

An aerial photograph of a tropical coastline. The left side of the image shows clear, turquoise water. The right side is dominated by a dense, lush green forest. A small wooden pier or dock extends into the water from the forest edge. In the top right corner, there is a white arrow icon pointing upwards and to the left.

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).

MEGA TRENDS

Digital Transformation



Quality and Cost Management

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

Safety and Sustainability

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

Operational Resiliency

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

Aging workforce

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

Autonomous and Remote Operations

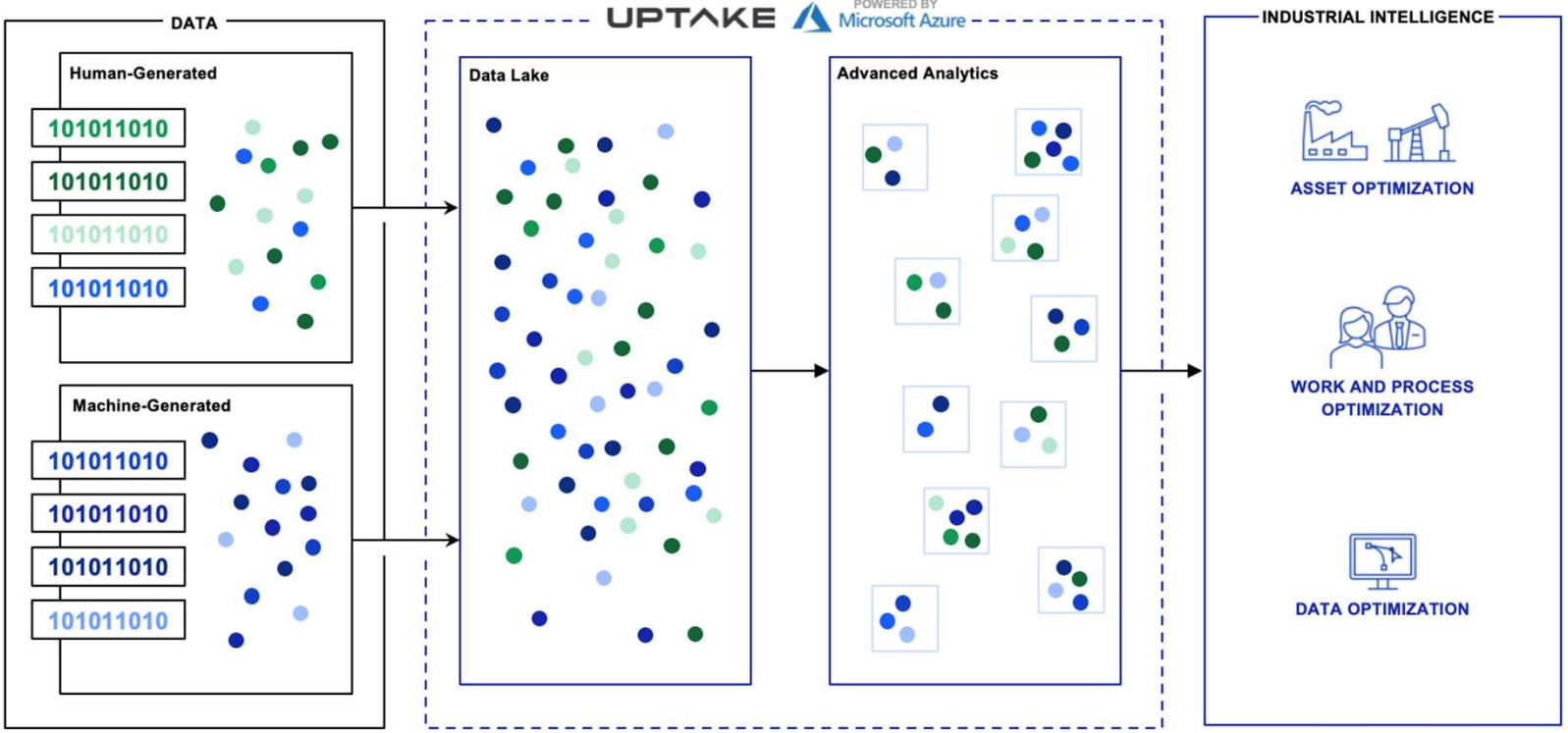
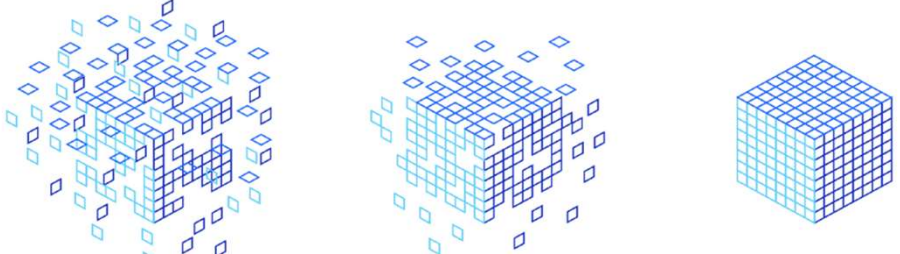
Monitor asset performance, utilization, and efficiency from anywhere

Infrastructure Interoperability

Leverage open data formats based on industry standards and best practices

Enterprise Data Lacks Operations Context (Video LINK)

Big Data → Analytics → Decisions



ABOUT US

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.

