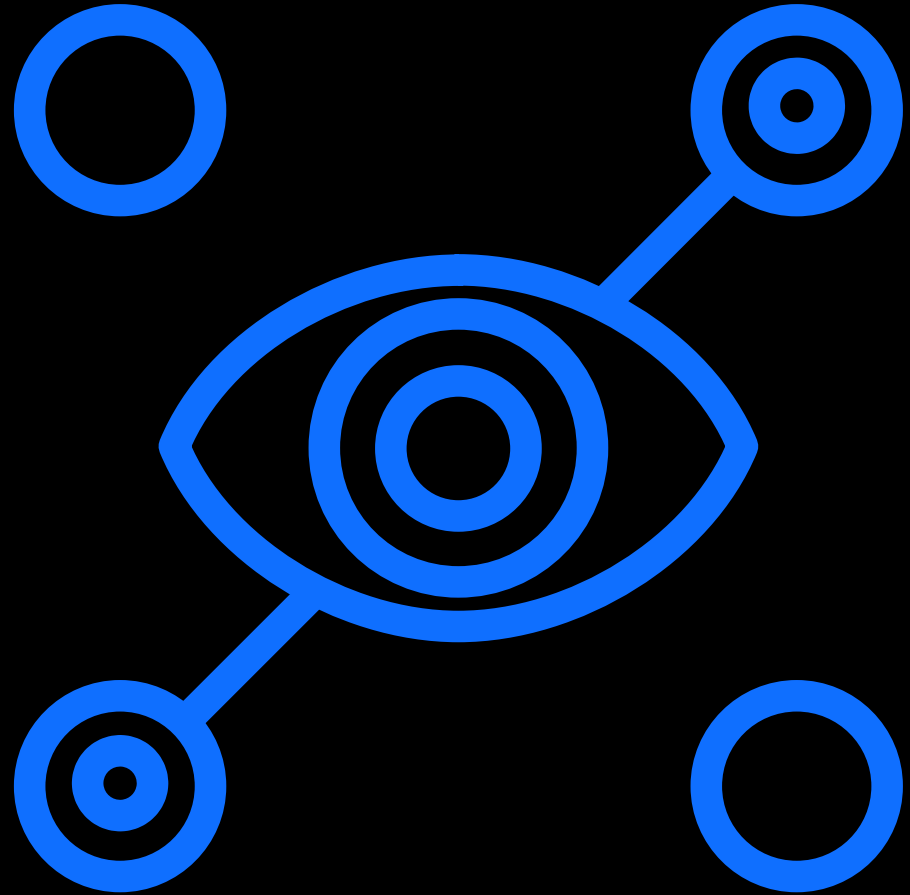


# IBM Maximo Visual Inspection



Industry 4.0  
transformation is being  
accelerated by AI



# IDC Predictions for Manufacturing

## By 2023: **AI and Edge**

70% of Internet of Things (IoT) deployments will include **AI solutions for autonomous or edge decision making**

## By 2024: **Intelligent Assets**

40% of manufacturers will use **field asset IoT data to intelligently diagnose issues and resolve autonomously**, improving unplanned downtime by 25%

## By 2025: **Digital Twins**

60% of manufacturers will use IoT Platforms with digital innovation platforms to **operate networks of asset, product, and process digital twins** for a 25% reduction in cost of quality

