

# The Future of Maximo

## *Next Chapter*

Boštjan Gabrijelčič  
Principal Asset Management Leader EMEA

Stavanger, 24<sup>th</sup> May 2023

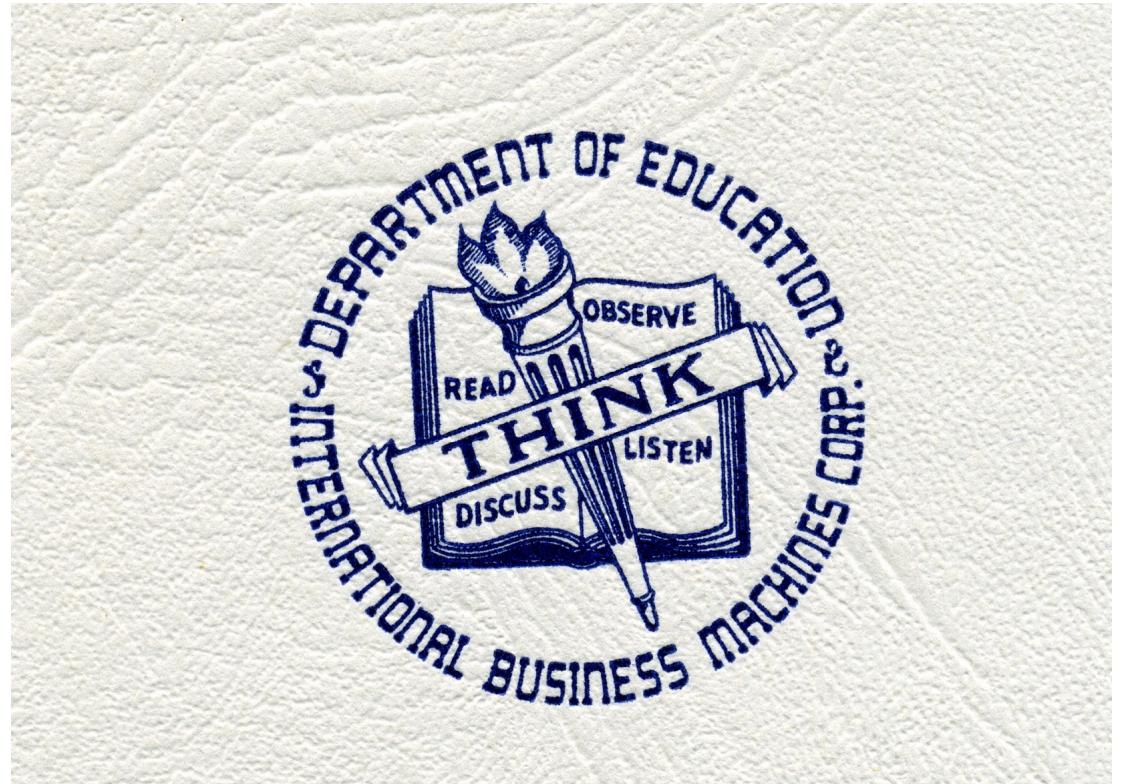
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# Key topics

- Artificial Intelligence / Generative AI
- Robotics / Visual Inspection / Edge
- Mobile / User Experience / Augmented Reality
- Sustainability
- Resiliency / Scalability / Functionality



# Managing the World's Infrastructure

Global warming

Artificial Intelligence

Geopolitics

War

Energy

Inflation

Ageing population



# Digitalisation Adoption

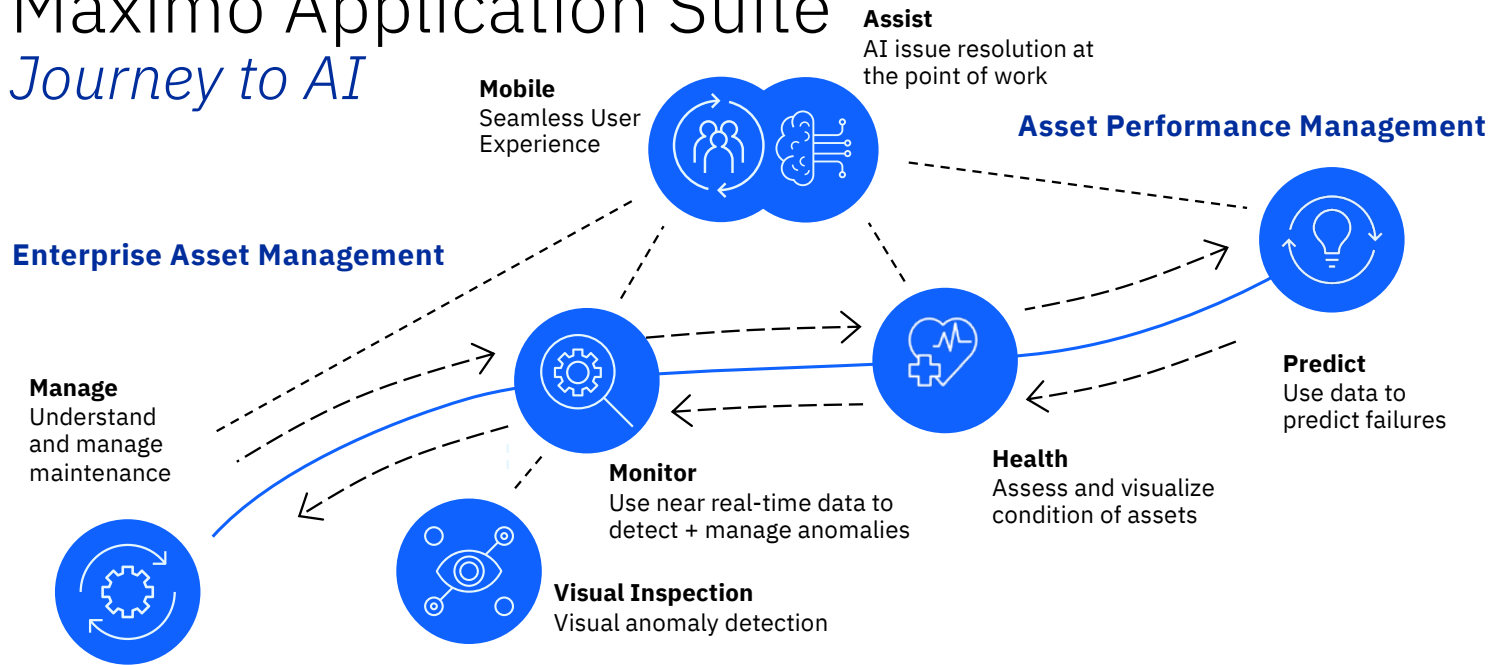
- Mobile 37%
- Predictive Maintenance 15%
- Inspection Robots 11%
- Augmented Reality 9%
- 3D Printing 7%



*2018 Survey of companies in Belgium,  
Germany and the Netherlands.*

# Maximo Application Suite

## *Journey to AI*



**Core Platform Capabilities are shared between functions and users**



### Artificial Intelligence

Receive critical data and instruction based on AI-generated criteria



### Robotics

Use mobile robots for enhanced data collection



### Visual + Acoustic Insights

Analyzes data from visual + acoustic sensors to ID issues in real time



### Edge

Integrate with operations and production at the point of work



### Mobile

Connected to EAM platform with APM, reference docs, AR



# Artificial Intelligence / Generative AI

*“The only way for industrial enterprises to remain competitive in the coming years is by linking AI to their process automation. Don’t screw this one up.”*

*Prof. Dr. Sepp Hochreiter, JKU Linz University, Austria*



## ChatGPT is changing manufacturing...here's how to use it

“The chatbot can provide quick responses for common issues that customers have, enable faster diagnosis and suggest personalized recommendations.”

March 21, 2023

Smart Industry



ON TECH: A.I. NEWSLETTER

## What Makes A.I. Chatbots Go Wrong?

The curious case of the hallucinating software.

## IDC on Chat GPT in manufacturing

*“Good for clerical work simplification, redundant for other functionalities, but definitely overselling itself sometimes.*

*The advice is to take this technology with a grain of salt.”*

*IDC, FEBRUARY 28, 2023|IN ARTIFICIAL INTELLIGENCE, INDUSTRIES*

## Chat GPT on Chat GPT in maintenance

*“Overall, ChatGPT can be a powerful tool for industrial maintenance, helping to improve equipment reliability, reduce downtime, and lower maintenance costs. However, it should be noted that ChatGPT is not a substitute for human expertise and should be used in conjunction with experienced maintenance personnel.”*

*ChatGPT, April 2023*

# Chat GPT v4 Q&A Example

Tech Artificial Intelligence

## The ChatGPT chatbot from OpenAI is amazing, creative, and totally wrong

Need ideas? Great! Need facts? Stay away!