OUR CUSTOMERS



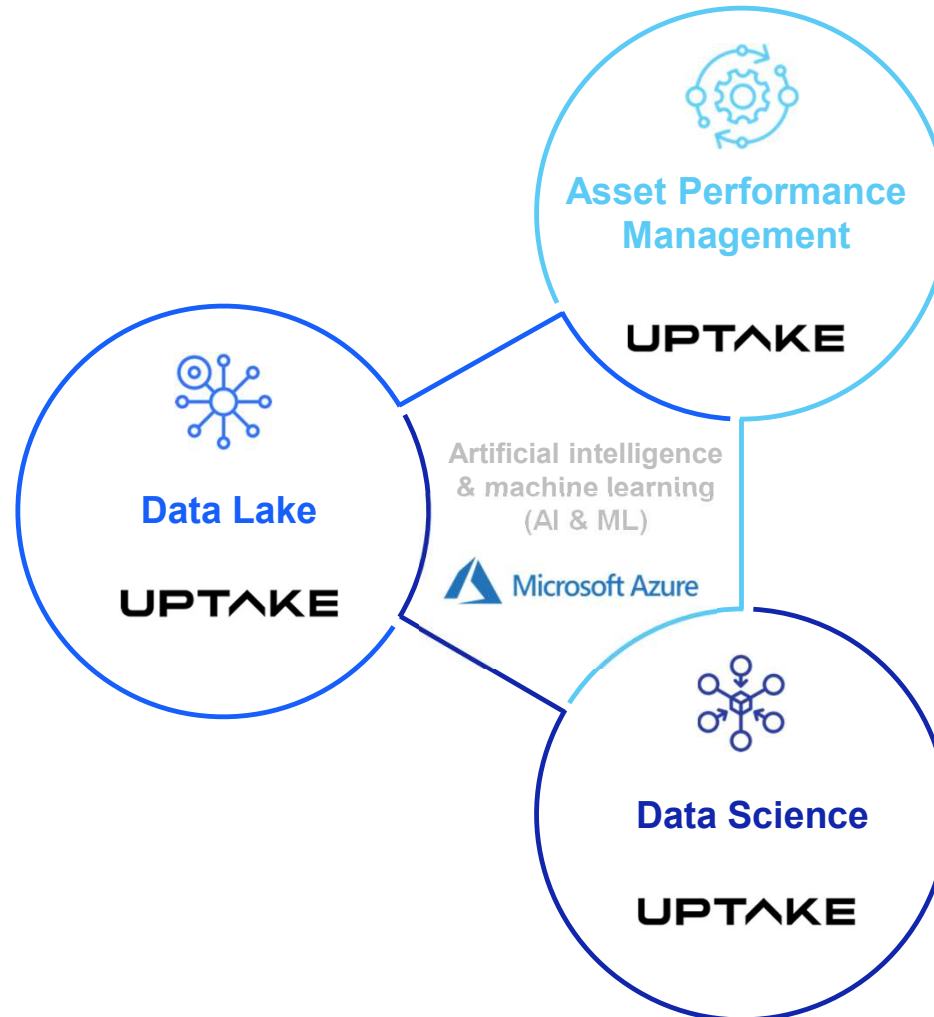


UPTAKE

Content & Expertise

Three areas of impact to unlock industrial intelligence.

