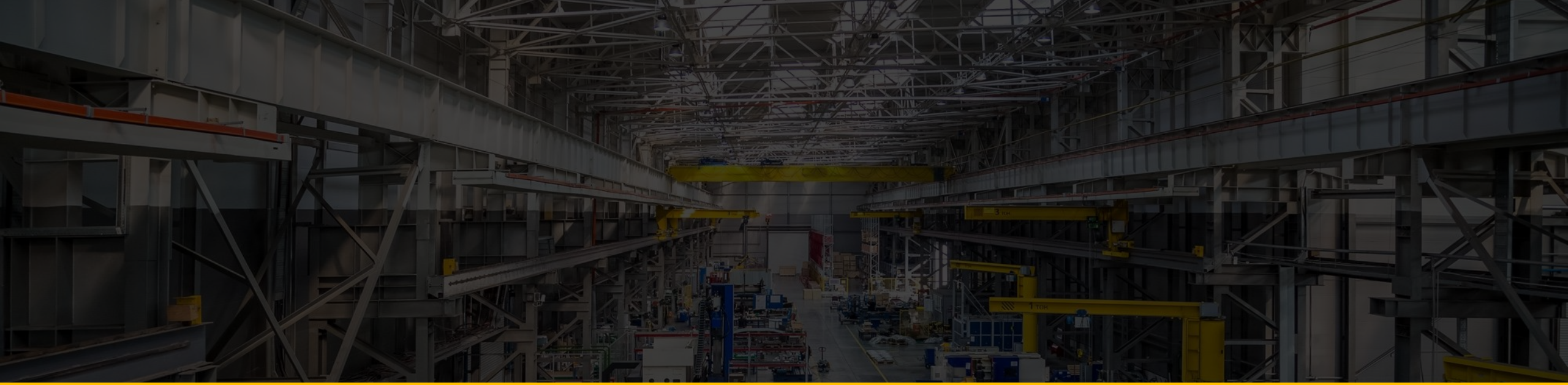

Fewer Defects, Faster Speed

Spyglass Visual Inspection for Manufacturers

Microsoft

intel MARKET READY

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Agenda

- The State of IoT Edge & Cloud in manufacturing
- Traditional machine vision systems
- Deep Learning AI
- Spyglass Visual Inspection
- Real-World Customer stories

Building Agile Plants – Optimize Production and Assets

Adam Juechter, Global Black Belt, Azure IOT

Microsoft

Microsoft framework for intelligent manufacturing

Discrete manufacturing | Consumer goods | Process manufacturing | Pharmaceuticals | Energy | Automotive | Aerospace

Transform your workforce	Engage customers in new ways	Build Agile Plants	Create more resilient supply chains	Unlock innovation and deliver new services
				
Reskill Workforce and Boost Productivity	Customer Signals and Omnichannel	Optimize Production and Assets	Intelligent Supply Chain	Digital Thread, Simulation and Sustainable New Business Models

Manufacturing a resilient and sustainable future

Microsoft's perspective for Building Agile Plants

Innovative Capabilities

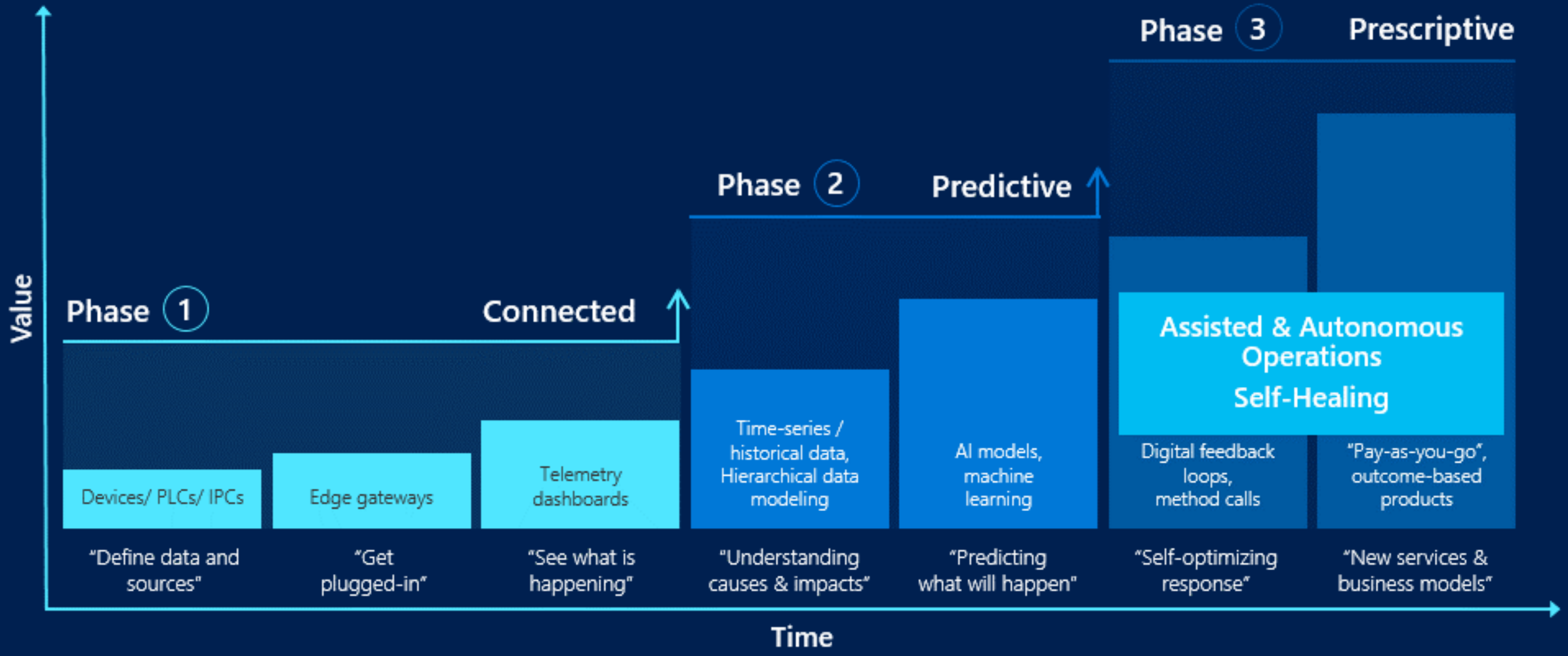
- Operational visibility
- Connected operations
- Intelligent supply chain
- Workforce transformation
- Sustainability