By [Mike Pearl](#) on December 3, 2022 [f](#) [t](#) [i](#)



*I left 5 clothes to dry out in the sun. It took them 5 hours to dry completely. How long would it take to dry 30 clothes?*



*The time it takes for clothes to dry depends on several factors such as the size and thickness of the clothes, humidity, temperature, and wind speed. However, for the sake of simplicity, we can assume that each piece of clothing takes the same amount of time to dry and that the environmental conditions are constant.*

*So, if 5 clothes take 5 hours to dry completely, we can say that it takes 1 hour to dry one piece of clothing. Therefore, to dry 30 clothes, it would take 30 hours, assuming the same environmental conditions remain constant throughout the drying process. However, in reality, it's highly unlikely that the conditions would remain the same for such a long time, so this estimate may not be entirely accurate.*

*Chat GPT, May 2023*



# Trustworthy and Transparent AI



**IBM Announces Watson X: The Best Choice for Enterprise Generative AI**

**watsonx**

By Rob Enderle / May 17, 2023

**techspective**  
a unique perspective on technology

	→ on target	→ on target				
<b>AI journey</b>	<p><b>2023</b></p> <p><i>AI extends beyond natural language processing</i></p>	<p><b>2024</b></p> <p><i>Governance and trust permeate AI</i></p>	<p><b>2025</b></p> <p><i>AI becomes more energy and cost efficient</i></p>	<p><b>2027</b></p> <p><i>Foundation models in production become scalable</i></p>	<p><b>2029</b></p> <p><i>Trustworthy and explainable AI starts to reason</i></p>	<p><b>2030</b></p> <p><i>Fully multi-modal AI gives enterprises unprecedented scale</i></p>
<b>Strategy overview</b>	<p>2023 will expand enterprise foundation model use cases beyond natural language processing (NLP). 100B+ parameter models will be operationalized for bespoke, targeted use cases, opening the door to broader enterprise adoption.</p>	<p>In 2024, we will integrate trust guardrails throughout the AI foundation models lifecycle and AI governance at the organizational level. Data representations will optimize across privacy, fairness, explainability, robustness, etc.</p>	<p>In 2025, we will improve the energy and cost efficiency of foundation model training and inference by 5x and bring 200B+ parameter foundation models to enterprises. It's all about making them more powerful, useful, and practical.</p>	<p>By 2027, we will be routinely doubling the number of foundation model parameters in production for the same energy envelope every 18 months. Training and inference will be 4x more energy efficient vs. 2025.</p>	<p>2029 will be an inflection point. AI will support diverse forms of reasoning with explainability and trust. Energy efficiency will increase 4x more and scalable, operationalized AI models will be routine in enterprises.</p>	<p>By 2030 and beyond, fully multi-modal architectures will learn diverse data representations, and developers will be able to manipulate them at multiple levels of abstraction to give enterprises competitive advantage.</p>
<b>Why this matter to our clients and the world</b>	<p>The expansion of AI foundation models will lower the barrier for entry, broaden the use cases, reduce labeling requirements for training by 10-100x, and provide greater efficiencies through reuse of models across use cases.</p>	<p>Governance and trust in AI will drive significant business value by enabling advanced AI in mission-critical use cases while increasing automation, improving the quality of AI regulatory compliance, and maintaining customer trust.</p>	<p>Reducing cost and improving power efficiency will make foundation models more practical for enterprise workloads and promotes deployment across many enterprise use cases.</p>	<p>Foundation models will scale with growing data volumes and model complexity. A full stack infrastructure will be able to support enterprise data warehouses based on foundation model representations.</p>	<p>2029 AI means robust and explainable NLP, reasoning over text, and generation of knowledge and trustworthy natural language to advance mission critical use cases. Tuning of domain-specific AI models will be 10x faster and cheaper.</p>	<p>By being able to predict, act, plan, and adapt to new situations and environments, these unified neural architectures — grounded in biological brains — will broaden use cases even further while reducing energy consumption.</p>

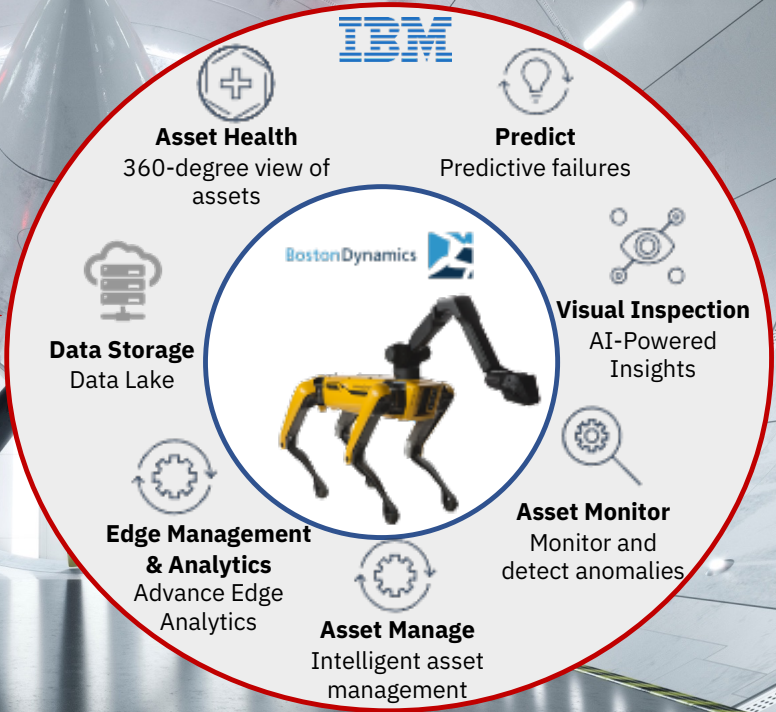
<https://pages.github.ibm.com/technology-atlas/roadmaps/ai/>






# Robotic Automation

-  Manufacturing
-  Energy & utilities
-  Public safety
-  Oil, Gas and Mining industry
-  Warehousing
-  Building Infrastructure

- Inspection (Production and Quality)
- Onsite Mobile Surveillance
- Worker and Public Safety
- Remote site inspection**
- Predictive Maintenance
- Inventory tracking and Material handling
- Digital Twin Designing

## IBM's Intelligent SPOT Solution



-  Maintenance squad
-  Production planning
-  Safety Dept
-  Admin
-  Service/OEM Partner

Catch Issues Sooner + Prevent Failures

**50%** Decrease in unplanned downtime

Reduce Preventive Maintenance Costs

**60%** Defer unnecessary PMs by knowing asset health

Increase Efficiency of Repair

**20%** Increase first-time fix rate and improve technician productivity

# SPOT at Paris Underground



Noise Anomaly Detection



Leak Detection



Gauge Reading



Radiation Detection



Telemedicine



Thermal Inspection



Search and Alert



Gas Detection



Site Documentation



Digital Twin Creation

*As the city of Paris sleeps, Spot is hard at work inspecting some of RATP Group's 35,000 civil works components. See why [RATPgroup](https://bit.ly/3JWdrNy) has turned to mobile robotics to inspect hard-to-reach and hazardous areas. <https://bit.ly/3JWdrNy>*

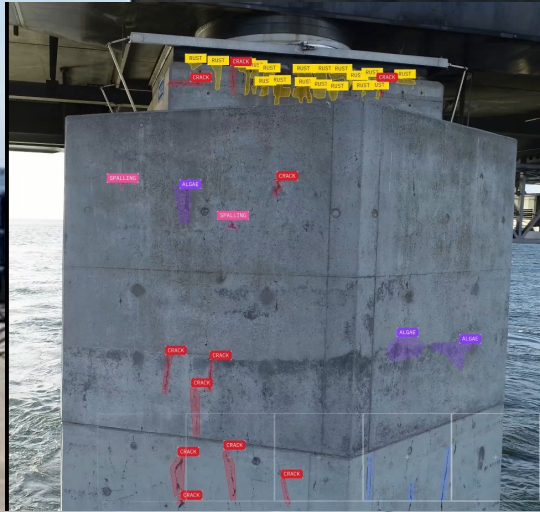


# IBM-SPOT IR Inspection Electric Room / Transformer

The screenshot displays the IBM-SPOT IR application interface. At the top, there are navigation buttons for 'DRIVE' and 'SPOT CAM THERMAL', along with system status icons (power, battery, eye, heart, Wi-Fi) and a 'Tablet:' indicator. A prominent red 'STOP' button is located on the right. The main display is split into two sections: a thermal camera view on top and a 360-degree camera view on the bottom. The thermal view shows a color-coded temperature map of an electric room, with a temperature scale on the left ranging from 14.85°C (blue) to 25.65°C (red). A specific component is highlighted with a red crosshair and labeled '20.71°C'. The 360-degree view shows the physical environment with a red 'HT' button, a 'FAST' speed slider, and movement controls for 'Stand' (B) and 'Walk' (A). A large red '+' button is visible in the bottom right corner of the 360-degree view.