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



Asset Strategy Library™

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

800+

critical asset types covered

58,000+

universal failure modes spanning all known operating contexts

5,000+

preventive maintenance tasks and intervals organized by operating context

178,000+

as found reportable conditions

32,000+

years of professional industry experience

up to

70%

reduction in maintenance costs

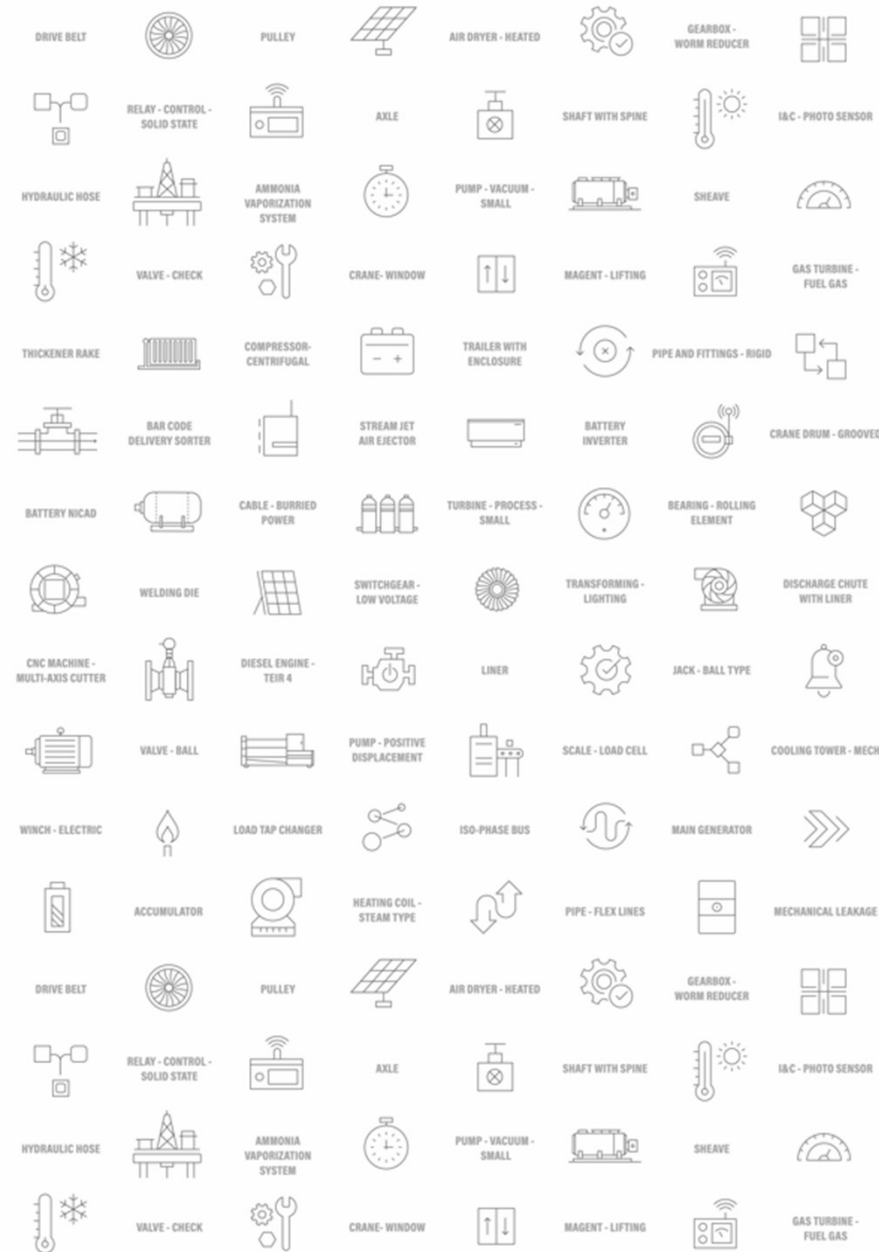
compared to traditional PM strategies

up to

15%

improved reliability

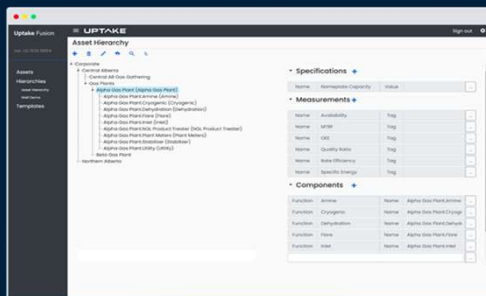
as measured by MTBF



PATHS TO VALUE

Unified Data Management

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



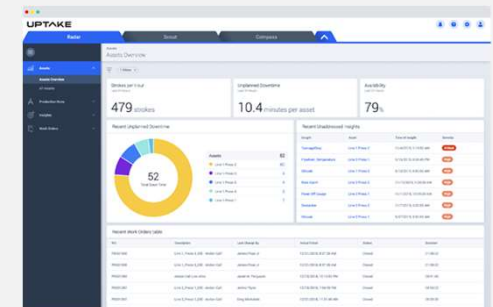
APM

Utilise AI to identify asset PoF and Cost of Failure. Optimize PM and repair costs. Insights based on AI-driven analysis of work order data



