

# Factory AI Solution Brief

As demand for automation increases in the manufacturing industry, technologies like artificial intelligence (AI), computer vision, and IoT are finding their way into factory-floor processes. By 2021, 20% of manufacturers will have moved to an intelligent factory model, and \$2.9 trillion will be generated in business value from AI.<sup>1</sup> Manufacturers have also started empowering the workforce using intelligent and innovative applications on the factory floor while improving safety and productivity. By 2021, 60% of manufacturers will have achieved productivity gains of up to 7% by supporting floor workers with intelligent apps.<sup>2</sup>

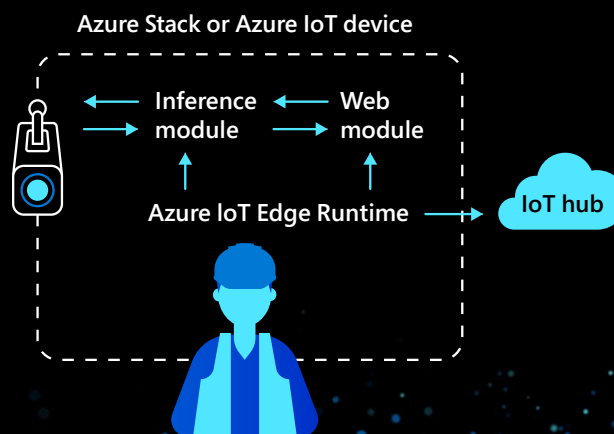
## AI at the edge

Instead of sending data to a public or private cloud, manufacturers are looking for a solution that can help right at the source of data—for example, using high-definition cameras on the factory floor to get a 360-degree view of their assembly line. To tap into this opportunity, manufacturers are turning to edge computing to reduce the amount of data sent over the network. This could help speed up decisions and enable immediate response times while minimizing the risk of interruptions to production due to latency issues.

Azure IoT Edge provides the ability to run a custom vision model next to cameras, where the video data is generated. In this context, ONNX RT helps accelerate these customer vision models using Intel Distribution of OpenVINO Toolkit. Microsoft Azure Stack Hub and Azure Stack Edge or Azure Stack Edge Mini R, powered by Intel technologies, offer local inferencing within factories.

### Hybrid platforms

- **Azure Stack Edge**  
Intel® Xeon® processors | Intel® FPGAs | Intel® SSDs
- **Azure Stack Hub**  
Intel® Xeon® processors | Intel® SSDs
- **Azure Stack Mini R**  
Intel MyriadX | Intel Xeon D processors



### Factory AI Demo

- CustomVision.AI
- OpenVINO
- ONNX Runtime

<sup>1</sup>2019 Manufacturing Trends Report

<sup>2</sup>IDC FutureScape: Worldwide Manufacturing 2019 Predictions

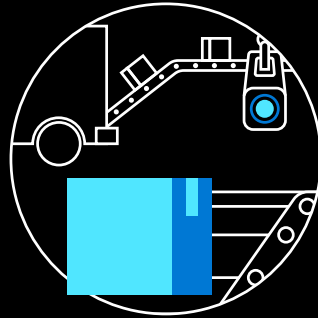
## Factory AI in action

The new Factory AI solution, powered by Intel and Microsoft, seamlessly integrates custom vision and analytics. Factory AI is bringing AI to compute, closer to the origin of data and closer to the cameras. With a few essential camera inputs, factory AI solutions deliver immediate power and intelligent, actionable insights to the factory across various use cases



### Part confirmation

Cameras installed at critical points along the factory floor can detect if the correct part is being used or not, improving operational equipment effectiveness.



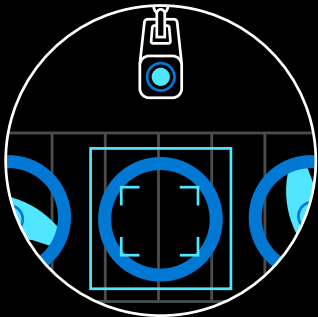
### Counting parts

Like a visual inventory tracking system, cameras can count the number of boxes delivered and taken. As a result, manufacturers can automate manual steps of part tracking while reducing cost and time.



### Tool detection

The cameras can detect when an employee is using the wrong tool by continually monitoring the tool and validating it against the trained model. This helps prevent inefficiencies and costly equipment failures, which increases employee safety.



### Defect detection

The cameras recognize when defective products are created across the production line and can notify the machine to remove them, thus analyzing and identifying quality issues precisely while automating quality assurance steps.



### Machine and employee safety

The cameras use sensors to detect if an employee is standing too close to a machine, generating an alert in real time to avoid safety hazards and help protect employees against machine-related injuries.



### Machine alignment

When a machine is not working correctly, the cameras can alert machine operators in real time so they can act before failures occur. The machine can then be adjusted to ensure optimum overall product quality and performance.

**All the technologies featured in the Factory AI are available today.**

From intelligent edge solutions to the cloud, these Microsoft products are powered by the latest Intel technologies and work together to discover, manage, and analyze factory data in real time.

For more information, visit:  
<http://aka.ms/factoryai>

To get started today, connect with your  
Microsoft representative.