# Sund & Baelte Drone Inspection



# End User Experience is King

*Real users don't read manuals*

## **Seamless / Mobile / Intuitive / All generations**

- Enterprise Asset Management & Asset Performance Management
- Documentation
- Augmented Reality / Remote Assistance
- AI guidance & Learning

*“Perfection is Achieved Not When There Is Nothing More to Add, But When There Is Nothing Left to Take Away”  
Antoine de Saint-Exupery.*



# Maximo Design Team



# Sustainability is a global megatrend

The world's largest corporations and governments are **accelerating** decarbonization commitments, amid increasing scrutiny of **ESG disclosure**

## Corporate Sustainability Reporting Directive (CSRD)

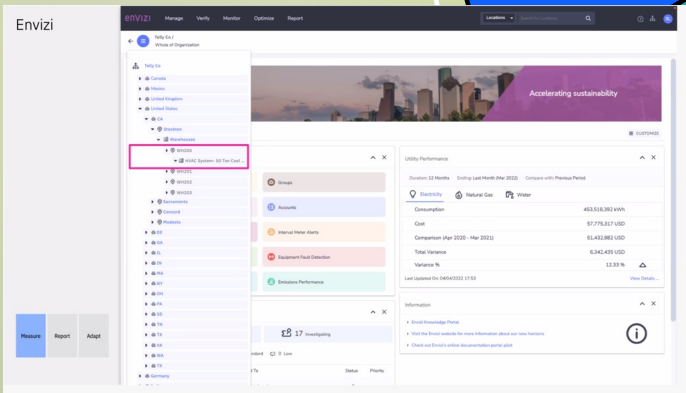
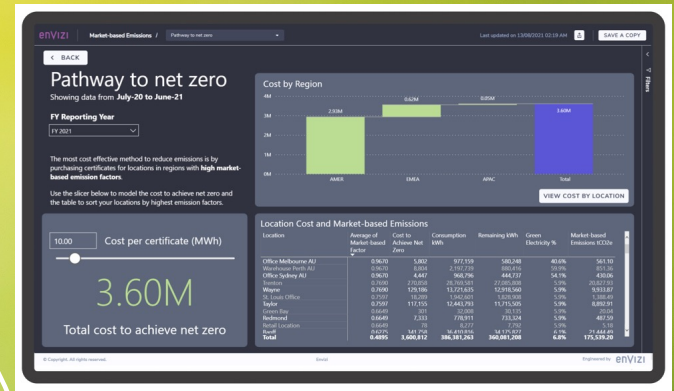
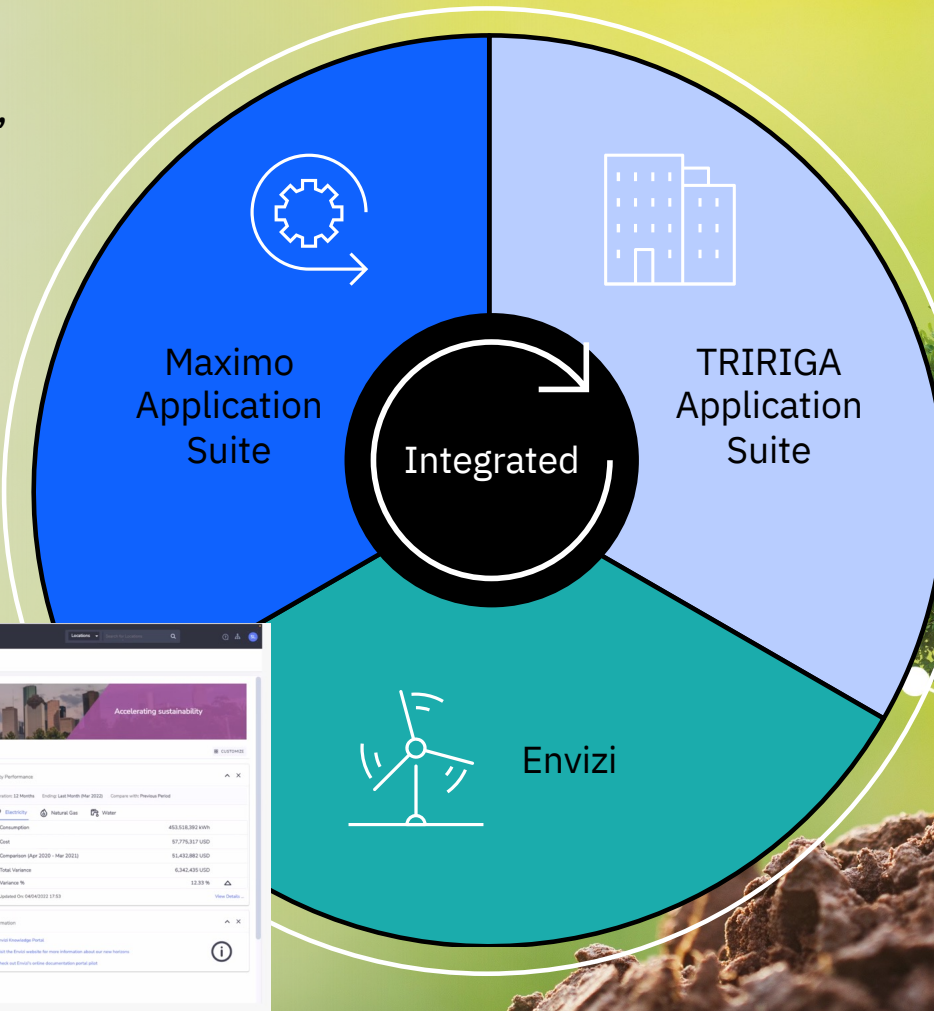
Mandatory for large EU companies\* to publicly disclose ESG performance  
2024 data for 2025 reporting





# Automating ESG

- Receive location, asset, and emissions information for ESG reporting
- Identify focus areas & assets
- Plan & execute decarbonization projects



**Jane Muir-Sands**  
Vice President Global Real Estate and Operations at IBM

**Customer #0**

*“High performance asset management equals high performance sustainability”*

*Brody Wilson, Sustainability Manager, IBM Global Real Estate*

Maximo Resiliency & Scalability

# Default Operations

Large

Critical Situations

Small

IBM Sustainability Software / © 2023 IBM Corporation

# Maximo 5 year High-level Roadmap

2022

2023

2024

2025

2026

## Manage

- Scheduling Dashboard
- Operational Dashboard
- Indoor Mapping

## Manage IS/Add-ons Updates

- Civil Infrastructure
- Nuclear
- O&G/HSE

## MAS SaaS

- Self service enhancements
- Security and regulatory compliance updates

## Maximo Mobile

- Current Mobile App enhancements
- Storeroom Clerk – Inventory Counting
- Defect App
- Asset Manager/Auditor

## Maximo Application Suite

- Consolidated platform
- Monitor
- Health
- Predict
- Visual Inspections

## Manage

- Scheduler Dispatch
- Operational Dashboard
- Enhanced Configuration

## Manage IS/Add-ons

- Maximo IT (fka ICD)
- Civil Infrastructure
- Scheduler/Scheduler Plus
- Optimization

## MAS Cloud Deployment

- Hybrid Cloud support
- AWS SaaS
- Security & Regulatory Compliance updates

## Maximo Mobile

- Storeroom Clerk
- Support for e-sig

## Maximo Application Suite

- Manage (EAM)
- Containerized deployment with Single Node OpenShift
- Monitor, Health, Predict
- Cognos reporting
- Visual Inspections

## Manage

- Asset Reliability Enhancements
- Asset Cost Rollup
- Additional Work Centers/UX
- Industry Solution and Addon updates

## Maximo Cloud Deployment

- Fisma/FedRamp
- Rolling upgrade
- Continued Security & Regulatory Compliance updates

## Maximo Mobile

- Enhanced applications for the technician

## Maximo Application Suite

- Industry Accelerators
- Expanded scoring and models
- Updates to Monitor, Health, Predict, MVI

## Manage

- Supply Chain – Manifesting, Hazardous Materials Mgmt
- Platform Improvements
- Workflow engine updates
- Industry Solution and Addon updates

## Maximo Cloud Deployment

- Additional applications
- Continued Security & Regulatory Compliance updates
- Serviceability

## Maximo Mobile

- New and enhanced applications, Offline Work centers

## Maximo Application Suite

- Optimized Investment Planning
- 3-D Visualization
- Updates to Monitor, Health, Predict, MVI

## Manage

- Customer and Market driven enhancements
- Improved Reporting and Data management
- Industry Solution and Addon updates

## New Industries or Markets

- Mining
- others

## MAS Cloud Deployment

- Continued Security & Regulatory Compliance updates
- Serviceability

## Maximo Mobile

- New and enhanced applications, Offline Work centers

## Maximo Application Suite

- Asset Performance benchmarks
- Updates to Monitor, Health, Predict, MVI

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# MAS/Manage Roadmap – 2023

## MAS 8.8/8.9 2022

Inventory Count Books  
Spatial - Indoor Mapping

### Role Based Apps

- Scheduling Dashboard
- Operational Dashboard

### MAF Configuration

- UI Control Preview
- Ability to use deploy dates
- Full page Component rendering
- Support of MAF non-Mobile applications