# Modernized manufacturing and assembly

## Detect and correct defects

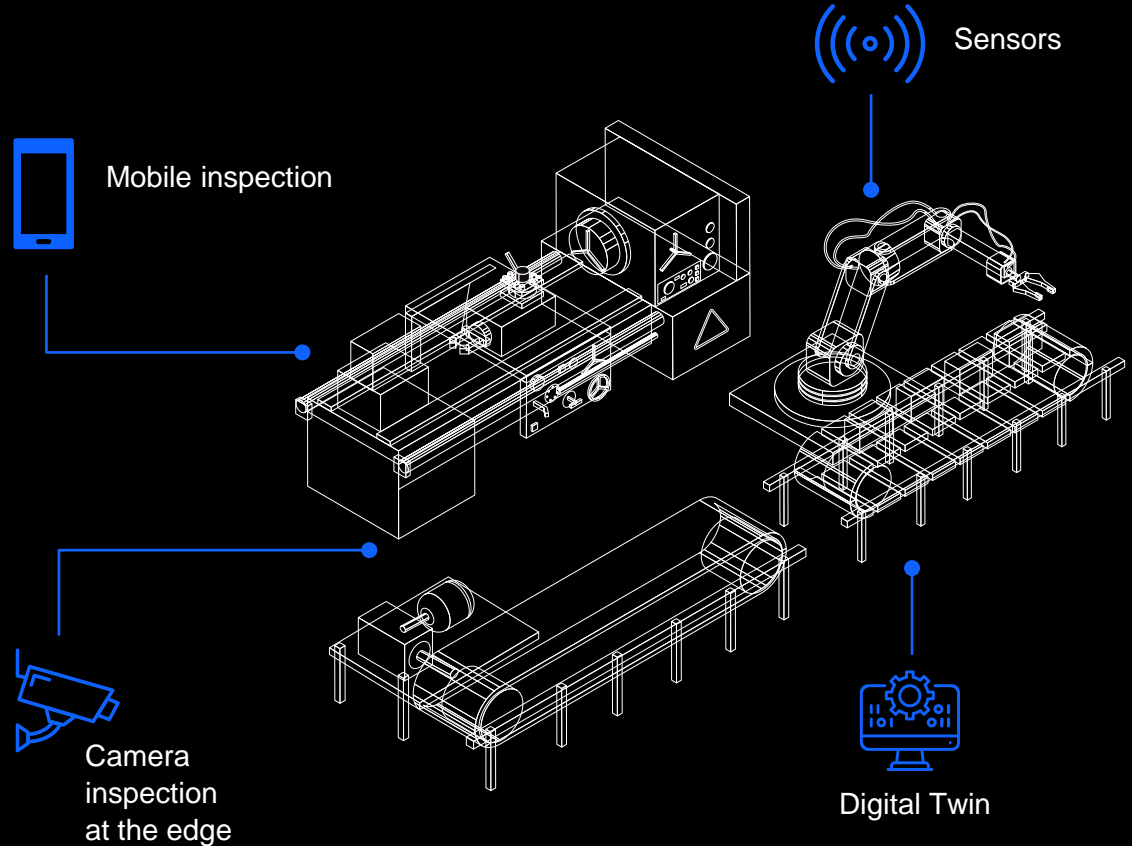
Where and when they happen

## Quickly react to change

Dynamically update AI models in seconds

## Actionable results

Leverage visual inspection data for asset insights and automation





visual inspection errors typically range from  
**20 % t o 30 %**



# The path to value – quality inspection

Stop defects at the point of installation



Reduce defects and expensive rework costs

**\$10,000s daily**

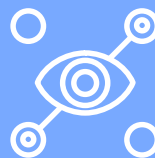
Quickly react to change



Dynamically update AI models

**In seconds**

Reduce manual visual inspection



Improve quality inspection consistency

**Accurate 24/7**

Improve production and assembly quality



Increase revenue

**By millions \$**

**ROI measured in weeks/months**

# AI is disrupting asset inspection and monitoring



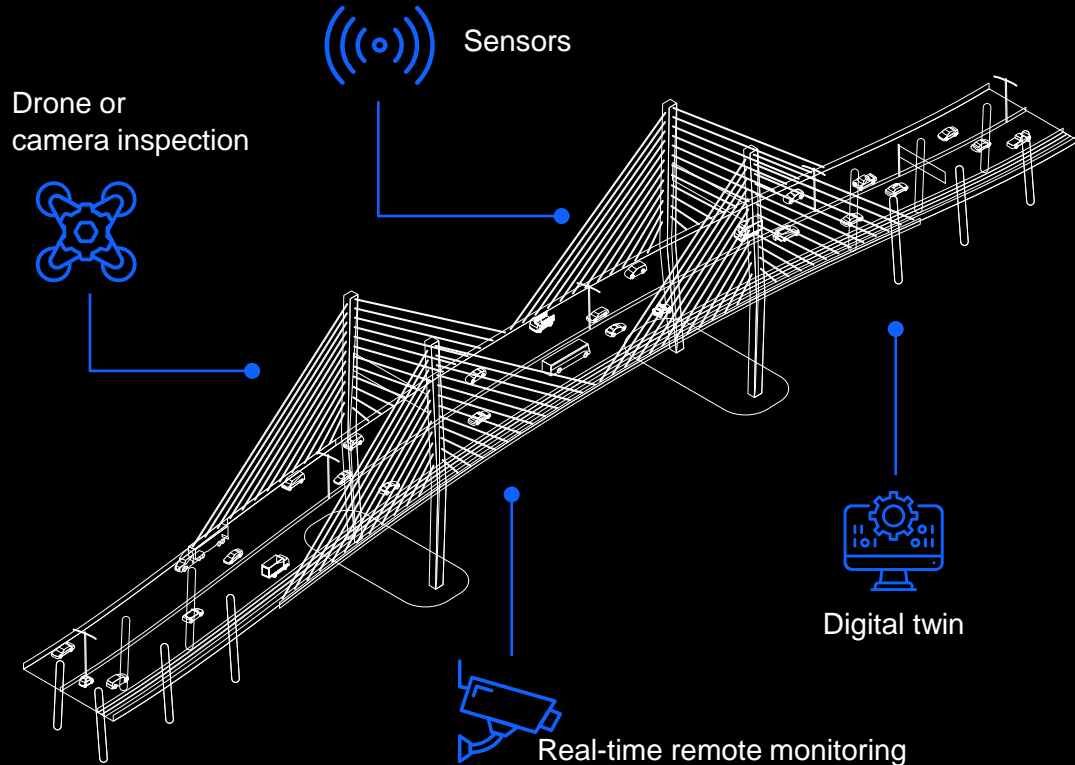
# Modernized Civil Infrastructure inspection

## Reduce manual inspections

Deliver consistency and accuracy with minimal human effort and risk

## Improve speed and precision

High-resolution AI immediately identifies cracks on large surface areas





# The path to value – asset management

Catch failures sooner  
and prevent failures



Decrease  
unplanned  
downtime

**10%**

Increase efficiency  
of repair



Increase first-time  
fix rate and improve  
mean time to repair

**15%**

Reduce unnecessary  
manual inspections



Labor costs savings  
by auto-detection  
of asset condition

**30%**

Improve production  
efficiency



Increase  
revenue

**By millions \$**

**ROI measured in weeks/months**

# Maximo Visual Inspection



Fast, easy and accurate



Empower subject matter experts  
with AI technology

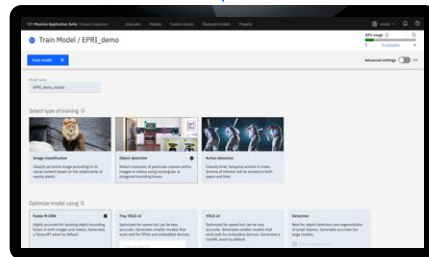


AI powered insights at scale and made  
actionable through automation

Run on the Edge



Run on  
iOS mobile devices

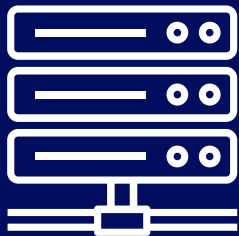


Train models and run remote inferencing

# Maximo Visual Inspection solution

## Maximo Visual Inspection

All-in-one application that provides data set labeling, model training, and deployment



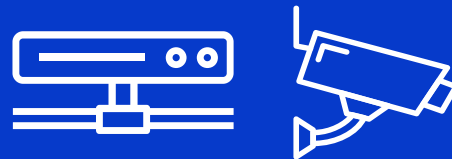
## Maximo Visual Inspection Mobile

iOS mobile app makes developing models and conducting inspections easy and portable



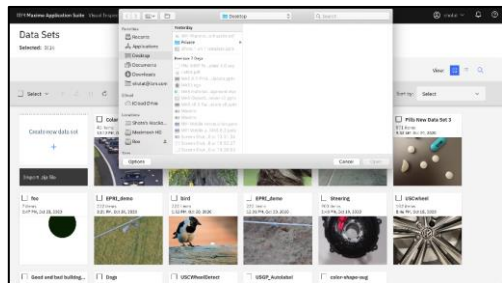
## Maximo Visual Inspection Edge

Easily configure and scale inspections at the edge using models built with Visual Inspection