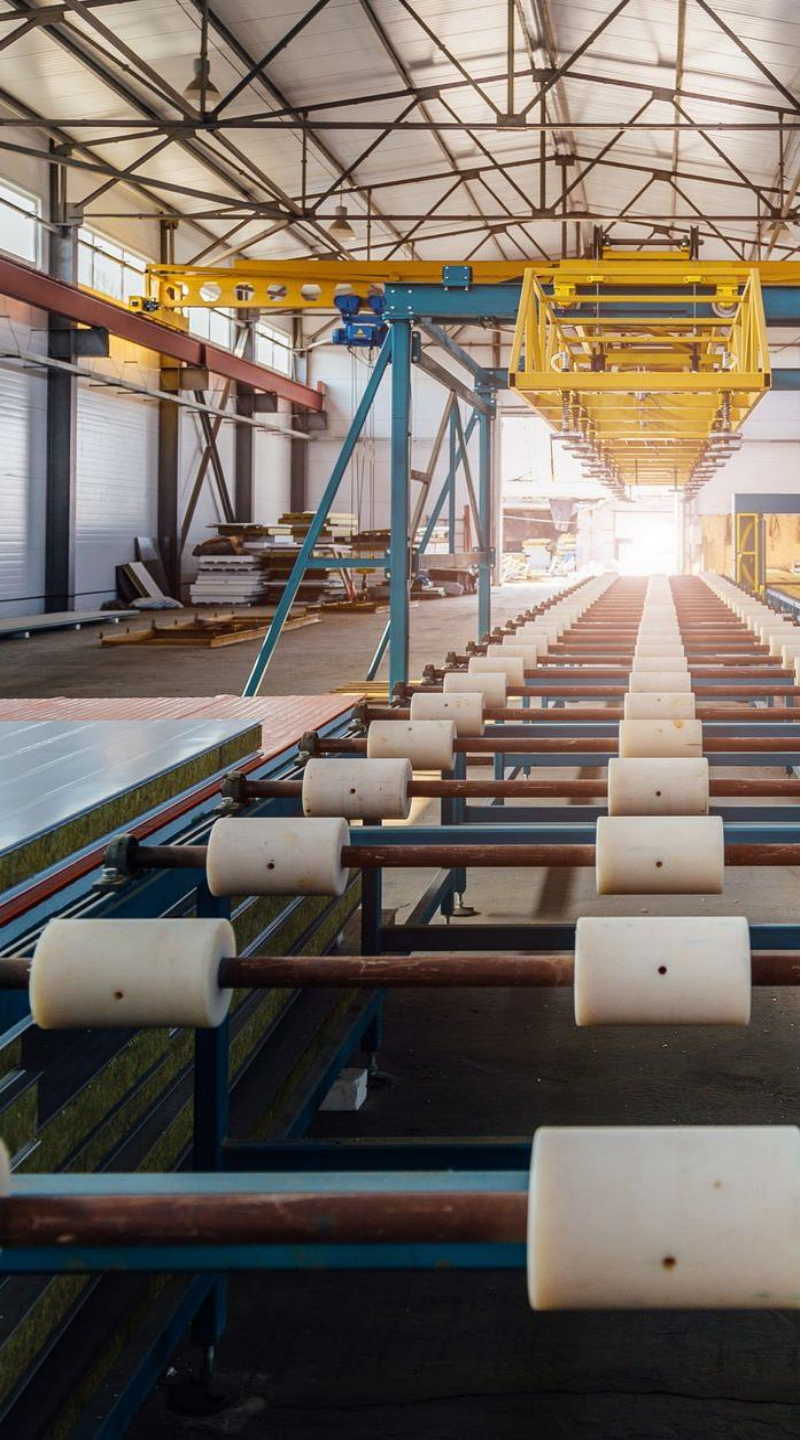
Customer outcomes

Unilever	Develop insights to help operators make better decisions using digital twins of the factory
JABIL	Reduced scrap & rework by 17% and energy usage by 10%
CATERPILLAR	Reduced parts inventory costs by 10-15% using integrated business planning
thyssenkrupp	Use technology to attract, train, and keep your next workforce safe
ECOLAB	Eliminate waste and engineer better outcomes for all your stakeholders

Our experience shows that implementation of agile factories/ plants typically occurs in three phases

Even if the end goal is autonomous operations the first step is to get connected and build a consistent data foundation





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100% AUTOMATED, REAL-TIME INDUSTRIAL INSPECTION

SPYGLASS VISUAL INSPECTION

Manufacturing Defect Detection & Elimination

SPYGLASS
VISUAL INSPECTION

THE PROBLEM

AUTOMOTIVE MANUFACTURERS SPEND AS MUCH AS 40% OF THEIR ANNUAL REVENUE PRODUCING DEFECTIVE PRODUCTS

-- *International Journal of Quality Engineering and Technology*

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Internal Attempts to Control Costs of Quality

- Hire extra QA personnel
- Slow line speeds down
- Put machine vision systems in place

Traditional Machine Vision Systems

- Work well on clear-cut problems
- Don't work so well on "fuzzy" problems
- Prone to over-tightening to avoid fuzzy problems

3 REASONS TO BRING AI TO YOUR FACTORY FLOOR

INDUSTRY 4.0

Many manufacturers are hungry to adopt IoT & machine learning as a portion of their Industry 4.0 transformation.Those who do will outperform those who don't.