### Manage Mobile Apps

- Current Mobile App enhancements
- Storeroom Clerk – Inventory Counting
- Defect App
- Asset Manager/Auditor

### Serviceability /Security/Currency

- Operator maturity model enhancements
- Improved logging options
- Autoscripting Enhancements

### Civil Infrastructure enhancements

- Mobile Issue Collection with integration to MVI for Bridge Defects
- Drone Mission table in Manage
- Asset Classification Sample for Bridge
- Regional Asset Manager View – Health of Structures on a Map
- Drone Image Upload/Drone Application Alpha
- Linear Road and Rail Defects/Closure Planning
- Key Bridge Asset Template w/ Inspection Forms

## MAS 8.10 Mar. 2023

### Role Based Apps

- Scheduler Dashboard enhancements
- Dispatching Dashboard
- Operational Dashboard enhancements

### MAF Configuration

- Component view inter-activity with Properties Editor
- Add UI guided features to support App Upgrade process

### Manage Mobile Apps

- Current Mobile App enhancements
  - Addition of E-sig to Technician App
- Storeroom Clerk - Receiving

### Serviceability /Security/Currency

- Operator maturity model enhancements

### Reporting

- Cognos 11.2

### IS enhancements

- RBA and mobile apps
- Civil Infrastructure enhancements

## MAS 8.y Q3 2023

### Role Based Apps

- Scheduler/Dispatcher enhancements
- Operational Dashboard
  - Operations enhancements
- MMI (Manage Monitoring Information)
- New Inspection Forms

### MAF Configuration

- Drag & drop configuration

### Manage Mobile Apps

- Current Mobile App enhancements
  - Addition of Calibration to Technician App
- Storeroom Clerk - Issues & Returns

### Serviceability /Security/Currency

- Operator maturity model enhancements

### Reporting

- Cognos enhancements

### IS enhancements

- RBA and mobile apps
- Civil Infrastructure enhancements

## MAS 8.z Q1 2024

### Role Based Apps

- Scheduler/Dispatcher enhancements
- Operational Dashboard
  - HSE enhancements
- New Dataloader

### MAF Configuration

- Tool Palette
- DataSource Assignment
- Data Dictionary Searching

### Manage Mobile Apps

- Current Mobile App enhancements
- Desktop Requisition

### Serviceability /Security/Currency

- Operator maturity model enhancements

### IS enhancements

- RBA and mobile apps
- Civil Infrastructure enhancements

# Maximo Application Suite

*Best of class capabilities to provide complete view of your assets*

*Coming soon !*



IBM Cloud Pak for Data | IBM Watson Studio | IBM Watson ML | IBM Watson Discovery | IBM Watson Assistant | IBM App Connect



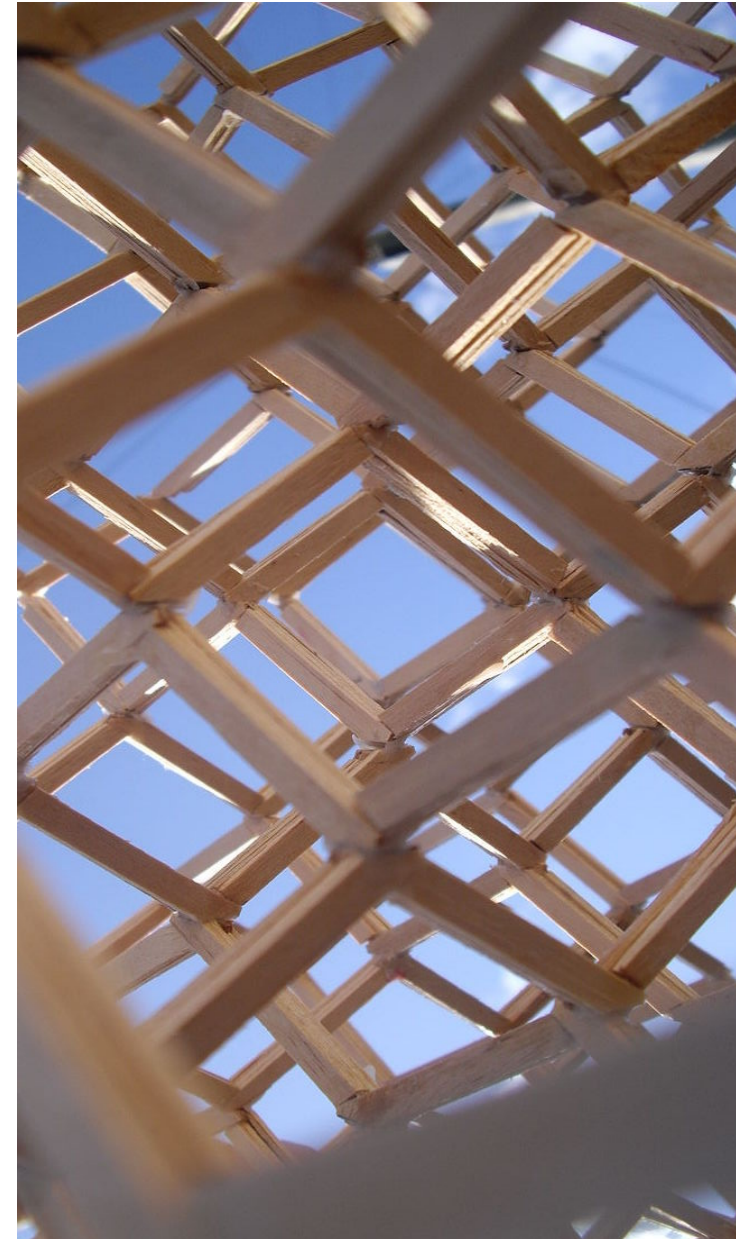
Infrastructure Independent  
Common Operating Environment



