

Manufacturing

AI that actually works: solutions that align IT and operations



You don't want another AI pilot project gathering dust in your IT department.

What you need is technology that keeps your production lines running, your quality standards intact, and your maintenance teams one step ahead of equipment failures. The kind of technology that prevents the costly disasters that keep you awake at night.

At the same time, here's the reality: while your competitors are still debating AI strategy in boardrooms, you have the opportunity to deploy AI-powered solutions that deliver measurable results on the factory floor. These solutions can prevent downtime that costs hundreds of thousands per hour, catch defects before they reach customers, and transform reactive maintenance into predictive precision.

The difference between AI that works and AI that doesn't comes down to one critical factor: focusing on what it actually does rather than what it promises.

The partnership that changes everything

Your most successful AI initiatives won't emerge from either IT or operations working in isolation.

However, when these two teams work together, magic happens. IT brings the technical expertise to make AI scalable and secure, while the operations team understands exactly which functional pain points create the biggest business impact. Together, you can identify opportunities that deliver real ROI across maintenance, production, quality, and supply chain functions.

You get there because of your shared expertise. IT understands data strategy, system integration, and the technical architecture needed to scale AI solutions across your enterprise. They understand how to connect disparate systems, ensure data quality, and build the infrastructure that makes AI initiatives sustainable rather than one-off experiments. On the other hand, the operations team knows the real-world constraints, workforce dynamics and problems that impact safety and profitability the most.

Together, your leadership can set the tone. When you present a united front, AI initiatives stay aligned with business priorities and deliver improvements that matter to your bottom line.





Where you can start delivering value

Predictive maintenance

Predictive maintenance uses IoT sensors and machine learning to monitor equipment health continuously. Instead of reacting to breakdowns or following rigid maintenance schedules, you perform maintenance at the optimal time.

As a result, your maintenance teams stop having to fill gaps as reactive firefighters and start performing as proactive strategists. Technicians can schedule repairs during convenient downtime instead of scrambling to fix catastrophic failures at 2 AM. This creates a safer work environment and helps address the skilled labor shortage by empowering junior engineers with AI-assisted diagnostics.

From a technology perspective, implementing predictive maintenance requires connecting shop-floor equipment with data infrastructure and AI analytics. For manufacturers running SAP systems, SAP's Asset Performance Management (APM) provides the integration layer that turns sensor data into actionable insights. When a critical machine shows unusual vibration patterns, the AI alerts your maintenance team and can automatically trigger work orders before a breakdown occurs.

Quality control

Manual quality inspection, no matter how thorough, introduces human limitations that impact both speed and accuracy. Visual fatigue, inconsistent standards, and the physical impossibility of inspecting every product create gaps that allow defects to reach customers.

AI-powered visual inspection systems eliminate these constraints while dramatically improving both speed and accuracy. These systems can inspect complex components in seconds rather than minutes, while reducing false rejection rates and catching defects that human inspectors might miss.

These systems use high-resolution cameras and advanced AI algorithms to detect surface flaws, dimensional errors, and assembly mistakes in real-time. When defects are caught immediately in the production line, you prevent faulty units from progressing downstream or reaching customers. This avoids costly recalls and protects your brand reputation.

For your workforce, AI quality inspection eliminates the tedious, eye-straining task of manually checking hundreds of parts daily. Quality engineers can focus on root cause analysis and process improvement instead of repetitive visual checks. This creates more engaging work while addressing labor shortages in skilled quality roles.

SAP's Digital Manufacturing platform now includes AI-powered visual inspection that integrates directly with production workflows. When defects are detected, the system can automatically alert operators, halt production lines, or route defective items for further inspection. Because it's embedded in your enterprise system, quality data flows seamlessly into analytics dashboards and traceability records.

Leveraging SAP's AI capabilities

If you're running SAP for ERP and supply chain management, you're uniquely positioned to capitalize on embedded AI capabilities that work seamlessly with your existing systems.

SAP has invested heavily in integrating AI throughout its manufacturing portfolio, starting with core solutions like SAP Cloud ERP and extending from there. This means production planning, inventory optimization, and supply chain decisions now have AI-driven features out of the box. SAP's AI digital assistant "Joule" allows users to query systems in natural language and receive instant insights.

SAP Digital Manufacturing connects your shop floor with enterprise systems through real-time data capture and analysis. The platform includes AI-driven visual inspection for quality control and provides Manufacturing Operations Management with embedded analytics. You get immediate visibility into metrics like Overall Equipment Effectiveness (OEE), cycle times, and downtime causes through intuitive dashboards.

SAP Asset Performance Management combines maintenance management with AI predictions, using sensor inputs to detect equipment anomalies proactively. The system includes risk-based maintenance scheduling and integrates with digital twin data for comprehensive asset optimization.

SAP Integrated Business Planning ensures materials and parts are in the right place at the right time through AI-powered demand forecasting. You can also run simulations of demand and supply changes to prepare for supply chain disruptions.

The key advantage of SAP's approach is seamless integration. These AI capabilities work within your existing system architecture, maintaining a single source of truth while providing the flexibility to extend functionality through SAP's Business Technology Platform when needed.



The results that matter

The real power of AI in manufacturing lies in what it prevents: costly downtime, defective outputs, lost productivity, and safety incidents.

This translates into more products delivered on schedule, reduced spending on emergency fixes, and ultimately higher revenue and margins.

For your workforce, it means safer, more engaging work environments. Maintenance technicians get advanced warnings for issues instead

of emergency repair calls. Quality inspectors focus on problem-solving rather than tedious visual checks. Front-line supervisors and operators gain clearer visibility into production through AI-driven dashboards and alerts.

Rather than eliminating jobs, SAP technology allows you to scale output with your existing workforce while creating higher-value roles. The key is managing this transition thoughtfully, using efficiency gains to upskill staff rather than simply cutting headcount.

Right now, you have the opportunity to build a smarter, more resilient organization where IT and operations work in synchronization toward operational excellence. The technology is there to help you sustain it with continuous improvement over time.

As a result, you end up with more than just efficiency gains. You end up transforming your culture into one that focuses on solving real problems and aligning around shared performance goals, not fighting fires or looking for individual gains.

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