68% TOP PRIORITY

In a recent McKinsey survey, 68% of manufacturers report that incorporating Industry 4.0 technology, specifically AI, is their top priority – which leaves 32% of companies at risk of being left behind.

72% NOT AT SCALE YET

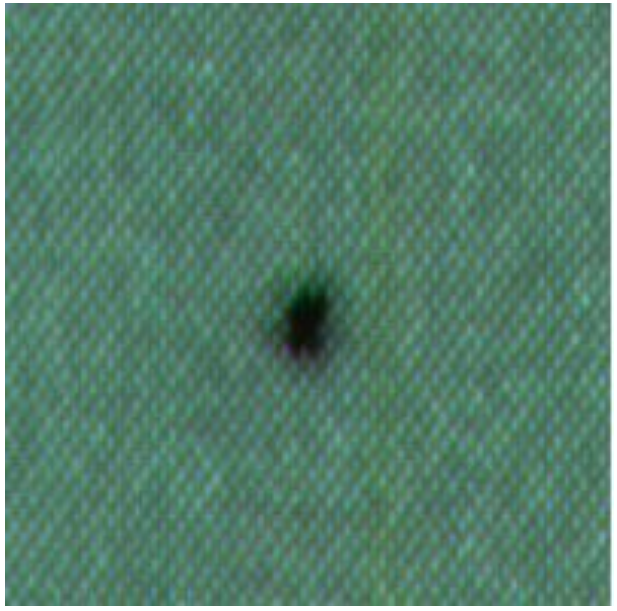
Only 28% of manufacturers have implemented Industry 4.0 at scale, while 42% are conducting PoCs & pilots. Again, 30% have yet to begin the journey and risk being left behind.

> By employing advanced image recognition techniques for visual inspection and fault detection, **productivity increases of up to 50% are possible.**
>
> Specifically, AI-based visual inspection that's based on image recognition may **increase defect detection rates by up to 90% as compared to human inspection.**

-- McKinsey

Question: Which of these images of fabric show a defect?

1



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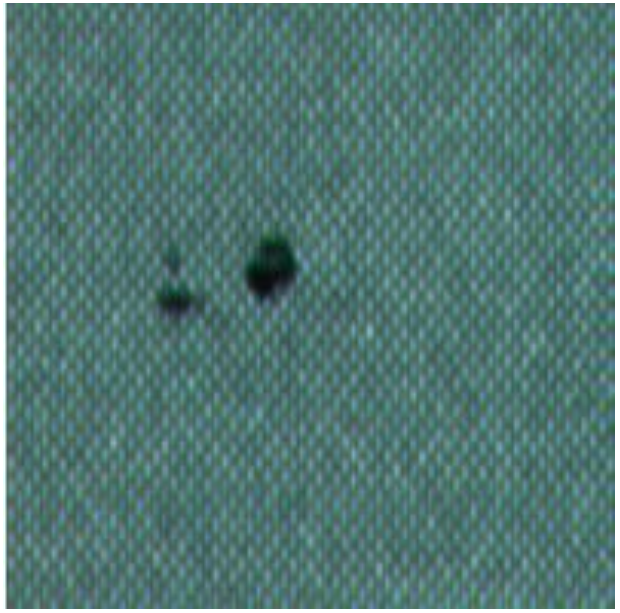

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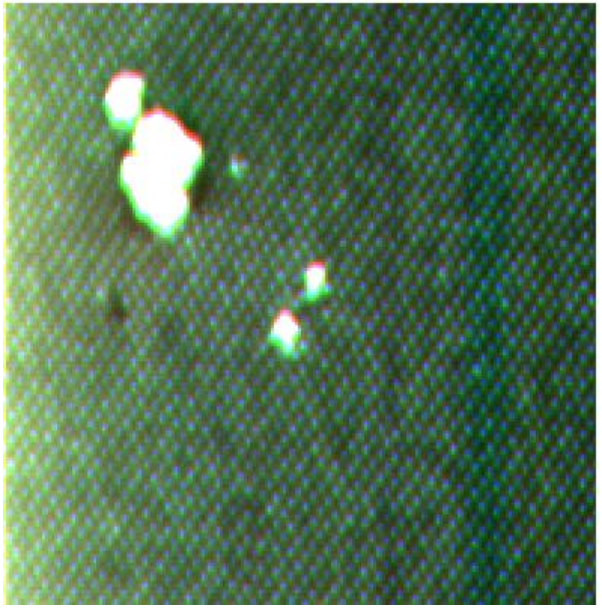

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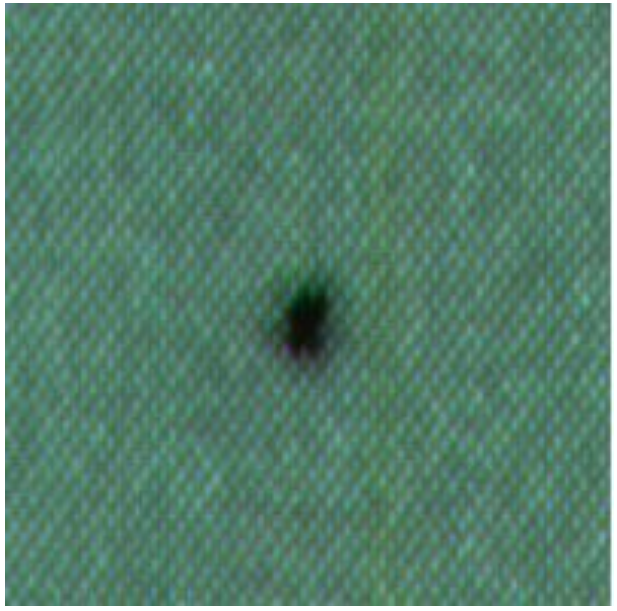
Answer: Which of these images of fabric show a defect?