# Modernized Experiences to support the new workforce

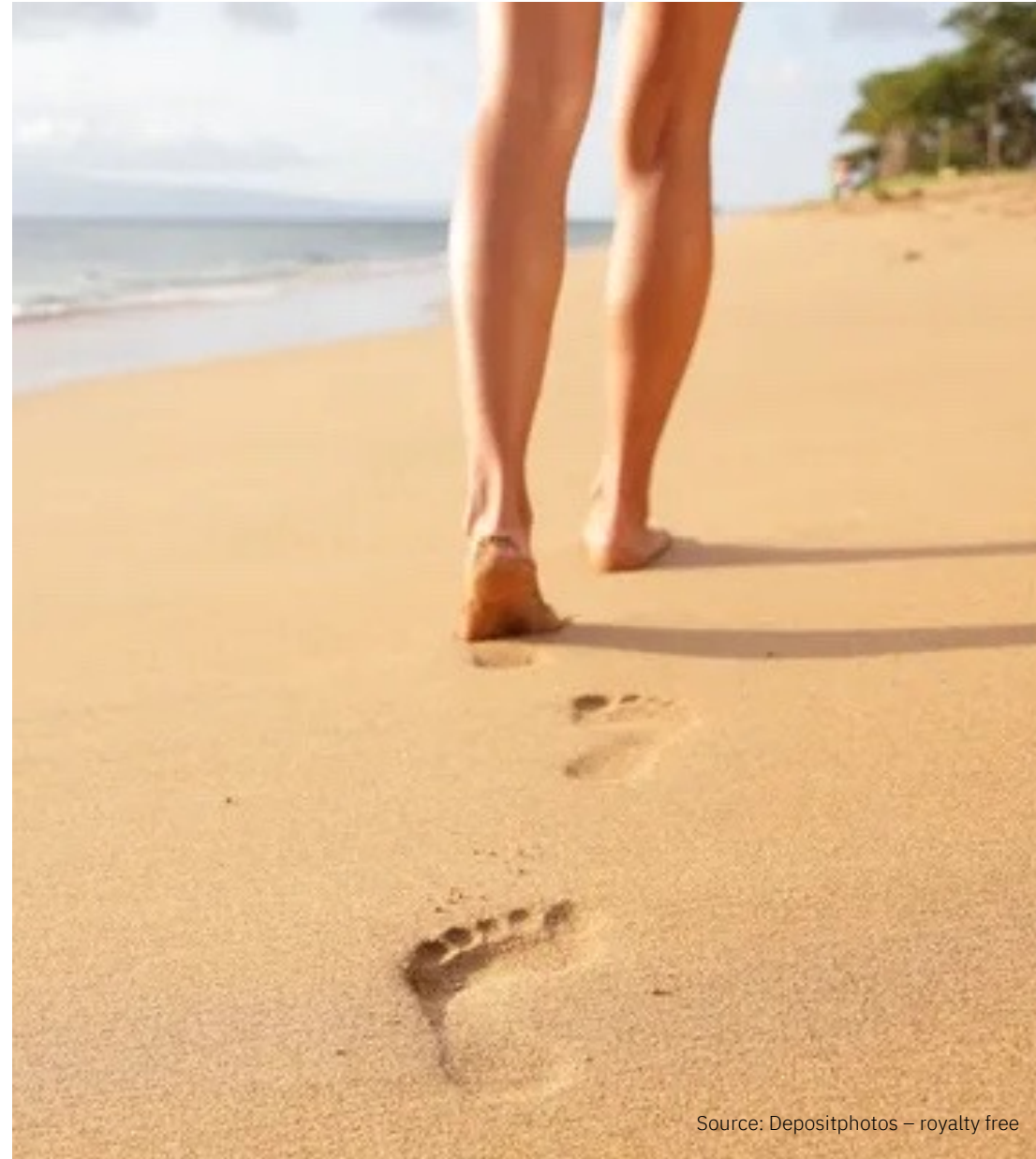
## Maximo Application Framework

- ✓ Uses [REST APIs](#) to ensure business rules with direct connectivity to the enterprise system
- ✓ Applications run in a browser or on a mobile device
- ✓ Same tool to [configure](#) an App to run on mobile and desktop, can use xml presentations
- ✓ Same development environment to [create/build Apps](#) for mobile and desktop



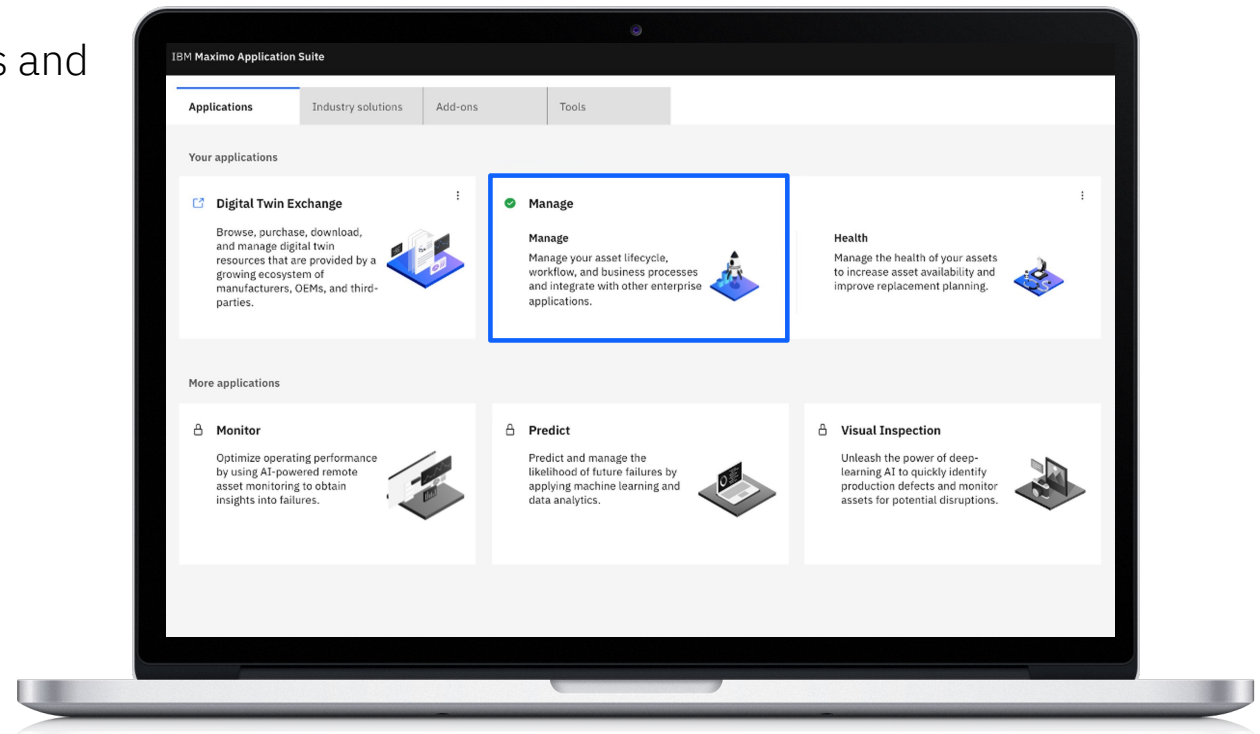
# Shrinking the footprint & improving performance

- Single Node OpenShift with 16 vCPUs and 64 GB Memory for 70 concurrent users (Manage)
- Smaller models in Visual Inspection
- Monitor performance improvement



# Longer version cycles & simplified installation

- Two versions per year - 8.10 and 8.11 in 2023
- Improved operator maturity for upgrades and scalability
- Significantly simplified installation and upgrade



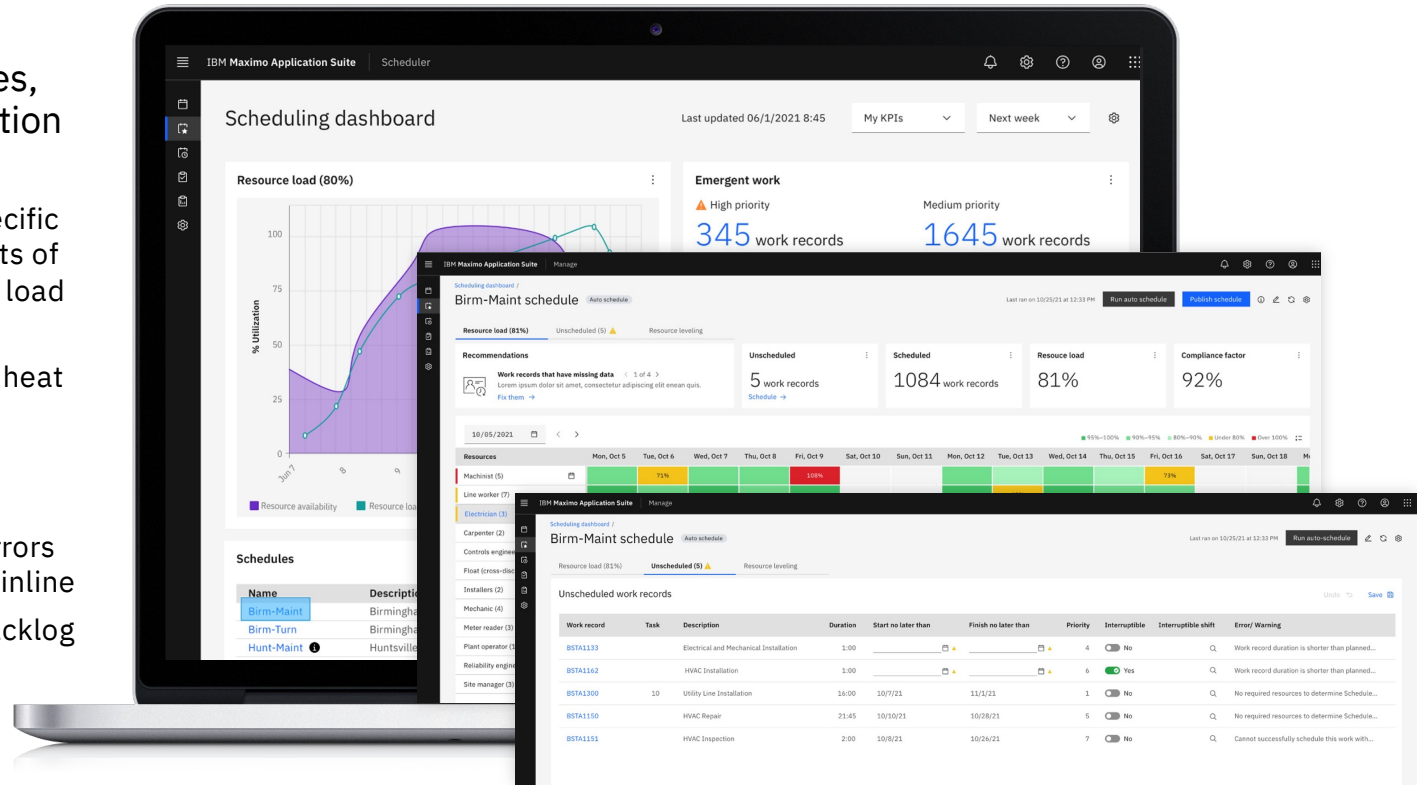


# Scheduling Dashboard

## Role Based Application

The dashboard is a holistic view of schedules, indicating areas requiring scheduler's attention with navigation to detailed schedule.

