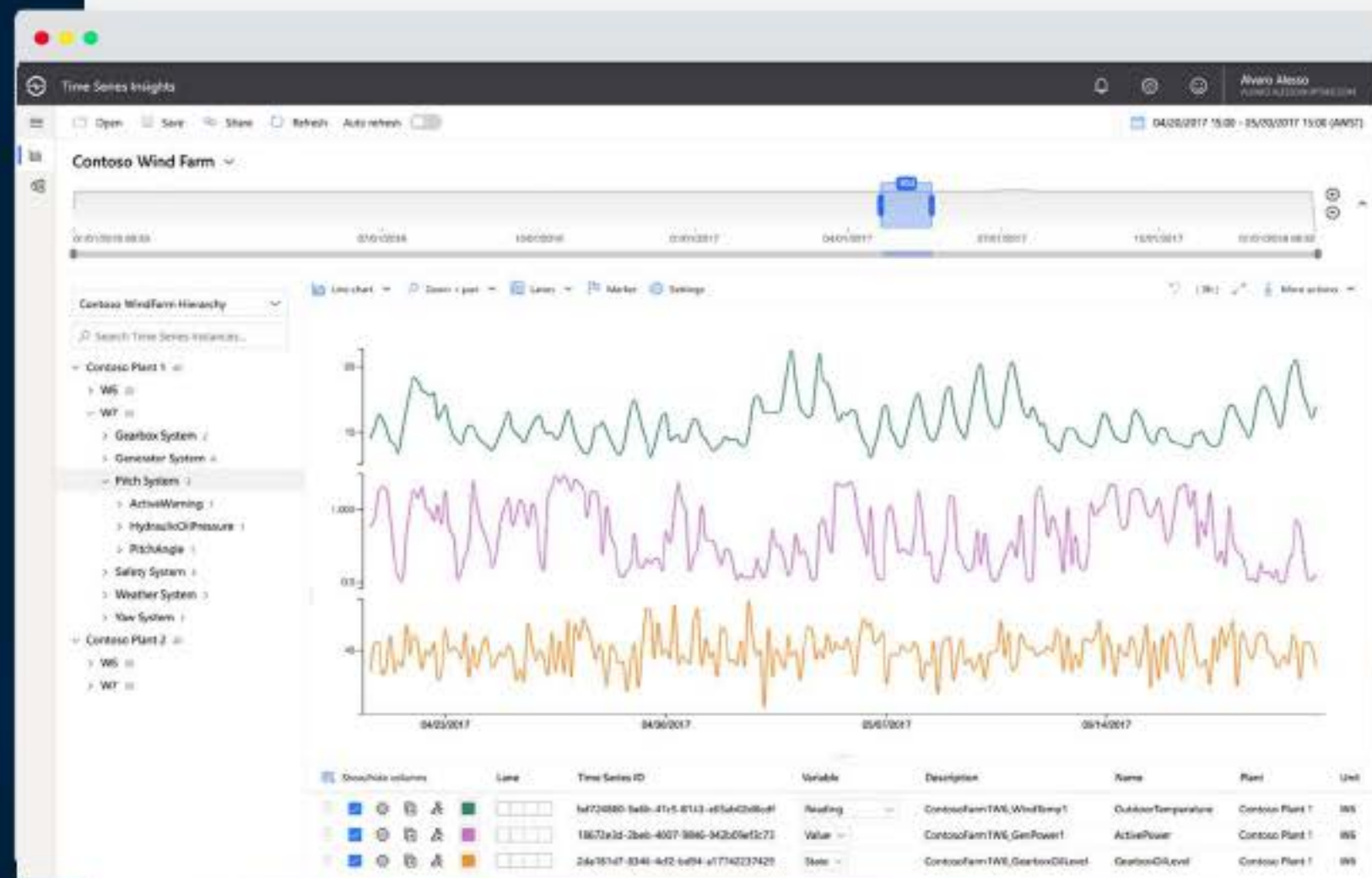




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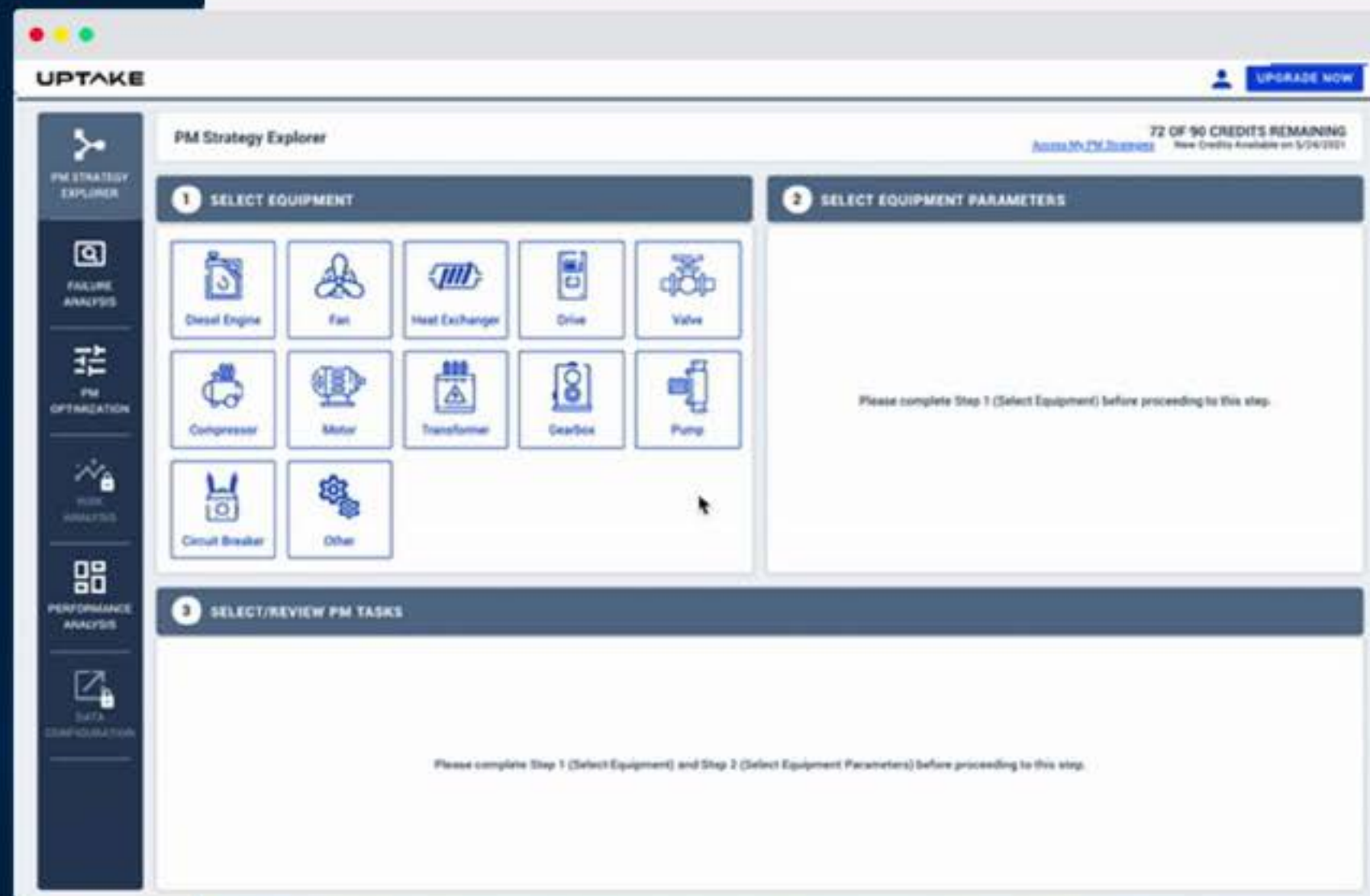
# APM

## PMs & Failure Analysis

**Easily explore and download expert curated Strategies and FMEAs from the ASL.**

Ability to access ASL baseline PM strategies and content quickly. Analyze PM tasks, frequencies, step by step task instructions. Download to a csv file for quick upload into your CMMS maintenance module.

Identify the failure mechanisms and failure causes for your equipment with industry average wear out times and user-proven PM tasks with the effectiveness of those PM tasks to mitigate against the failure mechanisms.