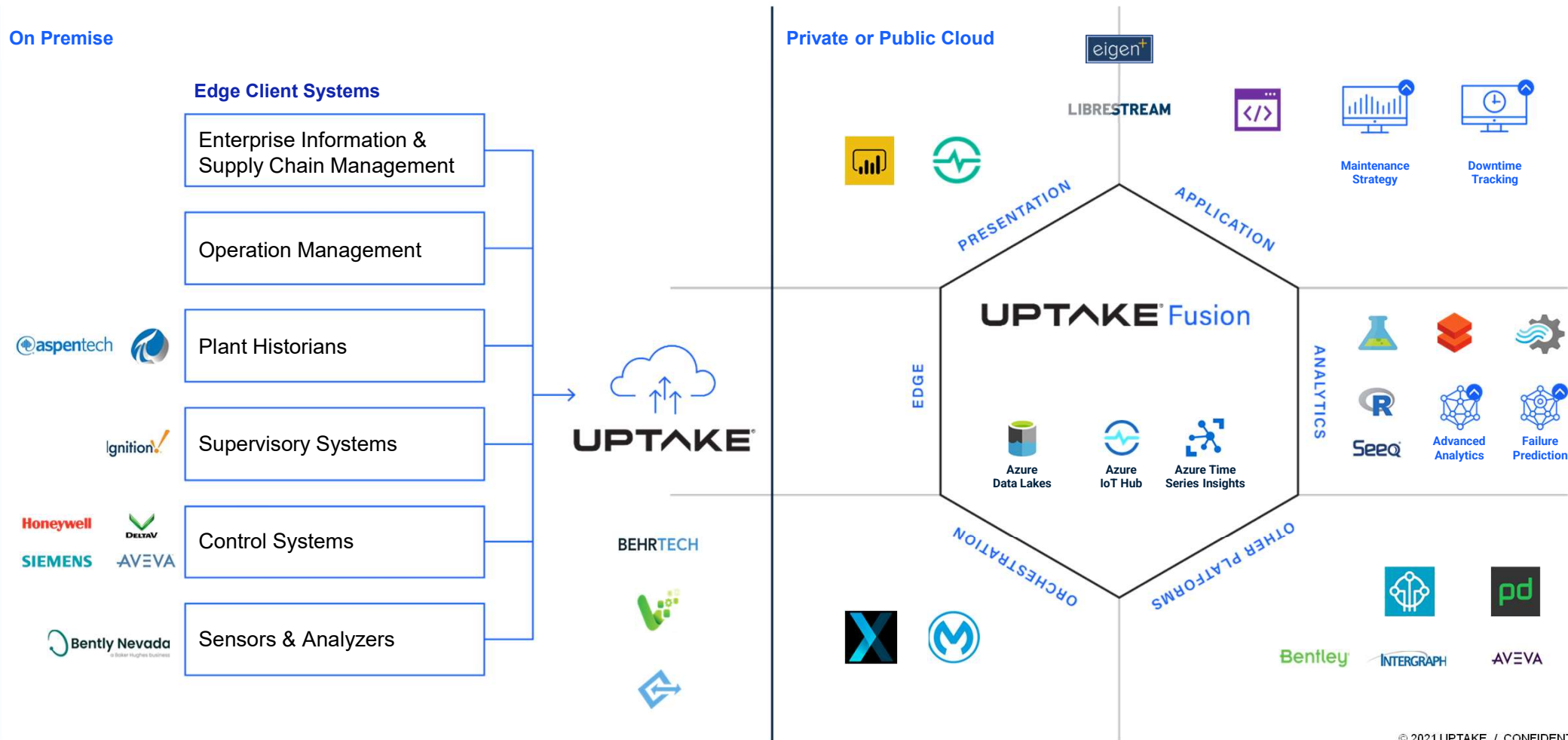
Advanced Analytics

Asset-specific data science bundles to predict failures & optimize equipment performance. Pre-built asset and fluids predictions