- Optimization initiated by the scheduler or at specific times using configurable parameters. The results of the optimized schedules are shown by resource load and resource levelling.
- Resource load and availability is presented as a heat map, clearly indicating areas of concern
- Resource levelling provides the user with an interactive graphical view
- Unscheduled work records are listed with the errors or warnings in a table that allows the user to fix inline
- Ability to bring work into the schedule from a backlog
- Compliance reporting with configurable metrics
- Leverages existing objects and methods of core applications. Ability to navigate to classic applications for details and additional modifications when necessary

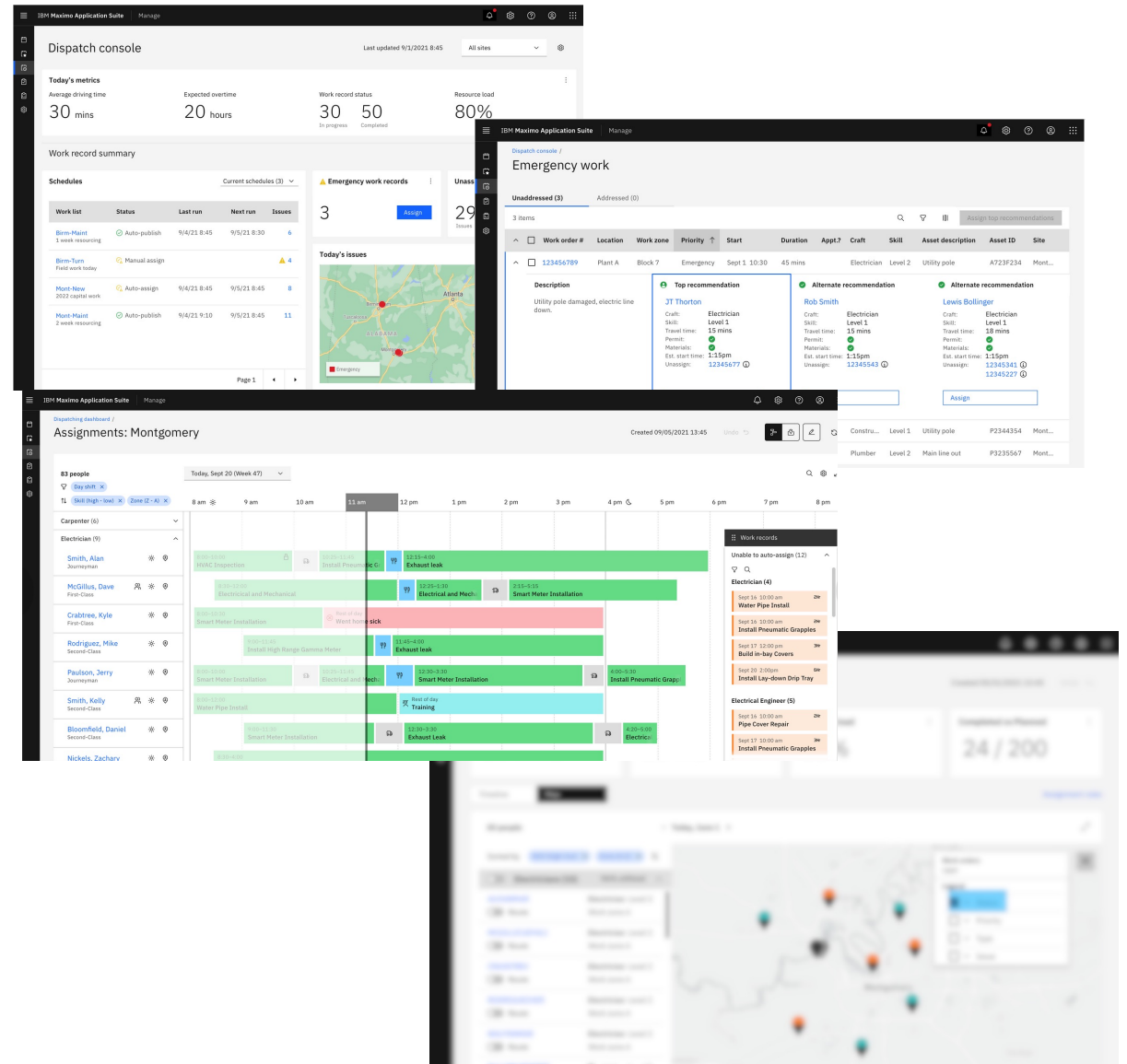


# Dispatching Dashboard

## Role Based Application

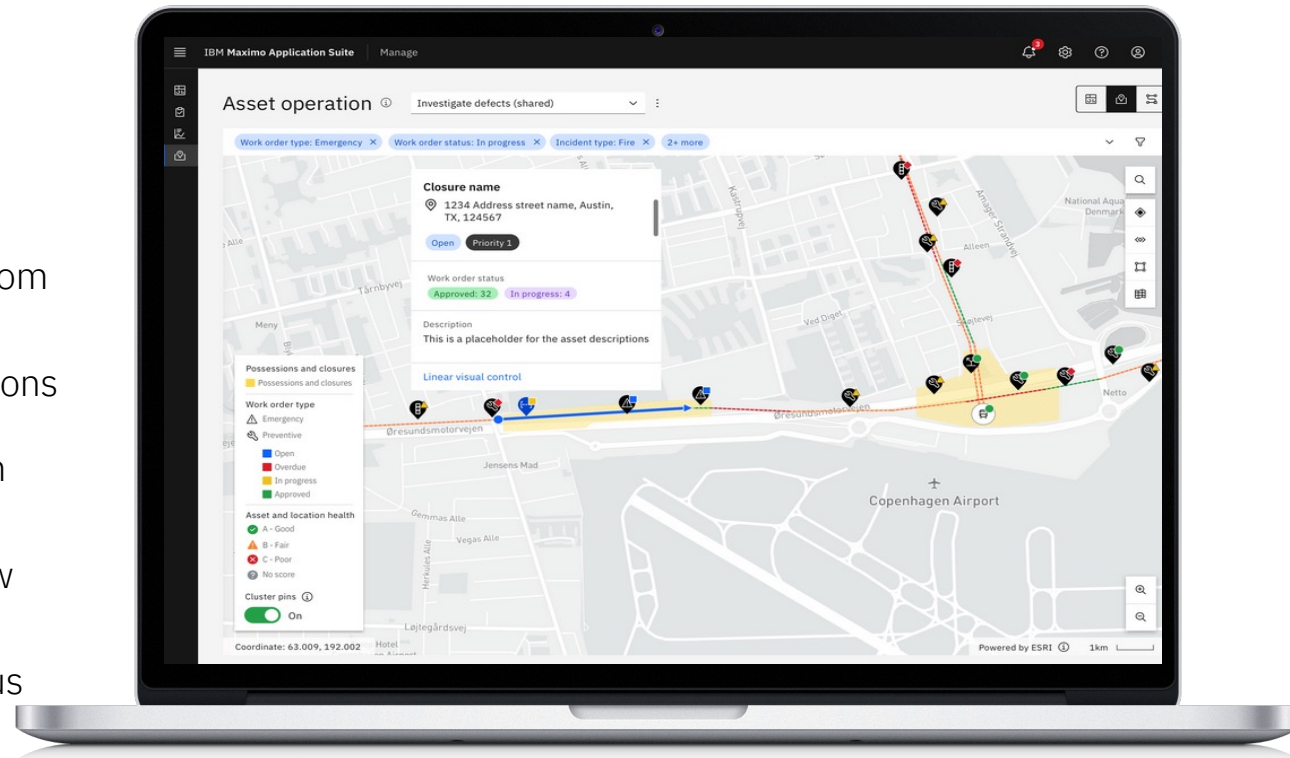
The dashboard is a holistic view indicating areas requiring attention with navigation to detailed schedule

- Rule based optimization can be initiated by the user or scheduled as specific times using configurable parameters. The results of the optimized assignments are presented as KPIs in graphical timeline or map
- Emergency work top recommendations presented to the user to make informed decisions to assign to the right person considering various factors such as skill, travel time and current assignments
- Timeline interactive view allows the dispatcher to monitor work status as the day progresses and indicates areas requiring attention
- Map interactive view allows the dispatcher to view technicians and crews daily routes and locations
- Ability to assign work from a backlog when extra time is available