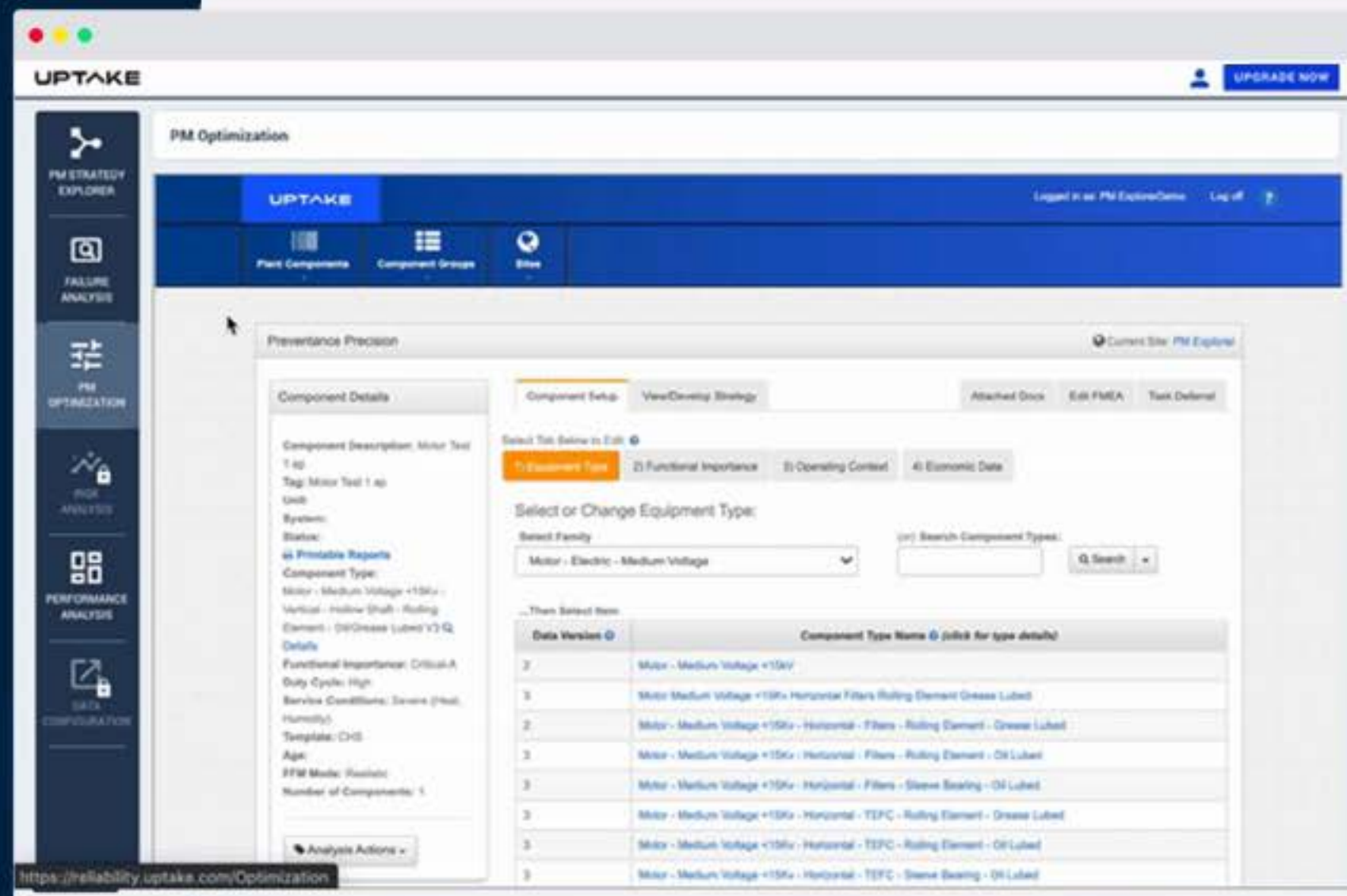


# APM

## Preventative Maintenance Optimization

Quantify the value of your maintenance program and optimize your repair costs

Cost-optimize your maintenance program using insights powered by our Asset Strategy Library® (ASL®) – the world's largest library of asset types, failure mechanisms and maintenance tasks – leveraging 32 years of experience





