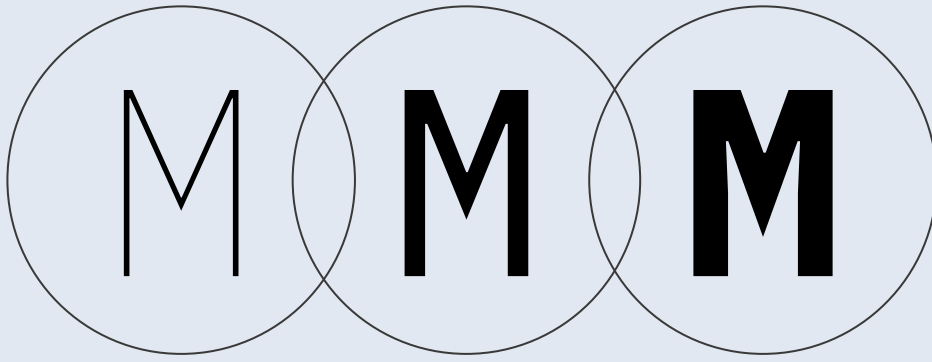


How AI is Reshaping Manufacturing



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Manufacturing is undergoing one of its most significant transformations, driven by data, connectivity, and real-time decision-making. Manufacturers are being asked to operate more efficiently and reliably while navigating supply chain volatility, labor shortages, rising operational costs, and increasing customer expectations.

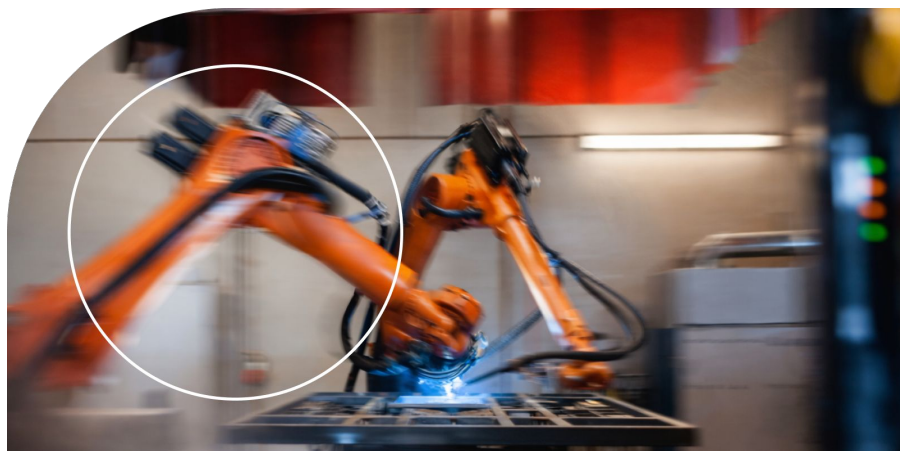
At the same time, manufacturing operations are generating unprecedented volumes of data across equipment, production systems, maintenance activities, quality processes, logistics, and field operations. However, much of the data remains disconnected and underutilized across siloed systems.

The challenge facing manufacturers is how to turn fragmented operational data into actionable insights or what we at Viaduct refer to as manufacturing intelligence.

AI can accelerate the delivery of insights but manufacturers first need to create a unified view of their operations.

Those who do are able to drive measurable impact — reduced downtime, improved product quality, stronger asset performance, and greater operational resilience.

Manufacturing has a visibility problem



Most manufacturers have no shortage of data. The problem is that it lives in silos, resulting in operational blind spots.

The result of this is felt across the organization. Operations teams react to issues without complete context. Quality teams are alerted reactively to problems from warranty claims. Leadership makes decisions based on delayed or incomplete information.

Data fragmentation slows response times, limits operational visibility, and makes it significantly harder to identify the root causes of downtime, quality defects, and equipment failures.

The opportunity lies in connecting these data sources into a unified operational picture — one that helps teams identify patterns earlier, anticipate problems before they escalate, and make faster, more informed decisions.

The future of manufacturing will not be defined by who has the most data. It will be defined by who can act on it most effectively.

Delivering *manufacturing* *intelligence*

Manufacturers are increasingly focused on improving visibility across production, assets, and field operations by making operational data more usable across the enterprise.

By connecting these areas into a unified view, AI can analyze large volumes of operational and time-series data in real time to surface patterns, risks, and inefficiencies that traditional reporting systems cannot detect. The result is manufacturing intelligence.

Intelligence at the equipment level

It starts at the machine level, where equipment and sensor data provide continuous visibility into machine health, process variability, and production behavior.

Machine learning models can identify early signals of equipment degradation or process deviation that often appear long before failures occur.

That visibility creates the manufacturing intelligence needed to intervene earlier, reducing disruptions before problems escalate.