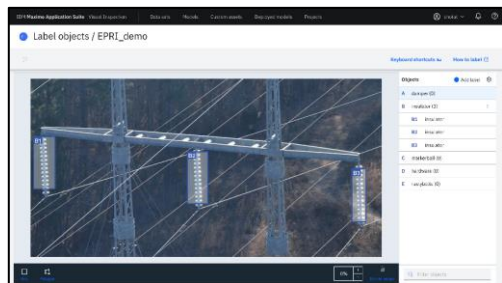


# Maximo Visual Inspection – training on hybrid cloud

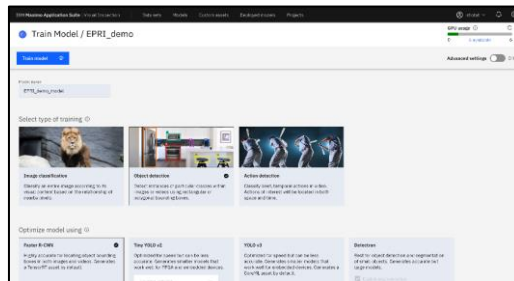
## *Streamlines the process for deep learning*



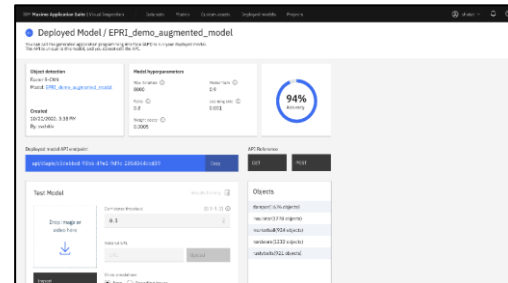
Drag-and-drop datasets on a browser



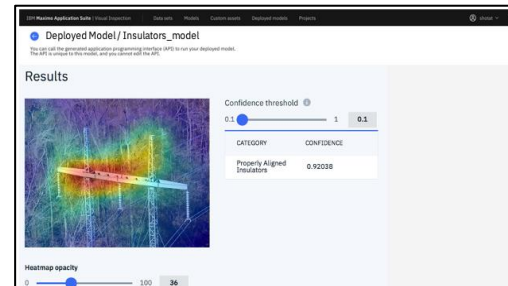
Label objects across images and videos



Train models



Deploy models



Infer results with confidence

LABEL

TRAIN

DEPLOY

# Maximo Visual Inspection

## *Easily create advanced AI models*

### Data preparation automation

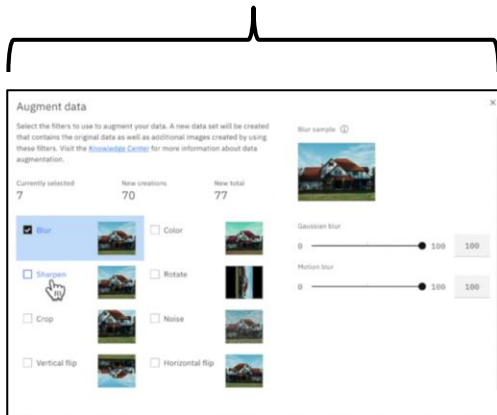


Image augmentation

### Model types

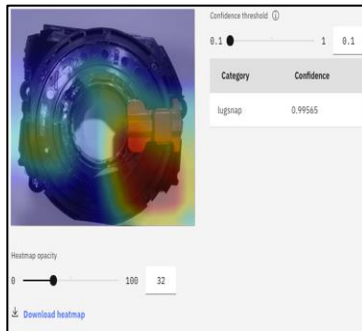


Image classification



Object detection

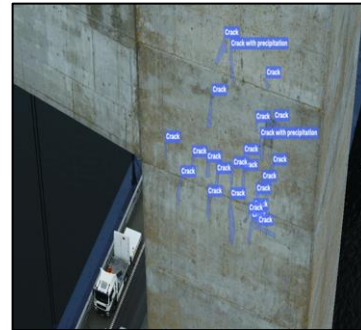


Image segmentation

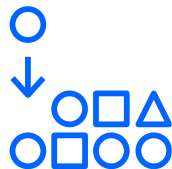


# Maximo Visual Inspection

## The Process: Digest



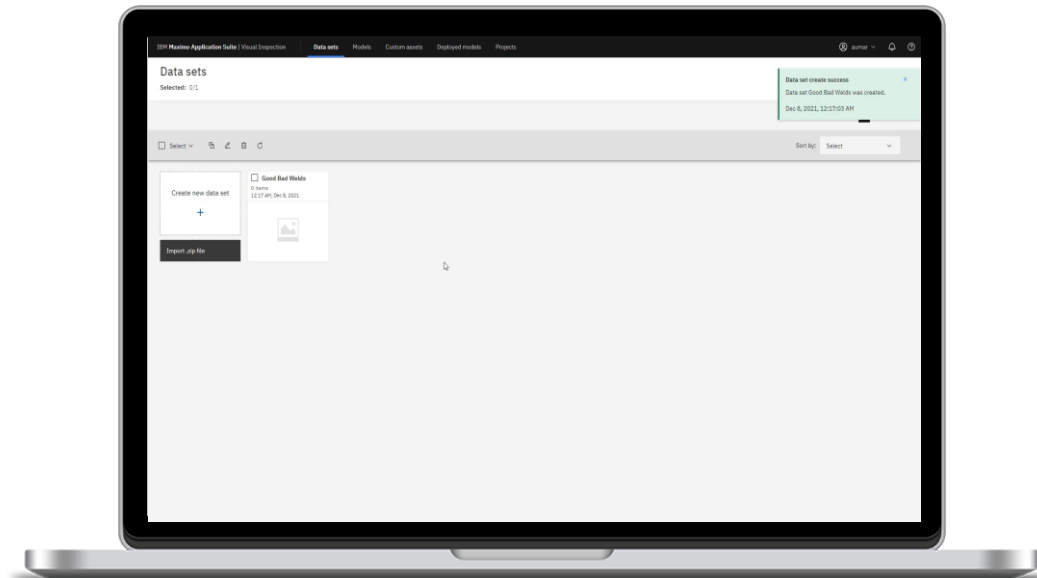
Upload dataset through **web browser drag & drop**



A common variety of **supported formats:**  
JPEG, PNG, MP4, etc.