1



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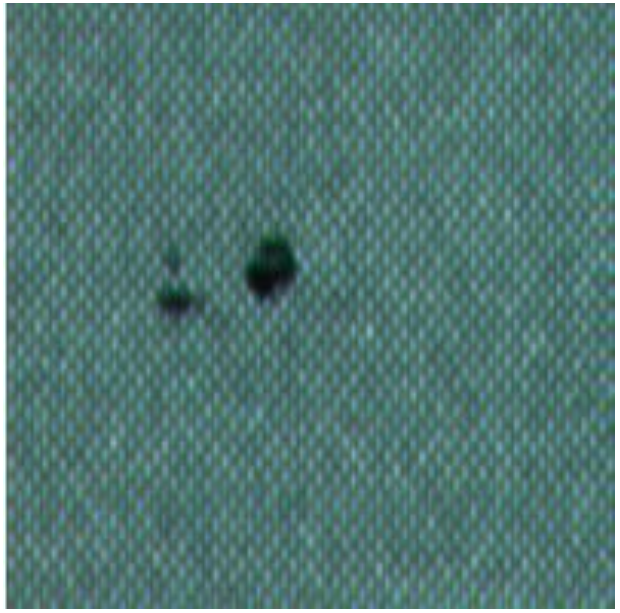

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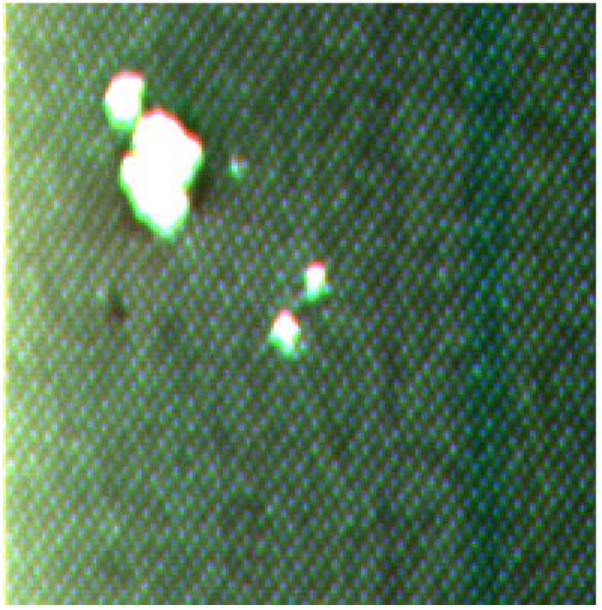

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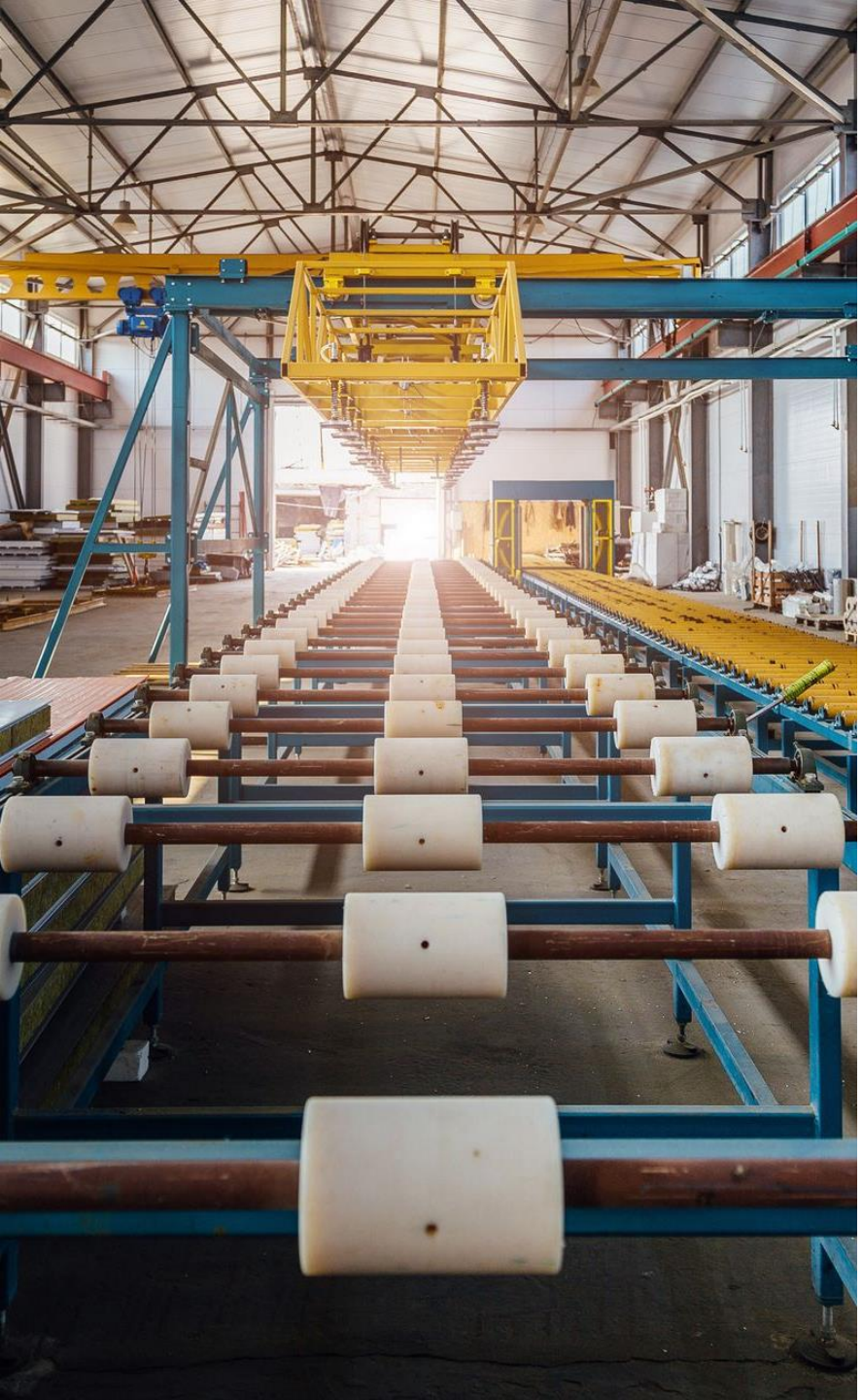
Congratulations!