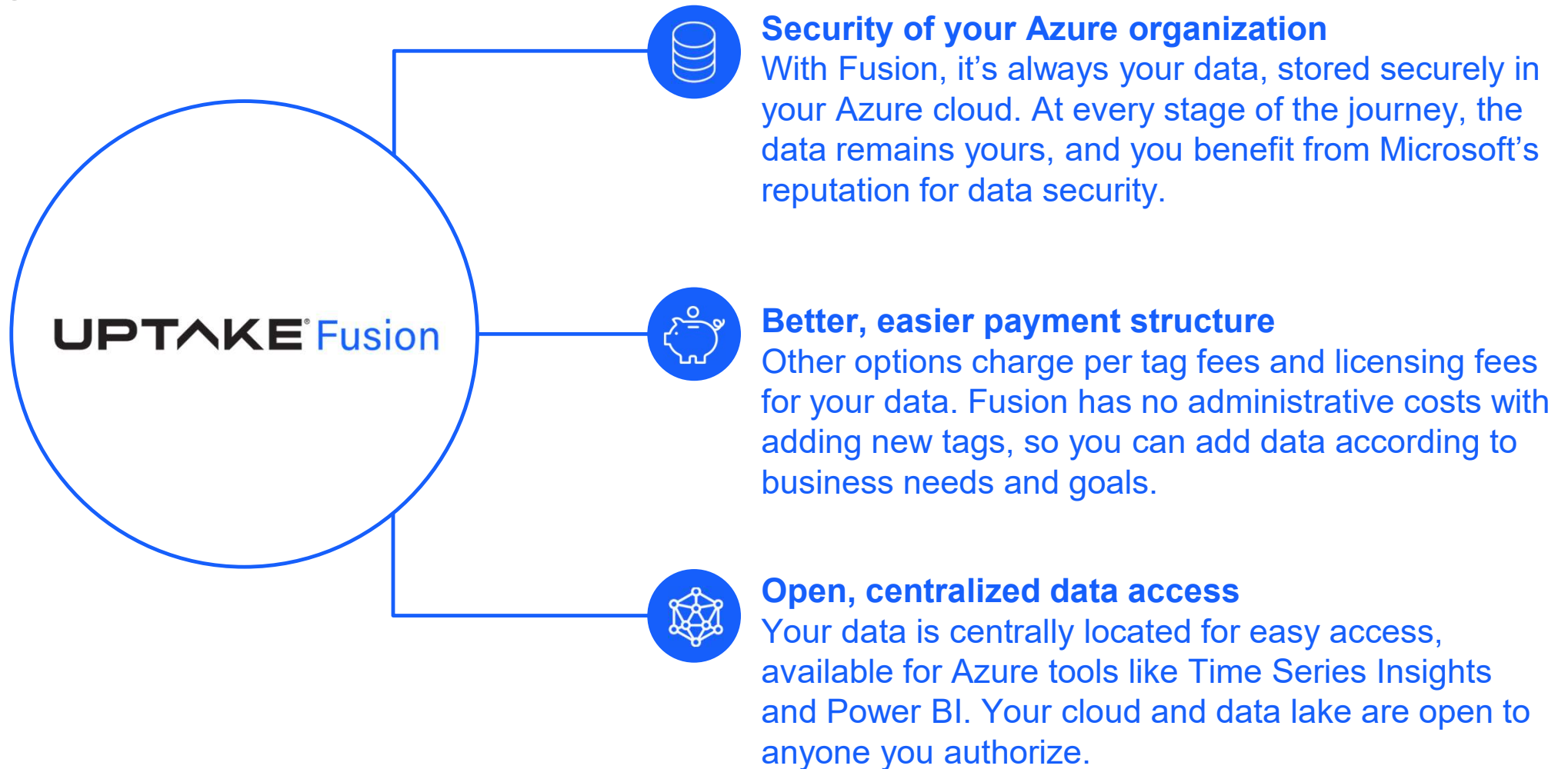
Liberators of Actionable Insights

Elevating Data from Any Operational System for Every Data Consumer



Uptake Fusion

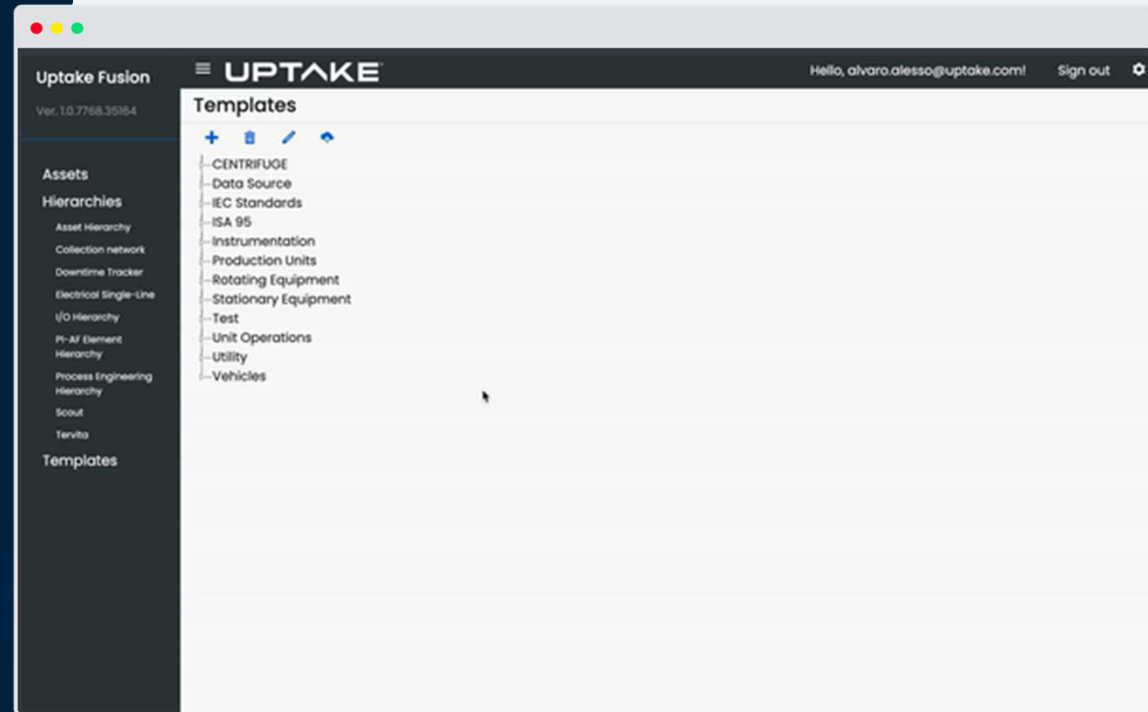
Key Differentiators



Unified Data Management

Liberate OT data and turn it into industrial intelligence

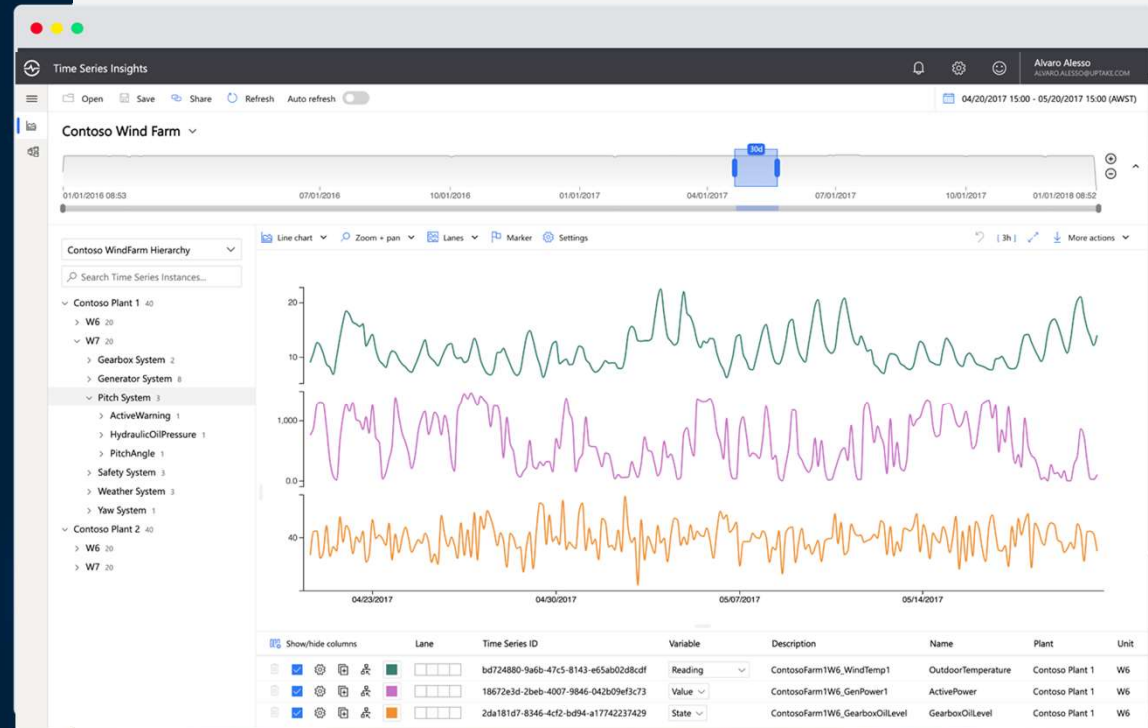
- Moving operational technology (OT) data from industrial sites to the cloud is challenging. Systems like DCs, PLCs, SCADA, and Historians make time-series or real-time data hard to access and share securely. It's time to liberate OT data.