**Sophisticated dashboard**  
organizes & secures data sets



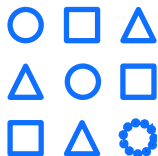
Click the laptop to play the video full screen and view data ingest in action

# Maximo Visual Inspection

## The Process: Label



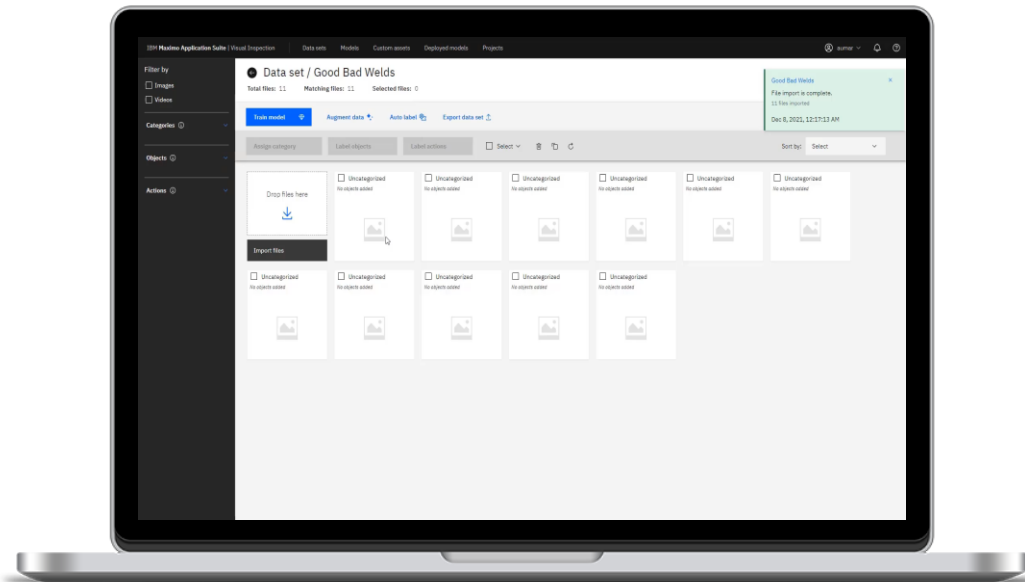
**Point-and-Click** labeling process. Specify object(s) in images with bounding box or polygon



**Augmentation** function helps users quickly augment images to enhance the accuracy of its models



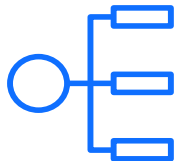
**Auto-labeling** function generates labels automatically on images for training/re-training



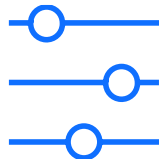
Click the laptop to play the video full screen and view data labeling and augmentation in action

# Maximo Visual Inspection

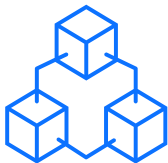
## The Process: Train



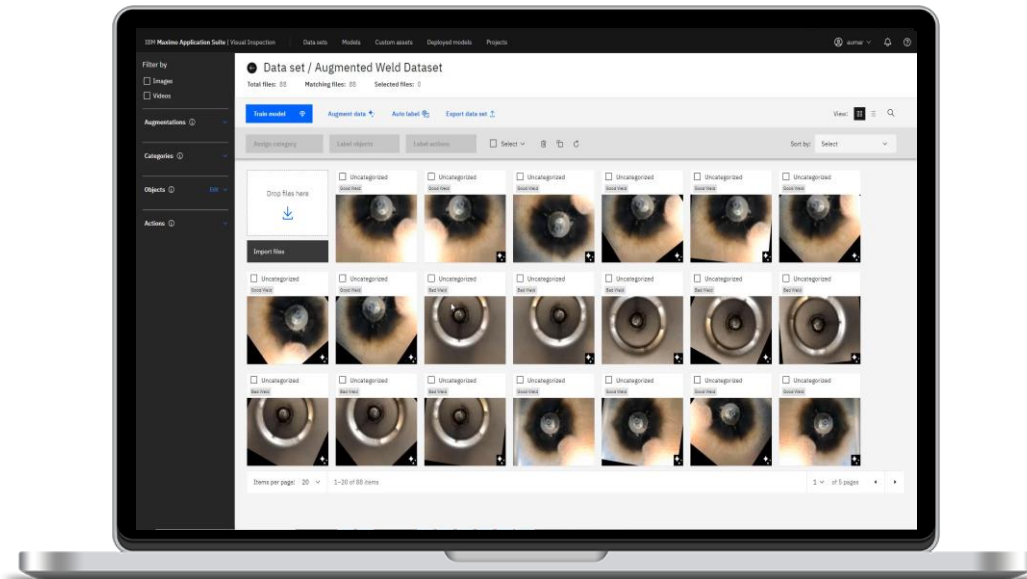
Customize a variety of **inspection methods** to meet specific requirements



**Advanced settings** provides hyperparameter optimization



**Guided model options** to support advanced use cases, such as high-resolution segmentation



Click the laptop to play the video full screen and view model training in action

# Maximo Visual Inspection

## The Process: Deploy



**Validate** the custom models with in-depth information

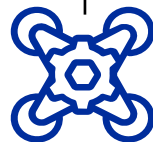
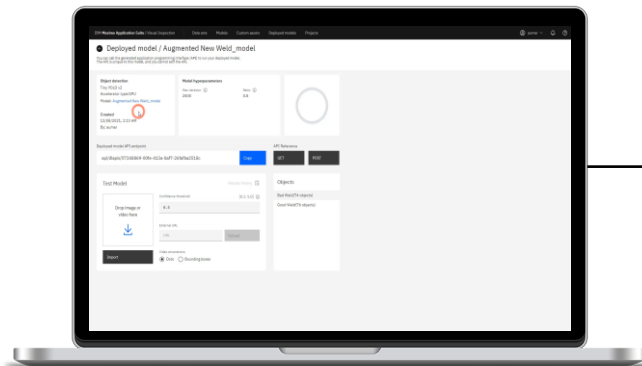


Rest API gives **deployment options** for customized solutions



**Project** function simplifies the communication with Mobile

Click the laptop to play the video full screen and view model validation in action