You're now trained at telling lint from stains!

Question

What does your organization call a false positive
in its defect detection process?

¯_(ツ)_/¯



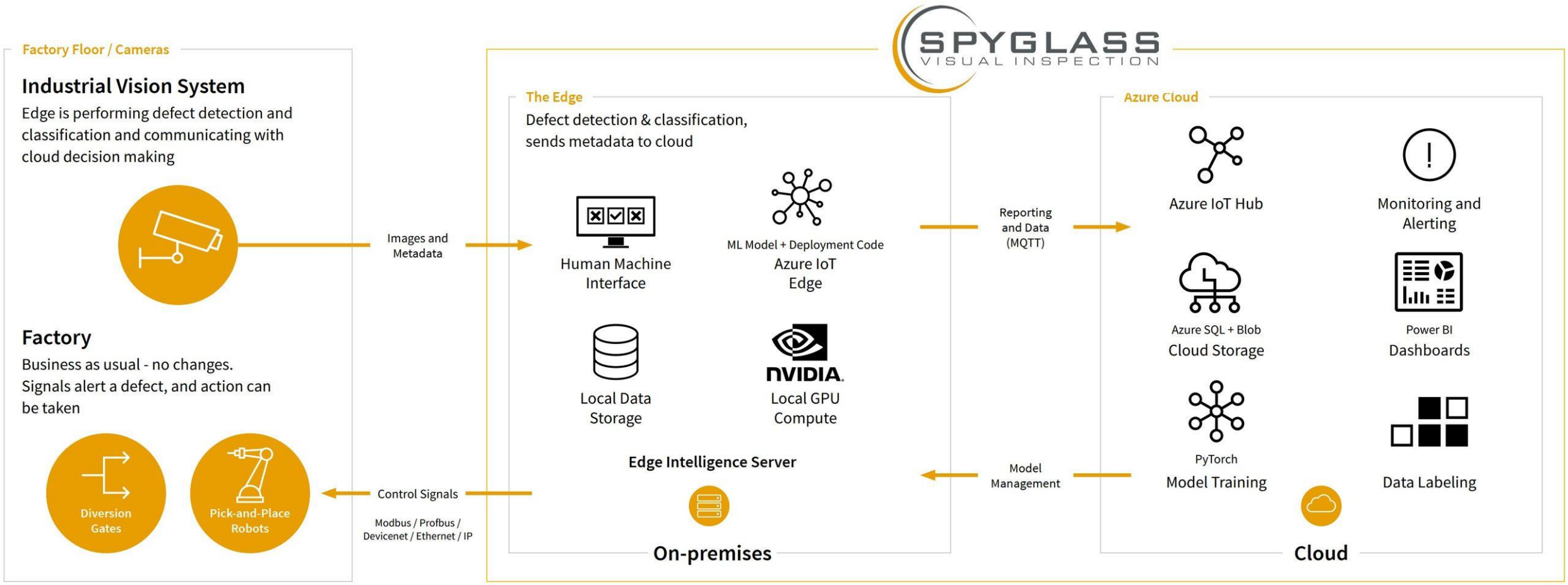
SPYGLASS VISUAL INSPECTION

A subscription-based product that reduces manufacturers' cost of quality
by leveraging Deep Learning, IoT, and the Cloud
to detect and reduce defects

- Reduces false positives
- Reduces or eliminates human inspection
- Improves throughput
- Reduces defects