10-30%

Revenue consumed
by cost of poor
quality ¹



Intelligence Across Plant Operations

When maintenance, production, inventory, and quality systems are connected, AI can transform the unified data view into manufacturing intelligence — providing greater visibility into how decisions in one area affect performance elsewhere.

That context helps organizations improve efficiency, reduce bottlenecks, prioritize maintenance more effectively, and maintain consistent throughput across the plant.

Intelligence in the Field

Operational visibility no longer stops at the factory floor. Assets in the field generate data throughout their lifecycle, giving manufacturers deeper insight into product performance, reliability, maintenance conditions, and real-world operating environments.

AI analyzes this data to identify recurring failure patterns earlier, reduce warranty exposure, improve maintenance planning, and accelerate root cause analysis.

Over time, this creates a tighter feedback loop with the factory, field, and customer to help manufacturers improve reliability, strengthen operational resilience, and make better decisions across the full asset lifecycle.

Where manufacturers are seeing results

At Viaduct, we see the impact of manufacturing intelligence across these four areas:

01

REDUCING DOWNTIME

Unplanned downtime remains one of the most costly disruptions in manufacturing.

AI-powered solutions can detect early warning signals before breakdowns occur by correlating patterns across sensor readings, maintenance history, and production logs to identify risks that are difficult to detect in isolation.

02

DRIVING QUALITY IMPROVEMENT

Maintaining consistent quality at scale is challenging when inspections are manual or when quality data is disconnected from production.

AI-powered solutions address this by analyzing production and downstream signals together to identify emerging quality problems in real time and understand root cause more quickly.

03

ASSET OPTIMIZATION

Many manufacturers still lack real-time visibility into asset or equipment performance across the plant.

AI-powered solutions unify machine data, maintenance activity, and production output to surface utilization patterns, inefficiencies, and early signs of asset performance degradation.

04

WORKFORCE OPTIMIZATION

As experienced workers retire and labor shortages persist, teams are required to make faster, more complex decisions with incomplete information.

AI-powered solutions reduce this burden by making operational data easier to interpret and act on in real time.

Getting started

Organizations making the most progress are not trying to transform everything at once. Instead, they focus on solving practical operational problems that create measurable value early and build momentum over time.

Build a strong data foundation

Manufacturing intelligence depends on accessible data and current data gaps.

The greatest opportunity comes from connecting previously siloed systems and making operational data more usable across teams and functions.

Viaduct helps manufacturers create a unified view of their environment by seamlessly integrating all of their data sources.

Leverage AI purpose-built for manufacturing

Effective manufacturing intelligence relies on AI built to analyze time-series operational data, understand production context, and correlate data signals across connected systems in real time.

Unlike horizontal AI solutions, Viaduct's platform is trained on manufacturing and connected time-series data to generate actionable insights across assets, systems, and operations.

Choose partners that know manufacturing

Manufacturing environments are complex, and horizontal technologies are not designed to meet their operational requirements.

Viaduct brings deep manufacturing expertise to help teams accelerate adoption, navigate operational complexity, and deliver measurable outcomes.

200%

AI in manufacturing delivers an average 200% ROI across deployed use cases ²

Future of manufacturing

As manufacturing environments become more connected, organizations that can turn data into intelligence will be better positioned to improve efficiency, quality, and customer satisfaction.

At Viaduct, we help manufacturers operationalize their data to deliver actionable intelligence across assets, systems, and operations. The result is improved production capacity, reduced quality issues, optimized performance, and strengthened operational decision-making.

The future of manufacturing will not be defined by who has the most data. It will be defined by who can act on it most effectively.

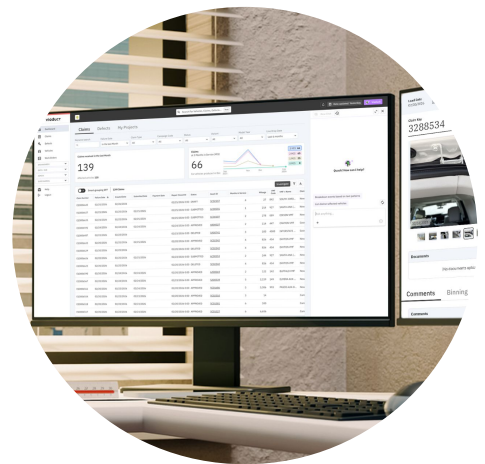
Learn how [Viaduct](#) is helping manufacturers turn data into a competitive advantage.

About Viaduct

Viaduct's solutions are purpose-built for connected assets, combining patented AI technology with deep industry expertise to help manufacturing teams make faster decisions, prevent failures, and eliminate unnecessary costs.

In 2025, Sumitomo Rubber Industries acquired Viaduct, bringing together world-class AI with decades of manufacturing leadership to accelerate the future of manufacturing.

For more information, visit [viaduct.ai](#).



¹ [Learn Lean Sigma](#)

² [Capgemini Research Institute. Smart Factories Report 2025](#)



viaduct.ai/resources