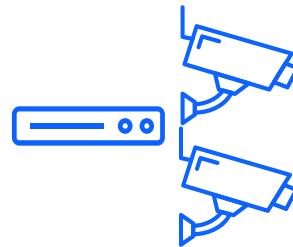


Batch processing

iOS Device



Maximo Visual Inspection **Mobile**

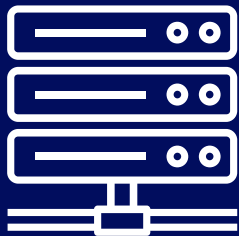


Maximo Visual Inspection **Edge**  
Server + Camera

# Maximo Visual Inspection solution

## Maximo Visual Inspection

All-in-one application that provides data set labeling, model training, and deployment



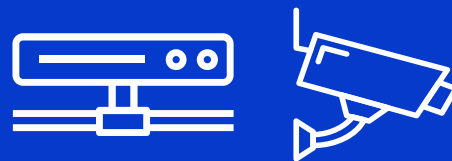
## Maximo Visual Inspection Mobile

iOS mobile app makes developing models and conducting inspections easy and portable



## Maximo Visual Inspection Edge

Easily configure and scale inspections at the edge using models built with Visual Inspection





# Maximo Visual Inspection **Mobile**



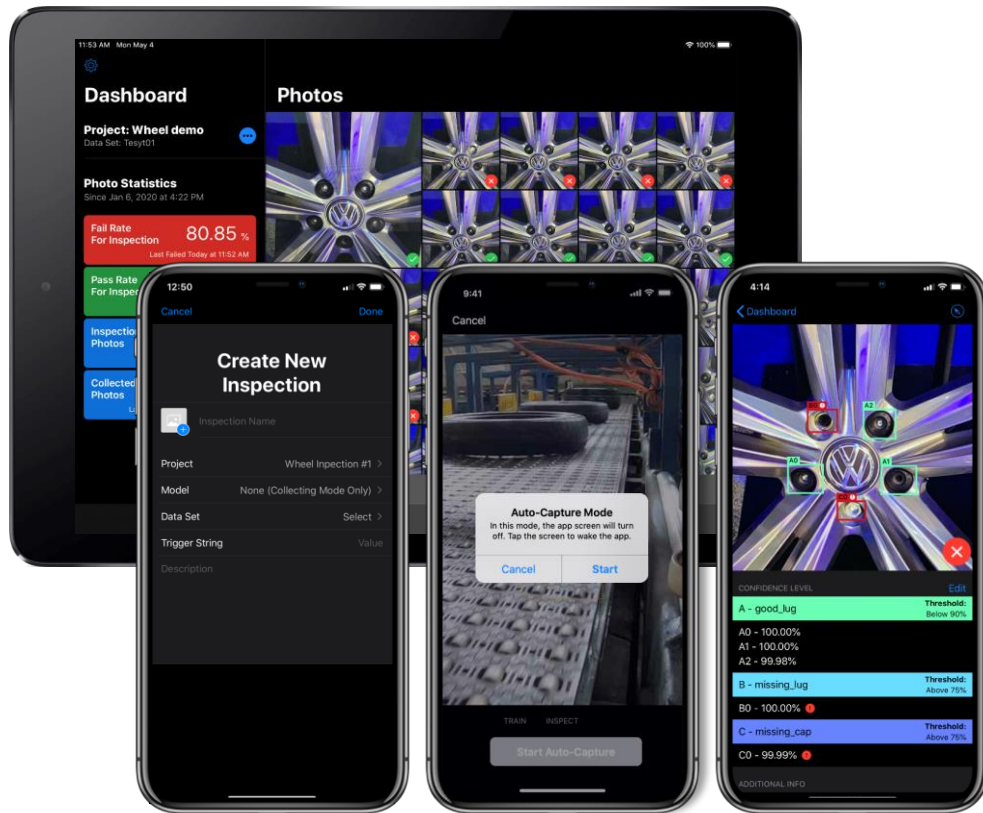
**All-in-one:**  
compute, camera, 5G



**Speed to value:**  
Capture, train, prove



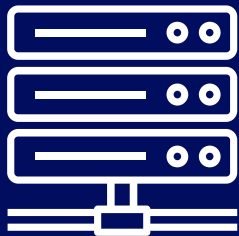
**Integration** with model  
training platform; perform  
**inferencing at the edge**



# Maximo Visual Inspection solution

## Maximo Visual Inspection

All-in-one application that provides data set labeling, model training, and deployment



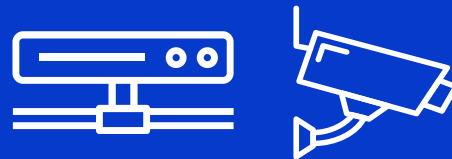
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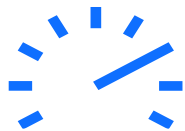
## Maximo Visual Inspection Edge

Easily configure and scale inspections at the edge using models built with Visual Inspection