SPYGLASS
VISUAL INSPECTION
BY MARINER

HOW SVI DELIVERS VALUE



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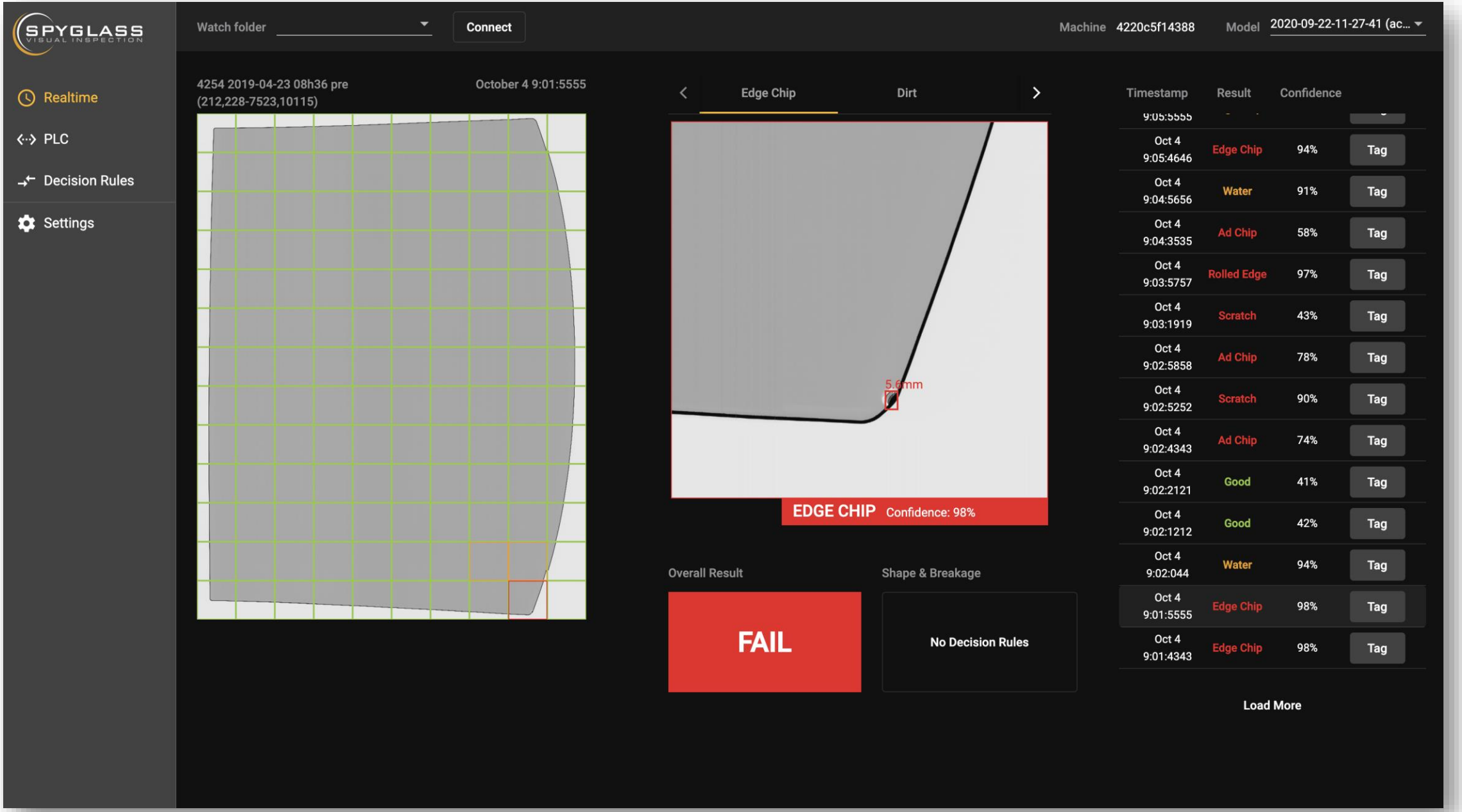
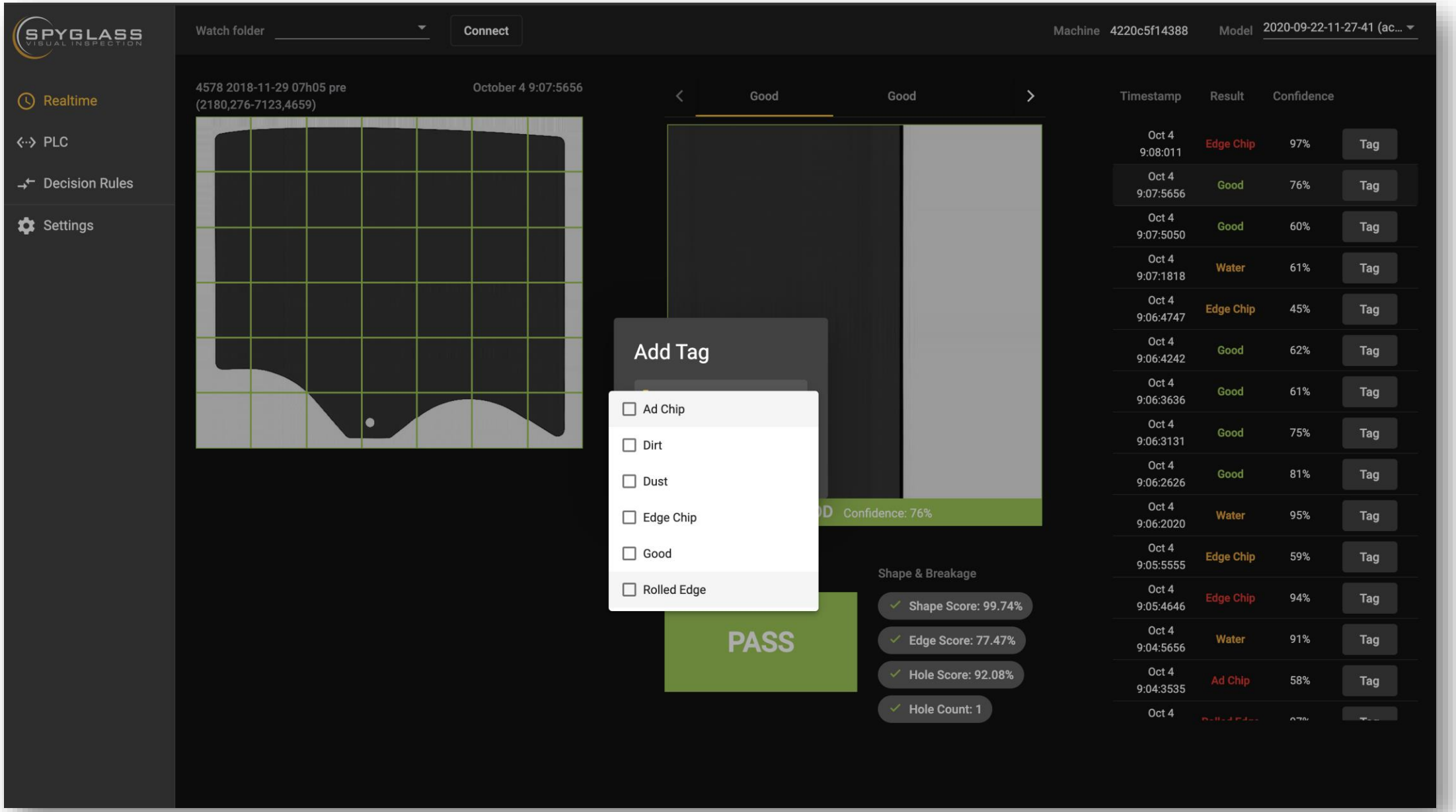
THE CLOUD IS HOW WE ELIMINATE DEFECTS