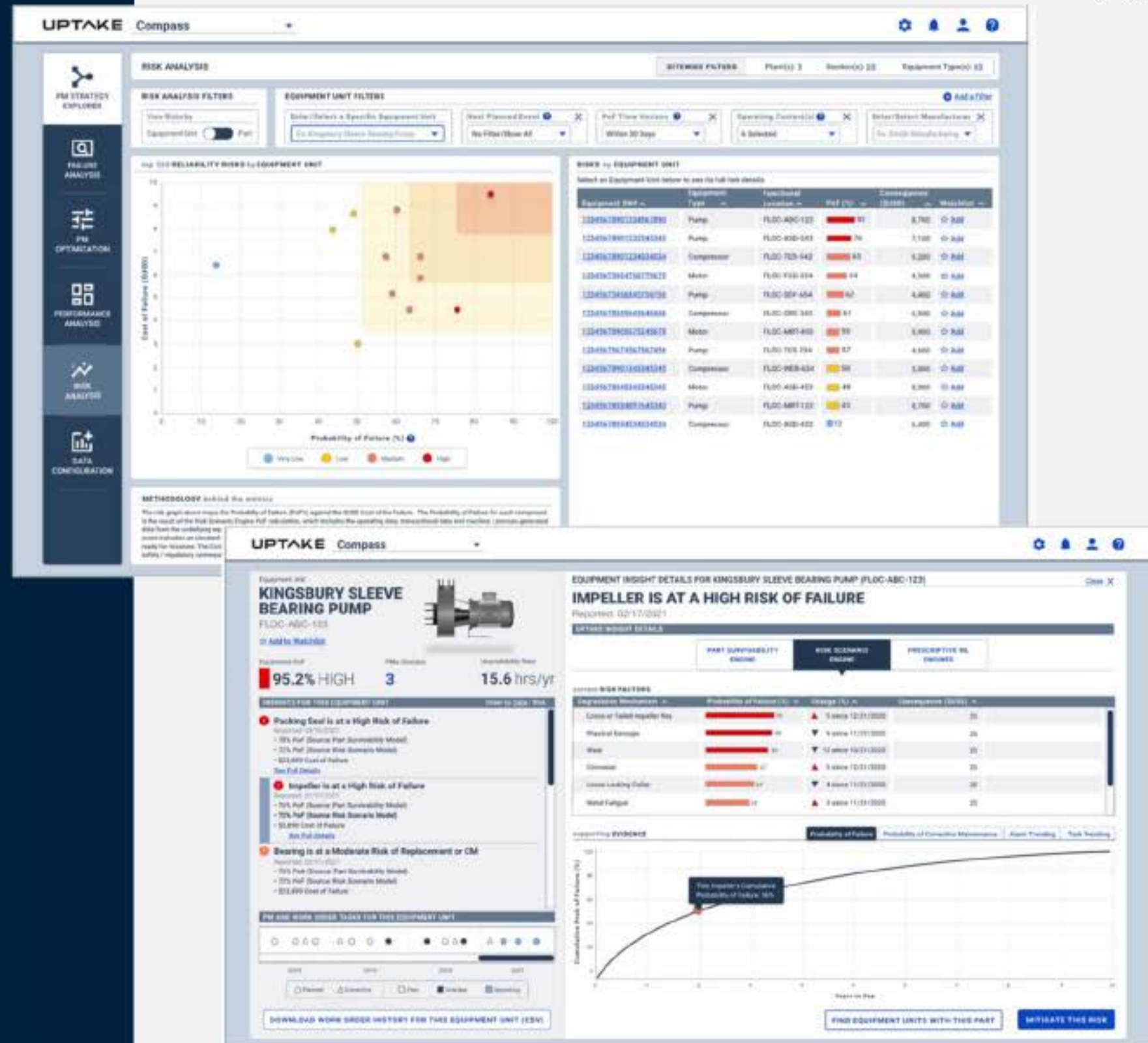
# APM

## Risk Analysis

## Identify Equipment Probability of Failure with Consequence and Decision Support

Optimize decision making based upon probability of failure (PoF) and consequence of asset and equipment failures.

Ensure reliability, flexibility, and efficiency while also balancing CapEx and OpEx investments.





# Your Maintenance Program with Uptake

*Reliability at the Lowest Total Cost of Ownership*



PERFORMANCE  
ANALYSIS

Import and analyze work order data from CMMS systems

Drive user efficiencies by up to 12.5%



Uptake PMs

Create PMs from Asset Strategy Library (ASL)