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.



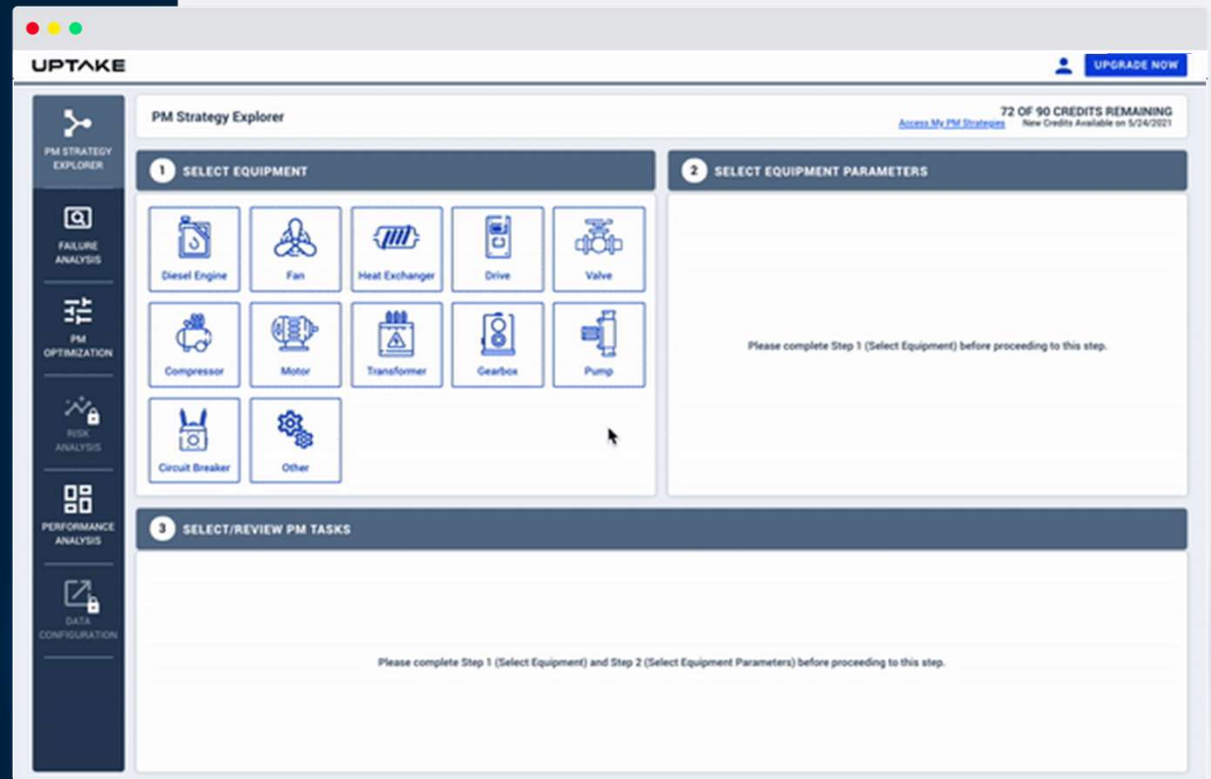
APM

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.