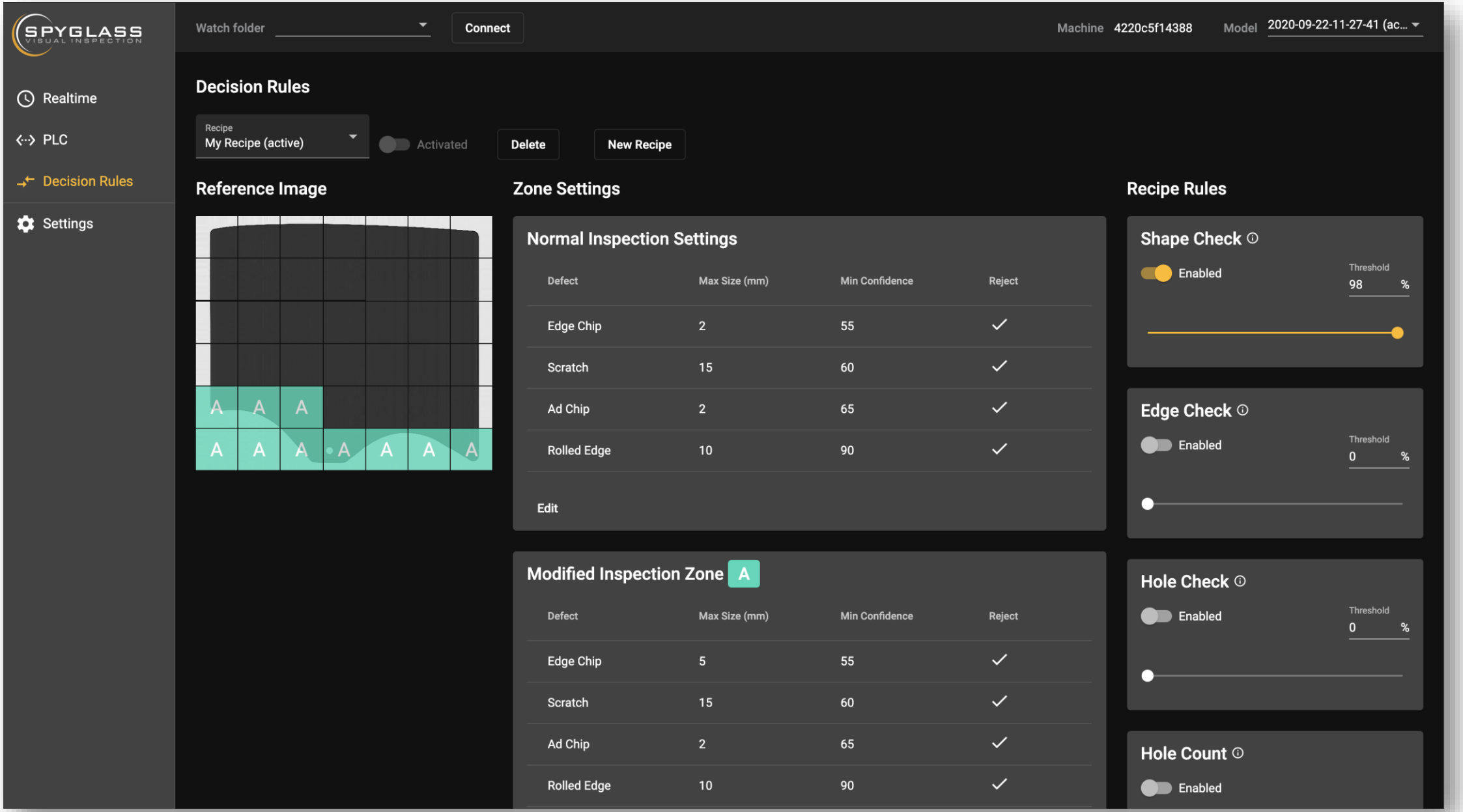
Production SVI In-Factory App Presents Detailed Deep Learning Model Results



In-factory applications allows users to tag images to improve Deep Learning model performance over time



Decision Rules UI Allows for Precise Control of Deep Learning Decisioning Criteria



AUTOMOTIVE GLASS CASE STUDY

The Client

Global glass manufacturer with a large automotive glass business in the Americas and Europe

The Problem

Our customer had a 25% false reject rate with their existing machine vision system. Human oversight of existing machine vision system required slowing production lines by 15% - 20%.

The Results

- Earning ~$4m in ROI annually
- Reduced false reject rate to <1%
- Operate production lines at 100% speeds
- Rolling out to factories in Ohio, North Carolina, and Poland

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AUTOMOTIVE FABRIC CASE STUDY

The Client

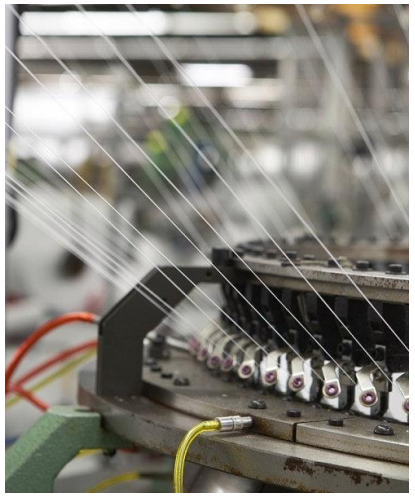
Global manufacturer of automotive fabric that provides body cloth and headliner to major OEMs worldwide

The Problem

- 34% false reject rate with their existing machine vision system
- Line speeds at 35% of capacity
- 4 Inspectors at end of line