Create and deploy PM strategies 75% faster than traditional methods



Failure  
Analysis

Identify asset failure mechanisms and causes

Up to 50% less time completing RCA



PM  
Optimization

Quantify and optimize your maintenance programs

Reduce maintenance technician costs by up to 40%



Risk  
Analysis

Identify probability of failure and consequences

Improve reliability by up to 15%

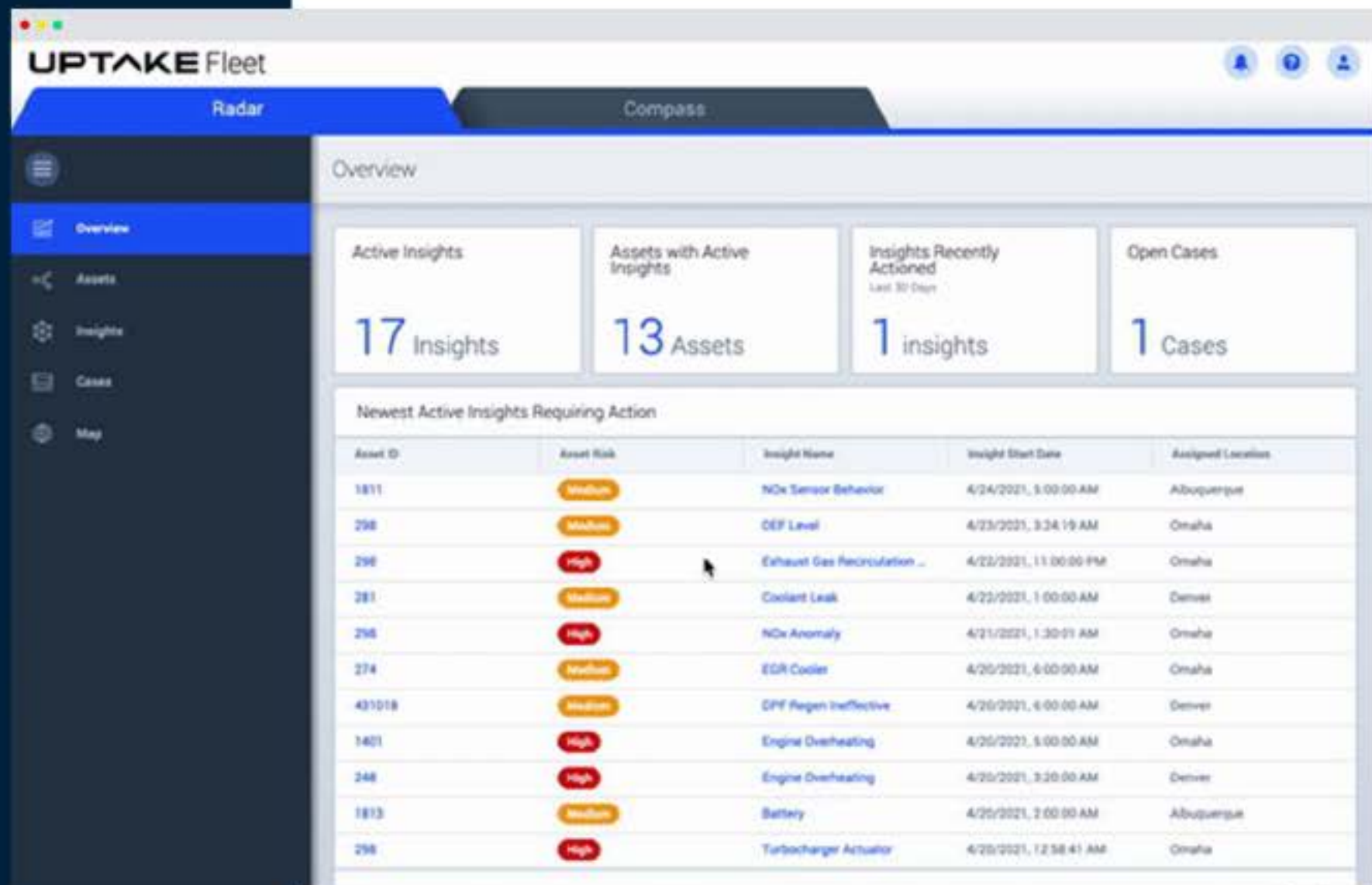
**Overall Impacts: Up to 20% Maintenance Cost Reductions & 3.5% Uptime Improvement**



# Advanced Analytics

Asset-specific data science bundles from the Uptake Industrial Library to optimize equipment performance

- Prediction of known failure modes
- Anomaly detection
- Next-level operational excellence







## Uptake ASL Explorer: Optimise PM Strategies





# PMs

## Explore, Identify, and download expert strategies from the ASL

- Generate PM strategies and content quickly
- Adjust PM strategies based on severity of the environment, duty cycle and criticality
- Analyze and implement PM tasks, frequencies, step by step task instructions
- Download to a csv file for quick upload into your CMMS maintenance module

The screenshot displays the UPTAKE PM Strategy Explorer interface. It features a sidebar with navigation options: Uptake PMs, Failure Analysis, PM Optimization, Risk Analysis, Uptake Grid, Performance Analysis, and Cause Analysis. The main content area is divided into three sections: 1. SELECT EQUIPMENT, 2. SELECT EQUIPMENT PARAMETERS, and 3. SELECT/REVIEW PM TASKS.