# Maximo Visual Inspection **Edge**

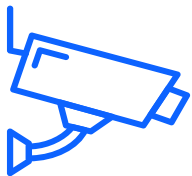
## *Key benefits*



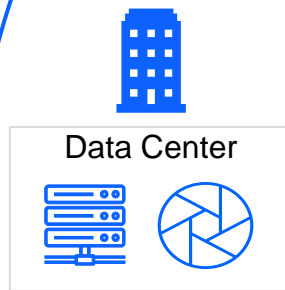
High performance inference service



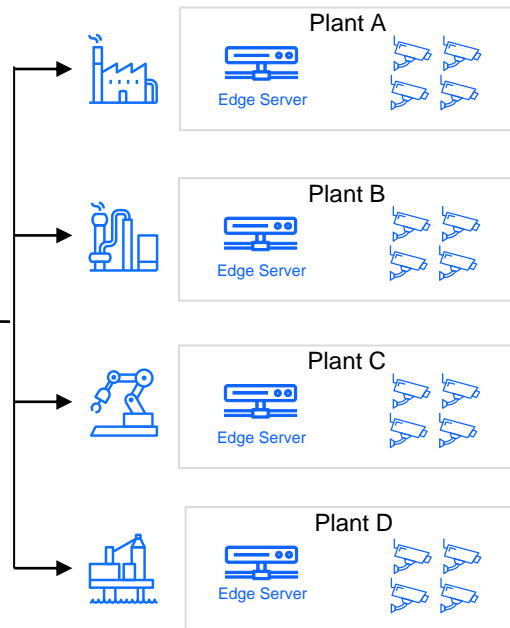
Large scale implementation



Integration with existing  
fixed cameras

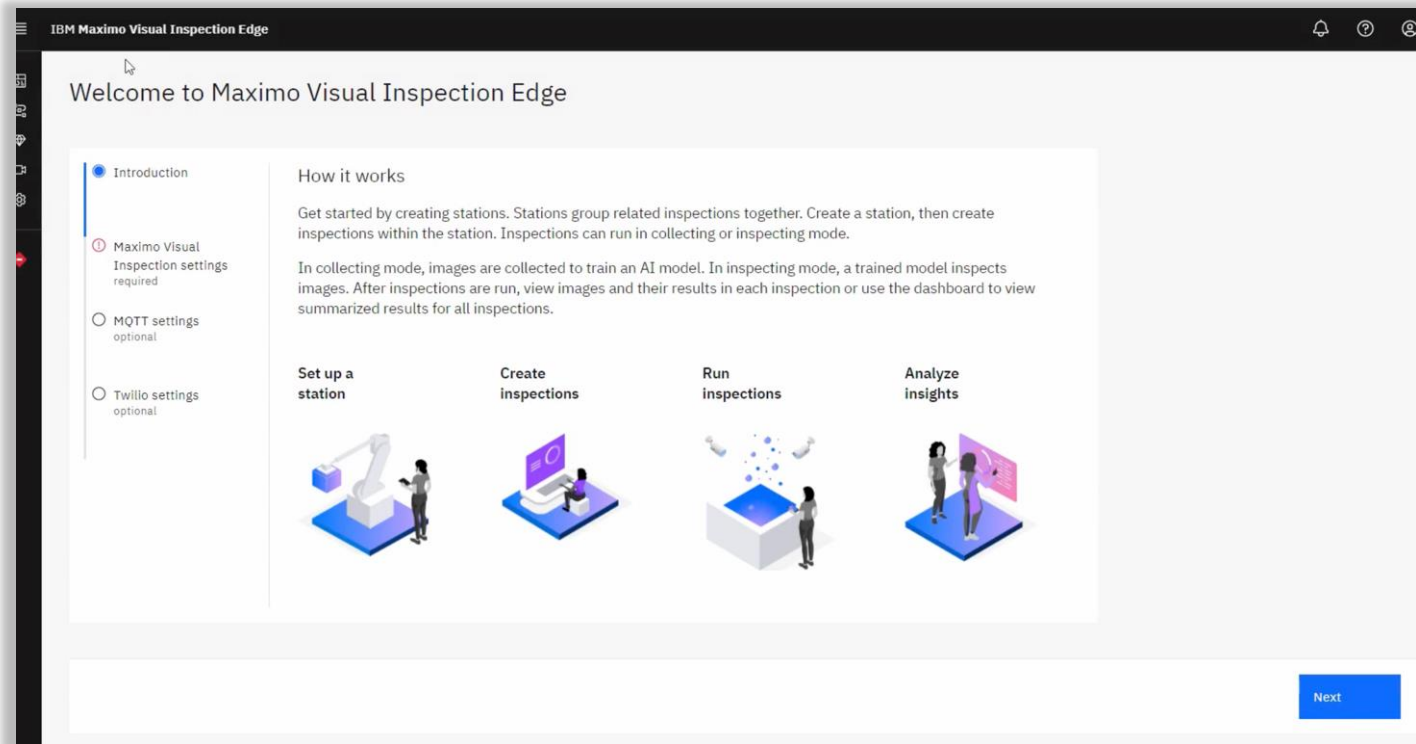


## Accelerated edge computing



# Maximo Visual Inspection Edge

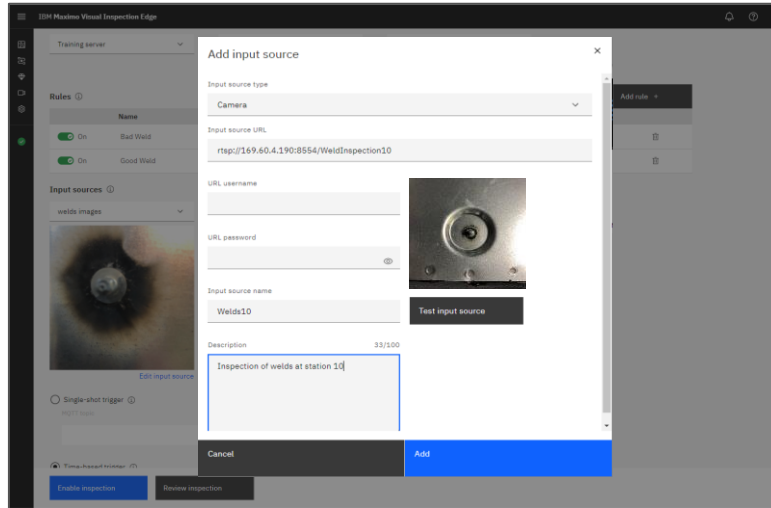
*Step by step set up is quick and easy*



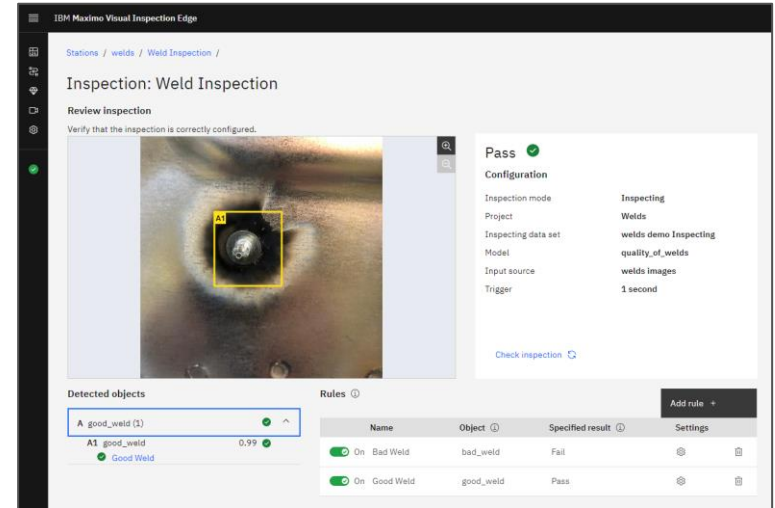
Easy to set up!