The Result

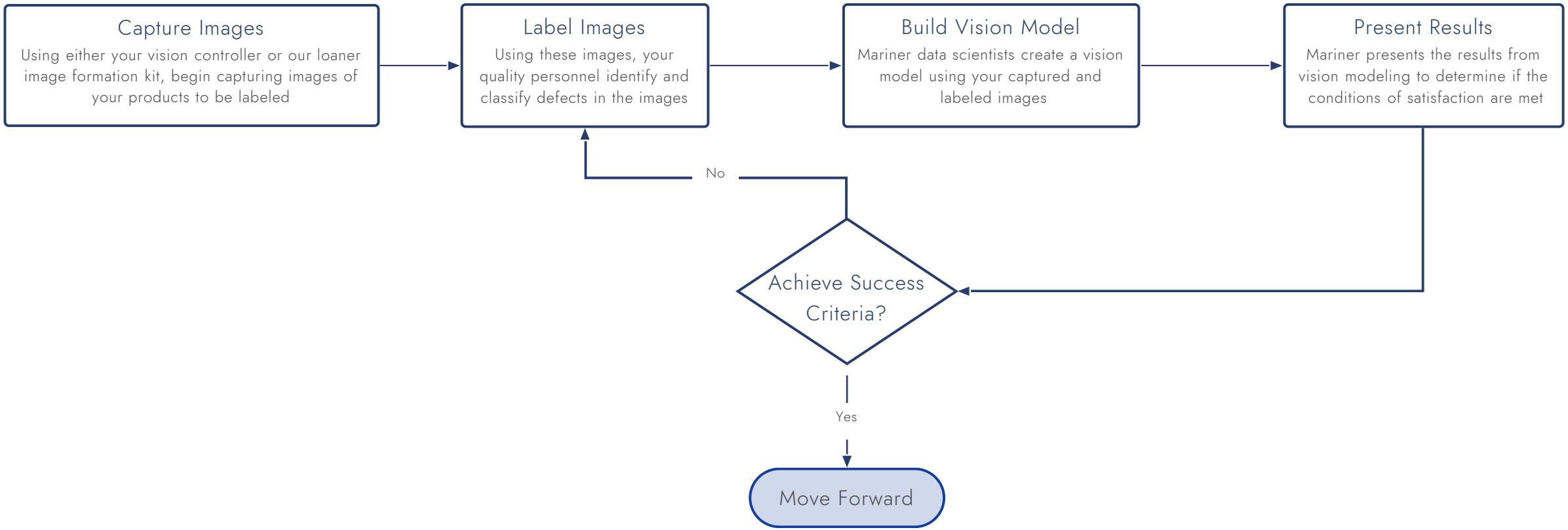
- Earning ~$2m in ROI annually
- Reduced false reject rate to <2%
- Operate without human inspection
- Rolling out to more factories



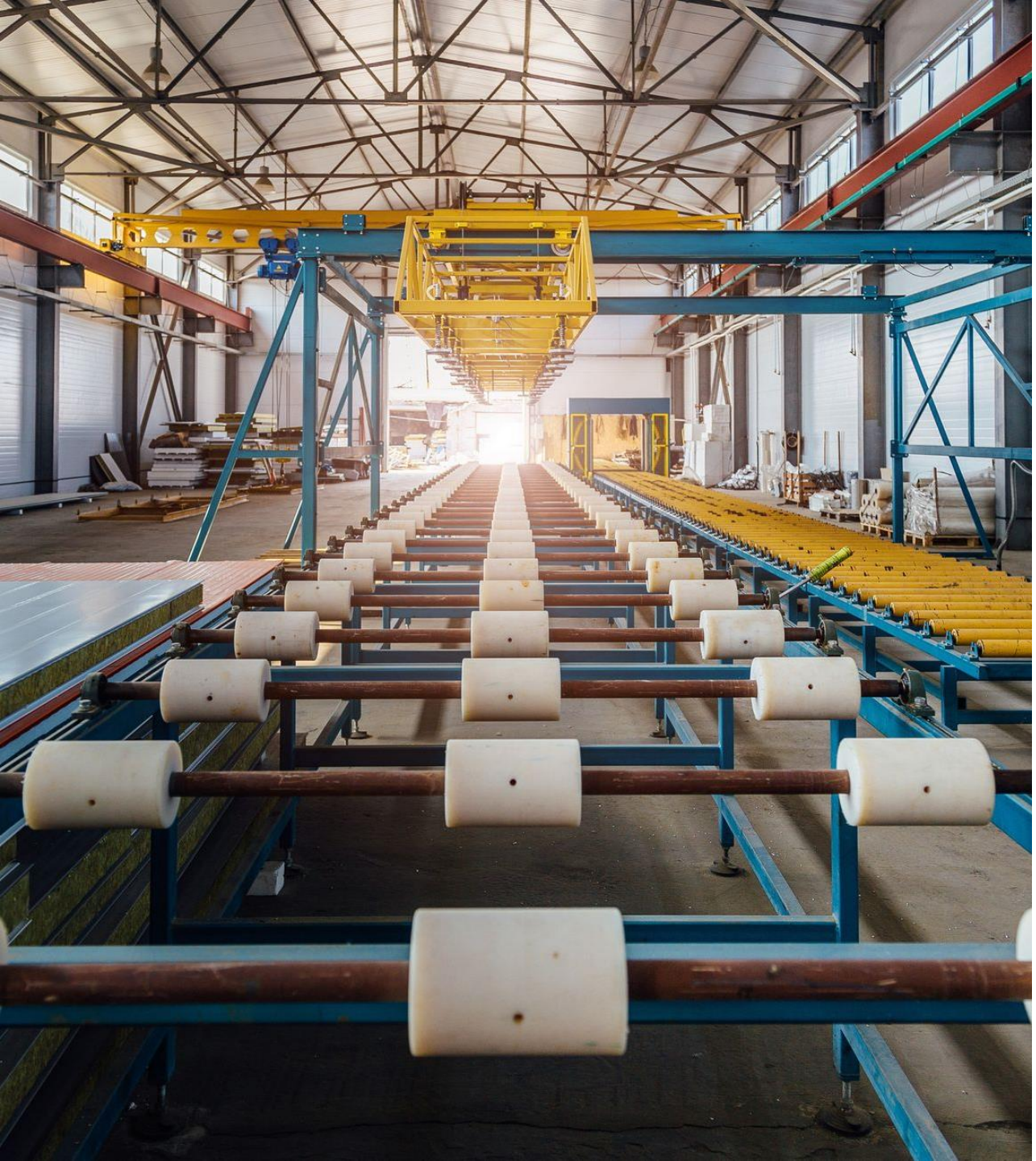
HOW TO GET STARTED

RISK-FREE 30-DAY PROOF OF VALUE ENGAGEMENT

Prerequisite: Verification of Significant Business Impact with Business Decision Maker



www.mariner-usa.com/proof-of-value-offer



LET'S GET STARTED

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Request Your Proof of Value at
www.mariner-usa.com/proof-of-value-offer