**1. SELECT EQUIPMENT**

Equipment icons include: Diesel Engine, Fan, Heat Exchanger, Drive, Valve, Compressor, Motor, Transformer, Turbine, **Pump** (highlighted), Circuit Breaker, and Drift.

**2. SELECT EQUIPMENT PARAMETERS**

Equipment Type: Centrifugal  
Equipment Attribute: Multi Stage  
Equipment Strategy Template: Pump - Horizontal - Multistage - Seal Type - Mechanical Seal - Kingsbury Sleeve Bearings Oil Lubed, VI

**3. SELECT/REVIEW PM TASKS**

Tasks for Selected Strategy: [View Boundary Details](#) [How Do I Choose an Operating Context?](#)

Task Name	CHS	CLL	CHM	CLM	MHS	MLS	MHM	MLM
Functional Testing	N/A	AR	N/A	AR	N/A	AR	N/A	AR
Refurbishment	AR	AR	AR	AR	AR	AR	AR	AR
System Engineer Walkdown	3M	3M	3M	3M	3M	3M	3M	3M
Oil Filter Change, Clean, and Inspect	2Y	2Y	2Y	2Y	2Y	2Y	2Y	2Y
Performance Trending	2Y	2Y	2Y	2Y	NH	NH	NH	NH
Oil Analysis	3M	6M	3M	6M	2Y	2Y	2Y	2Y
Vibration Analysis	1M	3M	1M	3M	3M	1Y	3M	1Y

**Task Details**

NAME: Oil Filter Change, Clean, and Inspect

TYPE: Time-Based

CHS FREQUENCY: 2Y

LABOR HOURS: 2

**TASK OBJECTIVES**  
The objective of the Oil Filter Change, Clean, and Inspect task is to provide clean oil between oil changes and to reduce component wear. For CHM conditions the task, by itself, mainly addresses preventing blocked oil filters and strainers and on detecting oil leaks in filter housings, nozzles, the pump housing, and other oil fittings and valves. In a full PM program for CHM conditions, the failure rate is...

[DOWNLOAD ALL TASKS](#) [DOWNLOAD TASK DETAILS](#)



# Failure Analysis

Identify failure mechanisms and failure cases of Assets

- Explore curated Failure Modes and Effects Analysis
- Identify the failure mechanisms and failure causes for your assets with industry average wear out times and proven in use PM tasks
- Match the effectiveness (high, medium or low) of those PM tasks to mitigate against failure incident events
- Link mitigation recommendations to PM strategies to update preventative maintenance plans

UPTAKE UPGRADE NOW

### Failure Analysis

Uptake PMs

Failure Analysis

PM Optimization

Risk Analysis

Uptake Grid

Performance Analysis

Cause Analysis

1 SELECT EQUIPMENT

Electrical Engine

Fan

Heat Exchanger

Drive

Valve

Compressor

Motor

Transformer

Generator

**PUMP**

Circuit Breaker

Other

2 SELECT EQUIPMENT PARAMETERS

Equipment Type

Centrifugal

Equipment Attribute

Multi Stage

Equipment Strategy Template

Pump - Horizontal - Multistage - Barrel Type - Mechanical Seal - Kingsbury Sleeve Bearings - Oil Lubed, VS

Failure Location

Shaft

Next

ANALYZE FAILURE CONTENT

3 VIEW FAILURE CONTENT

Failure Location Types and Causes [View Equipment Boundaries](#)

Failure Type	Failure Cause
Bent	Improper storage or installation
Bent	Thermal shock or water hammer
Bent	Improper tension or warm up
Bent	Misalignment, rubbing at bearing seal, excessive wear, stress
Bent	Defects
Cracked	High cycle fatigue, specific to pump design
Cracked	Manufacturing defect in material

Failure Cause Details

Please select a failure cause

EXPLORE PM STRATEGY TASK DETAILS



# PM Optimization

Quantify and optimize the value of your maintenance programs

- Generate PM strategies and content quickly
- Adjust PM strategies based on severity of the environment, duty cycle and criticality
- Analyze and implement PM tasks, frequencies, step by step task instructions
- Download to a csv file for quick upload into your CMMS maintenance module