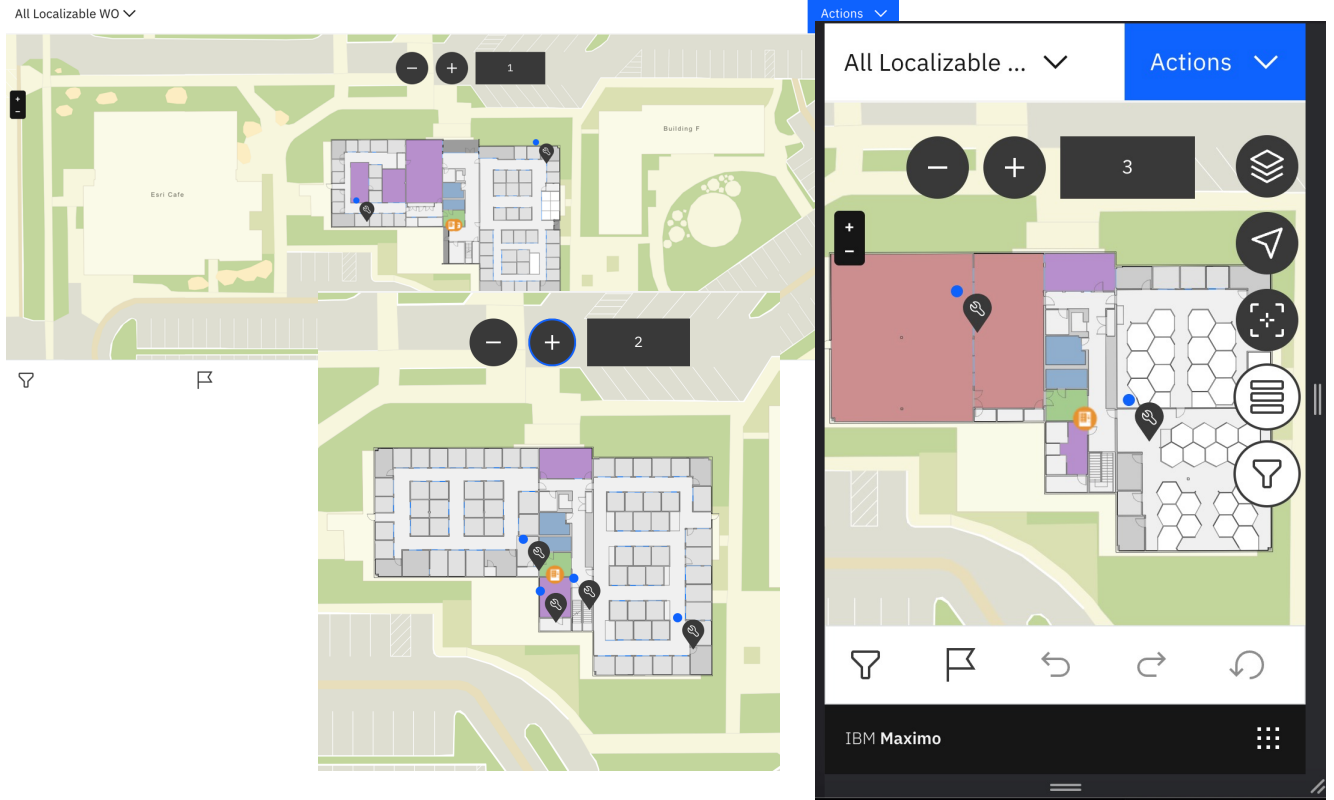
# Understand the health and work of critical infrastructure and assets

- Asset manager can easily get insights about work and health for transportation networks that span linear, spatial and structural views
- The user will be able to visualize linear closures from the map
- Important information about the assets and locations that the user manages, such as images and schematics, can be opened at the click of a button
- Modernized GIS capabilities to be able to see multiple assets in multiple work orders in one view
- Visualize the linear work order length/distance, feature and point asset position, overlapping status
- Reflect both the map and the linear visual control
- Integrated with the operational dashboard in Manage



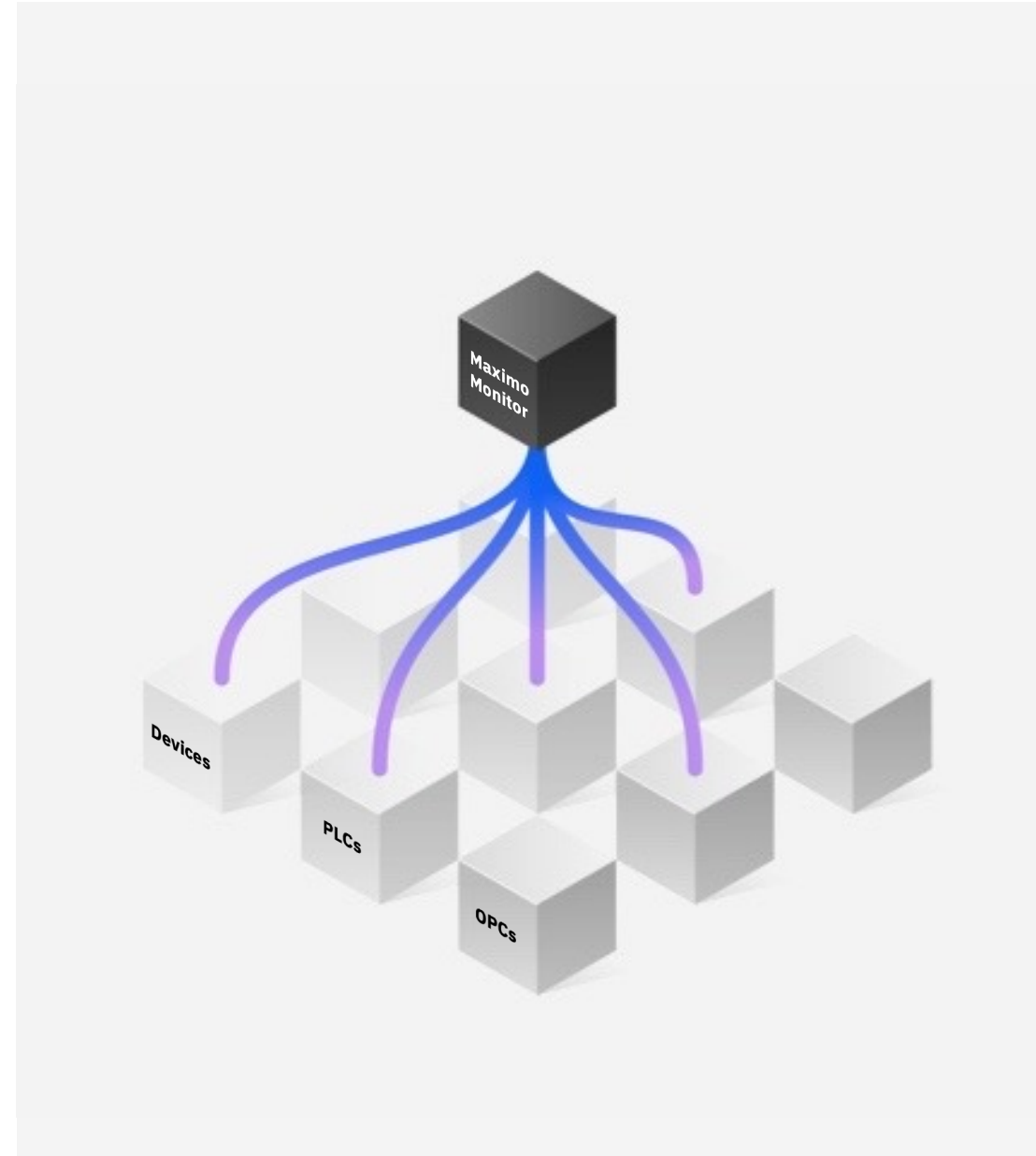
# Spatial - Indoor Mapping

- Quickly find and validate work locations
- Area Isolation scenarios
- Indoor Positioning for proximity and routes
- Access through MAP tab in existing Mobile and Desktop applications – supports online and offline access



# OMNIO now part of Monitor – Edge Data Collector

- Connection of a large number of fieldbus protocols to the IoT platform in Maximo Application Suite (Monitor)
- Industrial edge/gateway with comprehensive pre-processing options
- Easy configuration



# Adding Cognos to the Maximo Application Suite



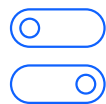
Provide analytic information to meet strategic and operational needs of our customers