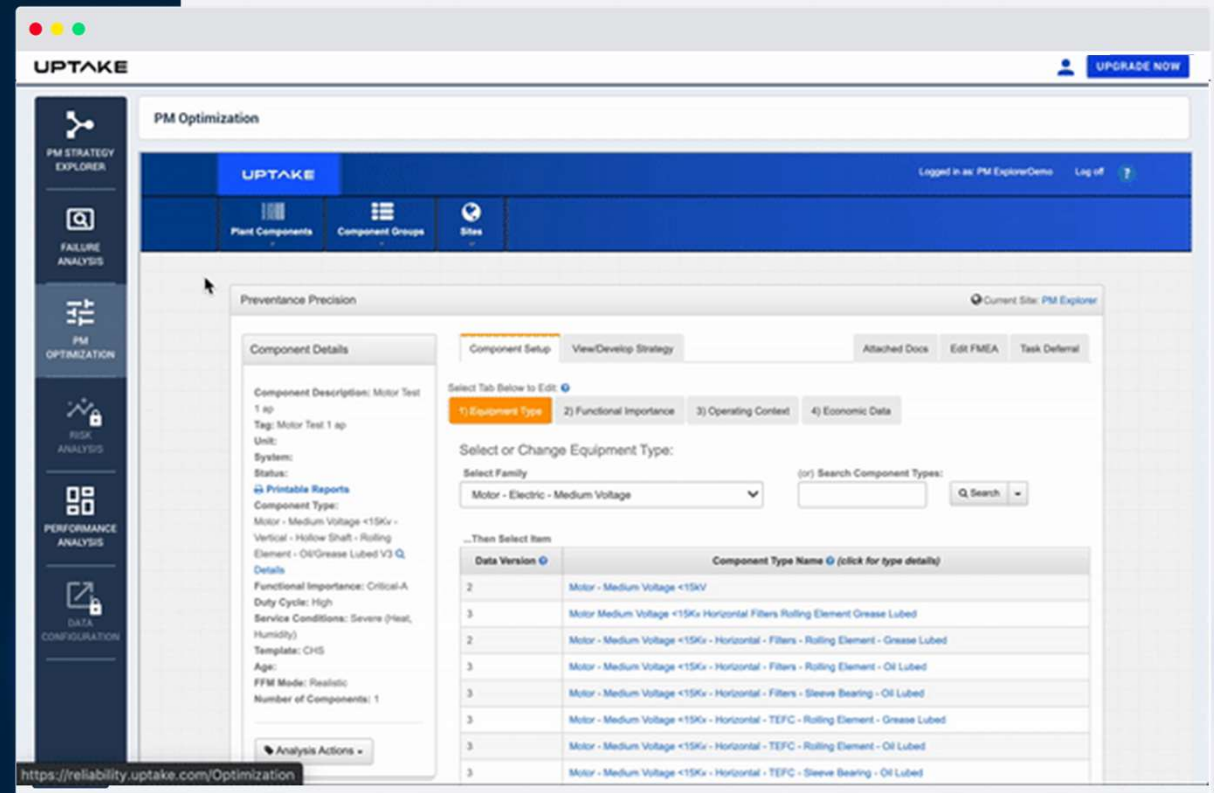


APM

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 32,000+ working years of experience



PRODUCTS

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.

The screenshot displays the UPTAKE Compass Risk Analysis interface. The top section shows a scatter plot titled "top 250 RELIABILITY RISKS BY EQUIPMENT UNIT". The x-axis represents "Probability of Failure (%)" from 0 to 100, and the y-axis represents "Cost of Failure (\$USD)" from 0 to 10. Data points are color-coded by risk level: Very Low (blue), Low (yellow), Medium (orange), and High (red). A legend at the bottom of the plot indicates these categories.

Below the plot is a table titled "RISKS BY EQUIPMENT UNIT" with columns for Equipment SN#, Equipment Type, Functional Location, PoF (%), Consequence (\$USD), and Watchlist. The table lists various equipment units such as pumps, compressors, and motors with their respective risk levels and consequences.

The bottom section provides a detailed view for the "KINGSBURY SLEEVE BEARING PUMP (FLOC-ABC-123)". It shows a 95.2% HIGH risk level and 15.6 hrs/yr of unavailability. Key insights include:

- Packing Seal is at a High Risk of Failure:** Reported 02/19/2021, 78% PoF (Source: Part Survivability Model), 72% PoF (Source: Risk Scenario Model), \$23,890 Cost of Failure.
- Impeller is at a High Risk of Failure:** Reported 02/17/2021, 76% PoF (Source: Part Survivability Model), 70% PoF (Source: Risk Scenario Model), \$5,890 Cost of Failure.
- Bearing is at a Moderate Risk of Replacement or CM:** Reported 02/17/2021, 76% PoF (Source: Part Survivability Model), 72% PoF (Source: Risk Scenario Model), \$23,890 Cost of Failure.

The interface also includes a "PM AND WORK ORDER TASKS FOR THIS EQUIPMENT UNIT" section with a timeline from 2016 to 2021, and a "DOWNLOAD WORK ORDER HISTORY FOR THIS EQUIPMENT UNIT (CSV)" button.

On the right, the "EQUIPMENT INSIGHT DETAILS FOR KINGSBURY SLEEVE BEARING PUMP (FLOC-ABC-123)" section highlights that the "IMPELLER IS AT A HIGH RISK OF FAILURE" (Reported: 02/17/2021). It lists current risk factors such as "Loss of Failed Impeller Key" (95% PoF, 5 since 12/21/2020) and "Physical Damage" (89% PoF, 9 since 11/27/2020). A "supporting EVIDENCE" graph shows the cumulative probability of failure over 10 years, with a callout indicating that the impeller's cumulative probability of failure is 56%.