The screenshot displays the UPTAKE PM Optimization software interface. On the left is a dark sidebar with navigation icons for Uptake PMs, Failure Analysis, PM Optimization (active), Risk Analysis, Uptake Grid, Performance Analysis, and Cause Analysis. The main content area is titled 'PM Optimization' and features a 'Component Details' sidebar on the left with fields for Component Description, Tag, Unit, System, Status, Component Type, Functional Importance, Duty Cycle, Service Conditions, Age, PPM Mode, and Number of Components. The main panel has tabs for 'Component Setup' and 'View/Develop Strategy'. The 'View/Develop Strategy' tab is active, showing a table titled 'Impact of PM Program' with columns for Type of Impact, Baseline, Increased Benefit, Maximum Benefit, Current, and Change (%). Below this is a table for 'Strategy: PM Tasks, Intervals and Other PM Information' with columns for Task Description, Baseline Interval, Increased Benefit, Maximum Benefit, Current Interval, and Hold Interval. The interface includes various buttons like 'Optimize', 'Printable Reports', and 'Download'.

Type of Impact	Baseline	Increased Benefit	Maximum Benefit	Current	Change (%)
Annual Direct PM Cost	\$5,487			\$6,257	14 %
Annual Total Cost	\$215,129			\$215,522	-2 %
Net Benefit	\$411,764			\$415,587	1 %
MTBF (Years)	35.8			36.7	76 %

Task Description	Baseline Interval	Increased Benefit	Maximum Benefit	Current Interval	Hold Interval
Vibration Analysis	150			150	150
Oil Analysis	300			300	300





UPTAKE

# Frequently Asked Questions



## Frequently Asked Questions and Answers

### 1. How accurate is AI?

- 》 It depends on the industry, but it can predict 80% to 95% or more.
- 》 In the case of freight trains, we have a track record of 100% accuracy in predicting failures one week in advance.
- 》 Some customers may choose to set the accuracy at a lower level (70% or less) to broaden the criteria for determining a suspected failure.
- 》 This includes false positives, but by teaching the AI about the client's situation, the AI learns and grows to make the ideal judgment of the situation.

### 2. How do you check the accuracy of the AI?

- 》 Before and after the introduction of Uptake, we compare the results of cost reduction, labor hours, etc., and constantly check whether the AI's judgments were accurate or not.

### 3. How long does it take to implement Uptake?

- 》 It depends on the content and scale of the project, but Fusion will be online in less than one month, and ASL Explorer in about three months.

We have a 24-hour support system to help you build the optimum situation and then support the operation of the system.

### 4. Do you offer Japanese language support?

- 》 Currently, only English is available, but we are planning to consider it in the future.
- 》 Uptake can be operated remotely by centralizing data from many locations, allowing a limited number of personnel to operate and issue instructions.

### 5. Uptake is based on American equipment and device data.

- 》 A. No. Many American industrial equipment and devices use Japanese components, and the data transmitted is the same regardless of the component manufacturer.
- 》 A motor is recognized as a motor and a valve as a valve, and there is no dependence on the manufacturer or the country in which the product is manufactured.

### 6. How are tacit knowledge and the know-how of skilled workers handled as data?

- 》 Since AI makes various judgments based on the overall flow by looking at trends, if the work content includes tacit knowledge or know-how, it will be covered as a result.

- 》 If there is essential content, it can always be utilized by inputting (training) to the AI before it is lost.



## Frequently Asked Questions and Answers

### 7. what will AI do if a worker makes a mistake due to human error?

- 》 Even if the operator makes a mistake, AI will repeatedly escalate and present the problem as long as the underlying problem remains unresolved.
- 》 Point out the connection to other problems and try to solve the root problem.

### 8. can it be applied to other situations besides industrial equipment (e.g., judging an aging building)?

- 》 Although it is not applicable to buildings themselves, it is possible for AI to judge and propose solutions based on installed equipment 》 (switchboards, air conditioning equipment, water supply equipment, etc.).
- 》 In fact, a major hotel chain in the U.S. has already introduced AI to their buildings.

### 9. Is it possible to use equipment other than trucks (agricultural equipment, ships, airplanes, etc.)?

- 》 Basically, we can handle all types of equipment (heavy construction equipment and motorized equipment).
- 》 When advanced diagnosis or prediction is required, it is necessary to link with Wifi to transmit data.
- 》 If there is no environment to transmit data (at sea or in the air), we can perform a diagnostic when the vessel stops at the nearest port of call.

### 10.What is the actual track record of the introduction of the system?

- 》 Outside of the U.S., we have been used in Europe, Australia, and Asian countries such as Singapore, Malaysia, the Philippines, India, and so on.
- 》 Since the system has been adopted by the U.S. Army and Navy, we already have experience at a U.S. military base (Okinawa) in Japan.
- 》 Our customers include electric power companies (nuclear power, wind power, etc.), logistics (trucks, trains), petroleum and chemical plants, manufacturing plants (cars, textiles, etc.), copper mines, public transportation, etc. Copper mines, public transportation, etc.