# Maximo Visual Inspection Edge

## *Connect to multiple cameras, set rules and alerts*



- Connect cameras
- Validate connectivity and image position

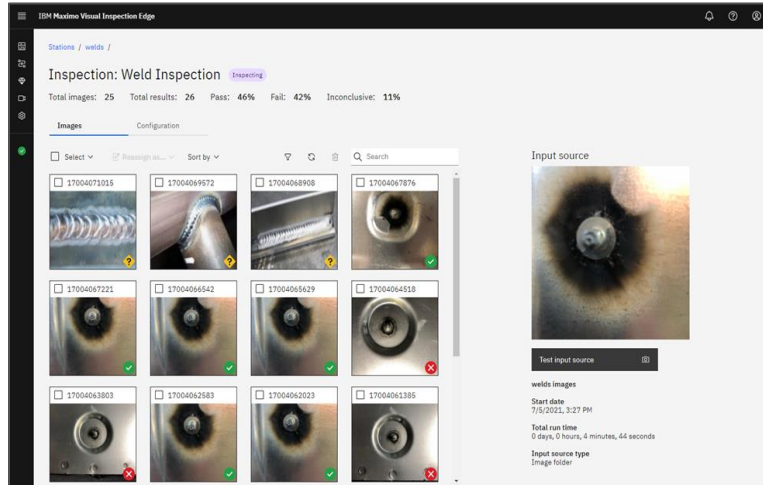


- Create rules to apply business logic
- Configure alerts to notify users of potential defects



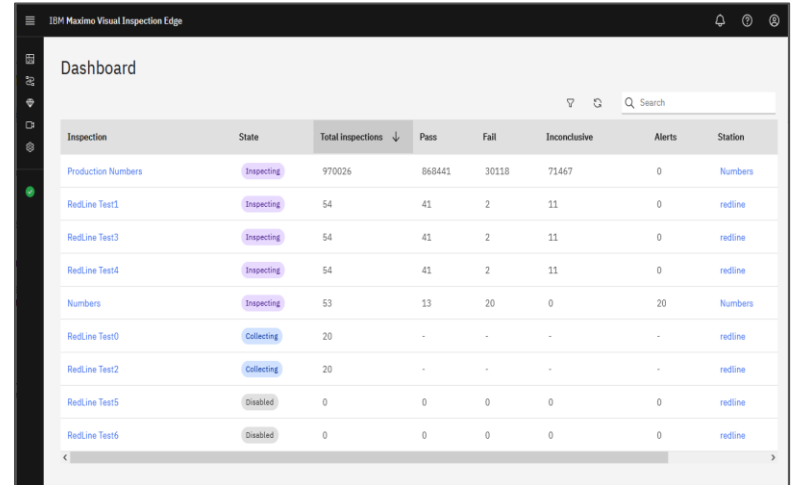
# Maximo Visual Inspection Edge

## *View inspection results at the edge*



## Line Operators

- View Pass / Fail results for a single inspection



## Plant Supervisors

- Dashboard provides summary of all inspections

# Manufacturing

## SMART modular technologies

### Business challenge

- Identify gaps in the manufacturing process and how automation can eliminate errors in the production process

### Solution

#### Maximo Visual Inspection

- Integration capability with collaborative robots
- Flexibility to leverage the custom models

### Business Value

#### Automated inspection results:

- Increased production yield by 10%
- Increased production throughput by 20%



# Major Automotive Company

## Vehicle assembly

### Business challenge

- Quickly support a new model launch and improve assembly issues observed previously

### Solution

- Maximo Visual Inspection Mobile deployed on the production line to automate quality inspections of key component assemblies

### Business Value

- First inspection station deployed prevented 32 vehicle mis-builds in the first 30 days
- Scaled in the plant, resulting in 200+ reduction of mis-builds per day (\$60,000 - \$80,000 per day savings)



*"I want this solution installed in all our new vehicle launch sites immediately"*