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

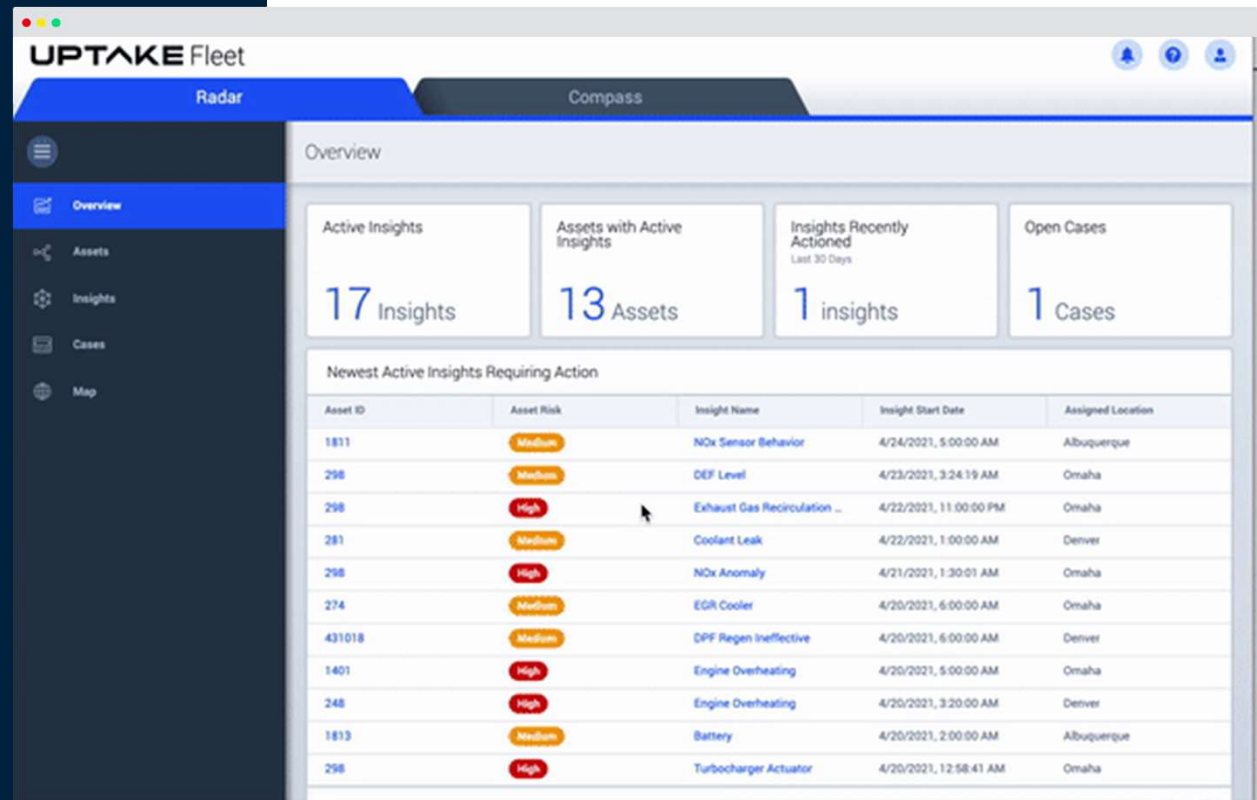
Improve reliability by up to 15%

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



Jump Start Your Preventative Maintenance Strategies

Scenarios for Balancing Costs vs Consequences



Reliability Engineer



Horizontal Pump
(Volute Casing, Mech Seal, Rolling Element Bearings, Oil Lubed)

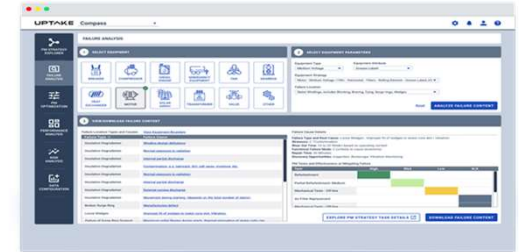
Scenario 1

An Event Has Happened, what do I do now to keep it from happening again?



Failure Analysis

To ID causes of problems or potential issues and contributing factors before Equipment Fails and review FMEAs



UPTAKE Failure Analysis

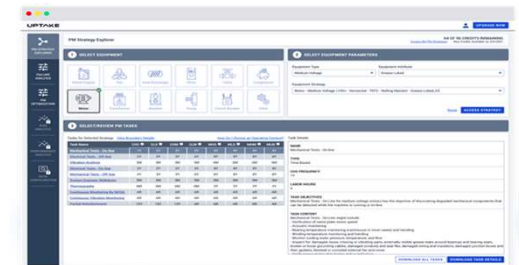
Scenario 2

I have no PM Strategies in place, where do I start?



PM Strategy

Based on Uptake ASL



UPTAKE Strategy Explorer

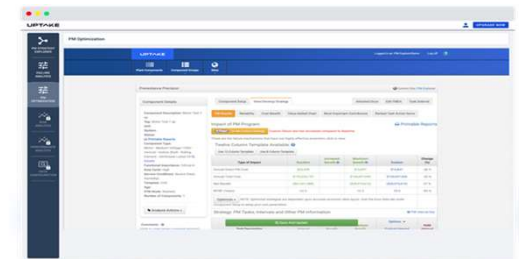
Scenario 3

I think I'm overspending or under servicing critical pumps, how do I optimize or Compare existing Strategies



Optimize Strategies

- Financial Considerations
- Contextual Conditions
- Compare Existing and ASL



UPTAKE PM Optimization



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 Compass 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.

- 11 》 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 Compass (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.

CUSTOMER CASE STUDY



\$10 million saved at largest US nuclear site.

Uptake Compass 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 COMPASS 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

CUSTOMER CASE STUDY

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

CUSTOMER CASE STUDY



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

CUSTOMER CASE STUDY



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

CUSTOMER CASE STUDY



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

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

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