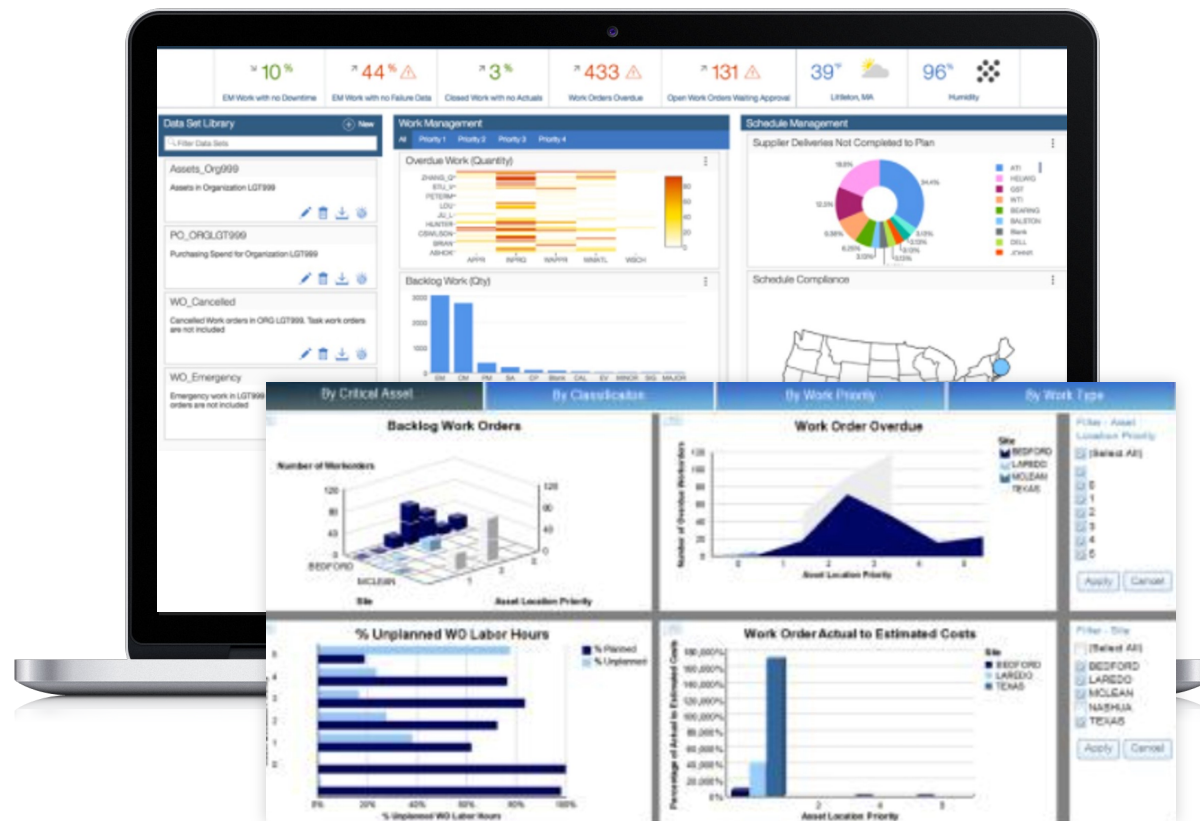
Display information quickly and in real-time



Deliver critical metric to drill down into actionable items



Make content customizable



# Uptake's Asset Strategy Library

IBM Maximo Application Suite will integrate Uptake's advanced optimization algorithms and content libraries capabilities into its existing suite of asset management tools, providing customers with an even more powerful solution for managing their assets.

## Uptake Knowledgebase

800+

critical asset types covered

5K+

preventative maintenance tasks and intervals organized by operating context

58K+

universal failure mechanisms spanning all known operating contexts

32K+

years of professional industry experience

## Customer Outcomes

UP TO 20%

reduction in maintenance costs

UP TO 15%

improved reliability

~75%

faster than traditional RCM

UP TO 37%

labor hour reduction via elimination of ineffective tasks

Introducing RCM based capabilities and libraries within MAS:

- ✓ Rapid FMEA-based asset strategy creation
- ✓ Prebuilt FMEA libraries, PMs, and Job Plans
- ✓ Advanced PM Optimization balancing reliability, cost, and operating context
- ✓ Unified platform (EAM+APM) for strategy deployment and work execution

UPTAKE ASSET STRATEGY LIBRARY® EXPLORER

**OPTIMIZE YOUR  
PREVENTATIVE  
MAINTENANCE  
STRATEGIES**

# Maximo Application Suite

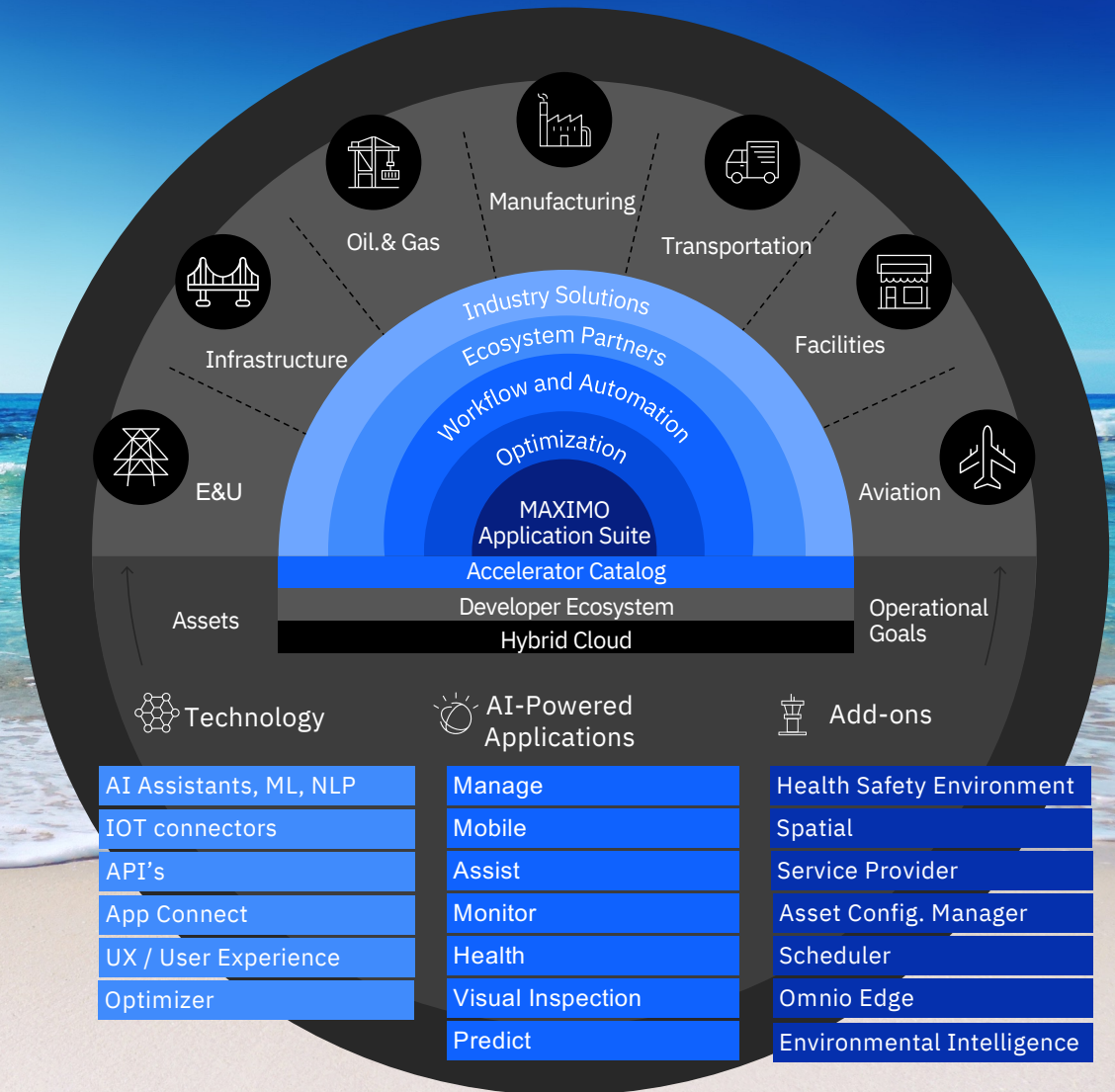
## Operations Optimization platform

### Powered by AI-based Automation

The next generation of Operational Technology solutions requires bringing *new intelligence* that did not previously exist.

Enhancing physical assets operations with rich digital insights helps companies *transform* their businesses.

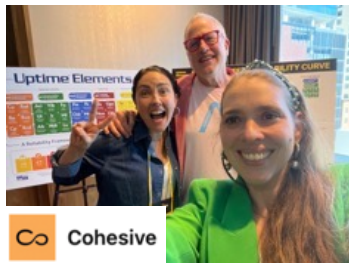
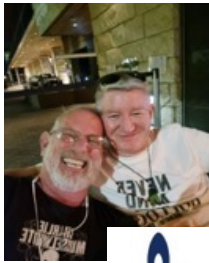
Technology must be intuitive and *easy to use* without lengthy manuals and training.







**USER GROUPS AND CERTIFICATE WORKSHOPS AUGUST 7 • AUGUST 7-10, 2023 • PHOENIX, ARIZONA**



# Maximo Exchange EMEA 2023

IBM Innovation Studio Munich & online  
October 10-11

#1

Maximo users

exchanging the most exciting projects to learn from each other and discuss ideas with peers, domain and IBM experts

IBM Sustainability Software/ © 2023 IBM Corporation

#2

Break the boundaries

Your peers might be in a similar industry, but different country. Exchange your challenges with industry leaders across EMEA.

#3

Not your usual event

This event is intended to be a user centric, fully co-created conference, not to a standard vendor-marketing event.

#4

Let's create!

- Topics
- Speakers
- The future

# The Future of Maximo

## *Next Chapter*

Boštjan Gabrijelčič  
Principal Asset Management Leader EMEA

Stavanger, 24<sup>th</sup> May 2023