World-wide CIO

Partnerships

**verizon**<sup>v</sup>



# Maximo Application Suite

Best of class capabilities provide an integrated approach to optimizing assets

## Manage

Intelligent  
Asset  
Management



## Monitor

Monitor and  
Detect  
Anomalies



## Health

360 View of  
Assets



## Predict

Predictive  
Failures



## Visual Inspection

AI-Powered  
Insights



## Schedule

Schedule  
Work and  
Resources



## Mobile

Technician  
Work  
Execution



## Assist

Prescriptive  
Assistance



## Safety

Actionable  
Insights for  
Worker  
Safety



IBM Cloud Pak for Data | IBM Watson Studio | IBM Watson ML

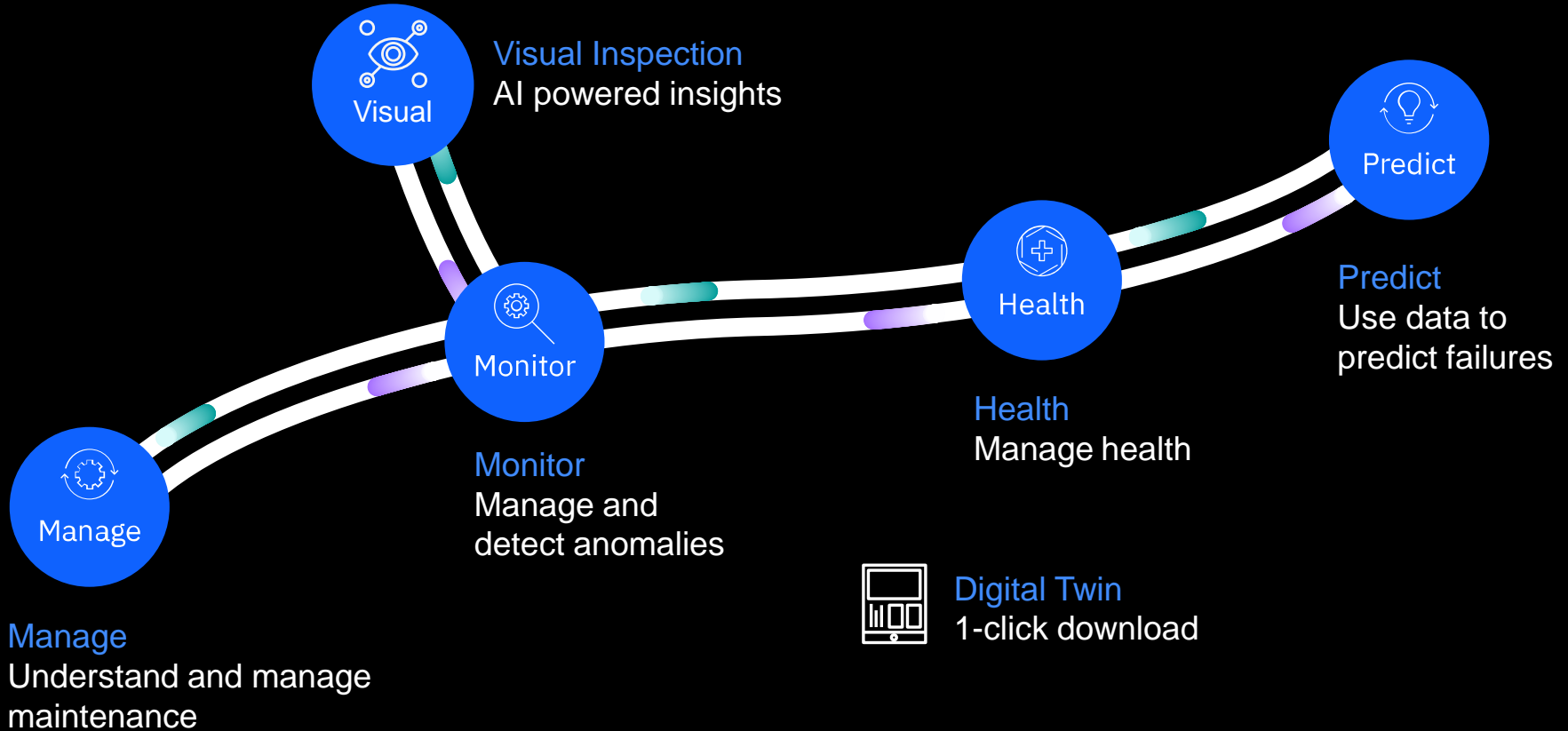


Infrastructure Independent  
Common Operating Environment





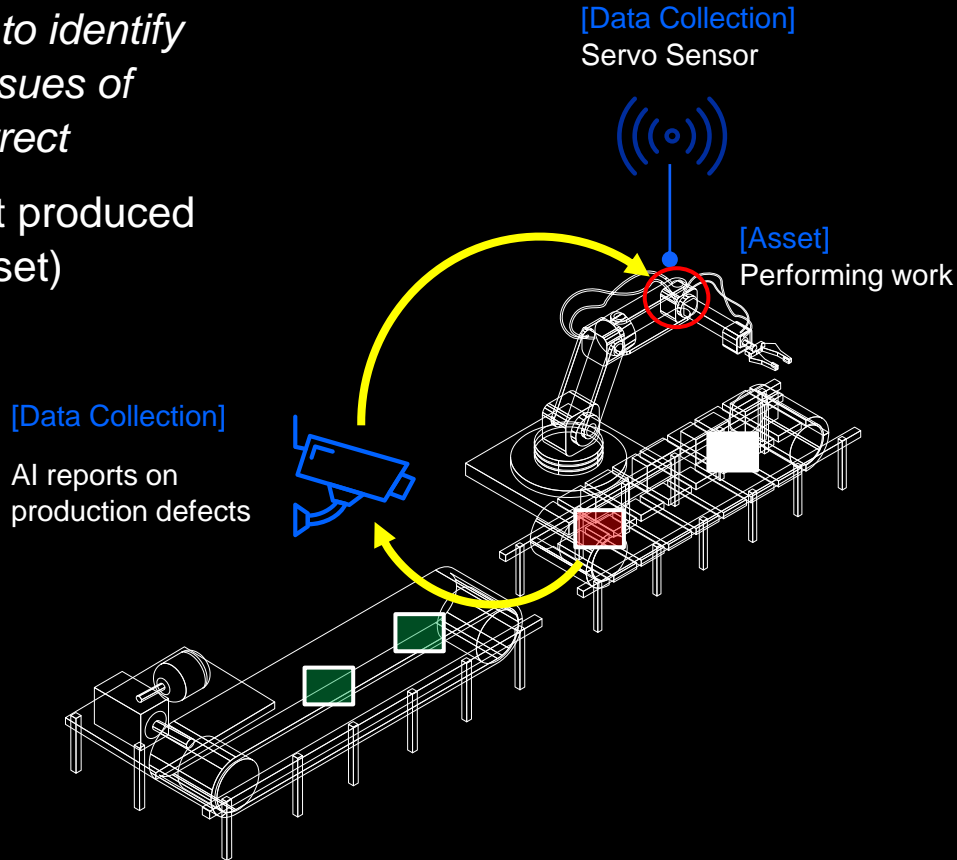
# Maximo Application Suite: Journey to the new operating model



# Developing intelligent assets

*Automated RCA to identify the operations issues of an asset and correct*

Use case: Defect produced by robot arm (asset)

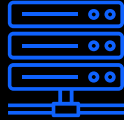


# Integrated use case flow for asset maintenance

*Delivering powerful insight and automation using visual data collected on assets*



Images  
captured



Visual AI  
performed



Results  
monitored



Automated  
alerts and  
actions



Service  
request  
generated

# Key benefits of IBM Maximo Visual Inspection

*Fast, easy, accurate*



Point-and-click AI model building – in just a few hours



Process automation



AI-powered insights at scale



Real-time quality assurance – “error proofing”



Improve efficiency & performance of assets - Maximo integration

# Moving forward



Identify key use cases



Get started



Deploy at scale

- Follow for more information: [Maximo Academy](https://maximo.ibm.com/academy)
- Stay tuned for product updates: [ibm.com/products/maximo](https://ibm.com/products/maximo)