### 11.What are the costs?

- 》 Fusion, which aggregates, organizes, and manages data, and ASL Explorer (including Radar), which maximizes the use of AI functions, have different fee structures.
- 》 Please refer to the attached ROI case study for an example of cost-effectiveness.
- 》 For more information, please contact your AASC representative.



**\$10 million saved at largest US nuclear site.**

Uptake ASL Explorer empowered Palo Verde to cut maintenance costs annually by 20% and working hours on PM by 37%. This resulted in record increases in power production without impacting safety.



## UPTAKE ASL EXPLORER GOES BEYOND PM:

- Specific equipment failure modes
- Maintenance to apply for these modes
- Risk in performing or not performing specific maintenance
- Cost analysis and expected reliability of maintenance in terms of financial value

# 20%

Reduction in annual maintenance costs

# 37%

Reduction in working hours on PM



# Major energy company uses Fusion for data access and Time Series Insights

Uptake Fusion helped a multinational energy company liberate its operational data from 40+ global sites. Centralized data in the cloud is optimized for Time Series Insights, Power BI, and Uptake AI products and services.



## UPTAKE FUSION UNLOCKED:

- Optimization and Fleet Benchmarking
- Stream Costs and Soft Sensors
- Failure Prediction and Root Cause Analysis



# Capital Power improves asset performance through data analytics.

Uptake Fusion enables Capital Power to store wind turbine data in a cloud-based environment for analysis, resulting in insights on improving wind turbine performance.



## KEY BENEFITS:

- Reduction of total cost of ownership for operational data management
- Improvements of accessibility and scalability to support future growth
- Unlocked further opportunities with the use of advanced analytics





In the initial 4-month pilot, Uptake identified 100+ pending Cylinder Head Valve Recession issues within Frito-Lay's 700 CNG trucks with more than 95% accuracy. This allowed Pepsi to proactively repair the issue and avoid catastrophic downstream failures that could cost up to \$50,000.

*"There is a high confidence in the Uptake models, now it's all about prioritizing and executing the repairs"*

**Jim Johnston**  
Sr. Reliability Manager



**95%**

In the initial 4-month pilot, Uptake identified 100+ pending Cylinder Head Valve Recession issues within Frito-Lay's 700 CNG trucks with more than 95% accuracy

**\$1MM**

Initial cost avoidance



# We enable peak production and quality.

Uptake maximized the uptime of stamping equipment for a major automotive manufacturer.

Uptake's data science predictive analytics models helped avoid unplanned downtime and improved production quality.



**\$79.4M**

In impact projected across 5-year usage in North American operations alone





# Data Lake Case Studies



# Major energy company enables their Data Lake with Uptake

Uptake Fusion helped a multinational energy company liberate its operational (OT) data from 40+ global sites. Centralized and optimized for Azure Data Lake with Time Series Insights, IoT Hub for various applications including Power BI, ML Studio and other Uptake AI products and services.



**\$50-100M+**

Typical Annual  
Identified  
Opportunities

## UPTAKE UNLOCKED:

- Optimization and Fleet Benchmarking
- Streaming Costs and Soft Sensors
- Failure Prediction and Root Cause Analysis



# Davey Textile bolsters loom productivity with downtime monitoring.

Uptake Fusion and the Uptake Downtime Tracker enable Davey Textile to make data-driven decisions, monitoring and catching lapses in loom activity to increase productivity



## KEY BENEFITS FOR DAVEY TEXTILE:

- Increase downtime visibility, availability, asset utilization, and efficiencies
- Eliminating bottlenecks and root cases downtime events
- Improve communication using a single source of truth



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# Ensign creates cloud-based data historian for enterprise-wide decision making.

Uptake Fusion helped Ensign Drilling Inc. get more value from its operational data by leveraging the cloud to make information more readily available across the organization.



## KEY BENEFITS FOR ENSIGN:

- Improve productivity and get more value from operational data
- Enable the use of ML algorithms for data classification and reporting automation



# Enerplus uses insights from Uptake Fusion for data-driven decision making.

Uptake Fusion equipped Enerplus with data insights for improved decision making. An added benefit was the fully integrated security with the Microsoft Azure platform.



## KEY BENEFITS FOR ENERPLUS:

- Increased insight into operations through easy acquisition and accessibility of far greater amounts of data providing insight.
- Proactive Decision Making capabilities