



# The invisible advantage: mastering observability in modern manufacturing

Anticipate and prevent costly disruptions,  
optimize resources, and ensure compliance



**Business**



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# 1 Executive summary

## Digital resilience is now the No. 1 priority for manufacturing leaders

Today's manufacturers operate in one of the most complex and competitive industrial environments in history. Rising production demands, mass consumerization, sustainability goals, tightening regulations, and the constant threat of unplanned downtime stretch operations to their limits.

In fact, **unplanned downtime can cost up to 6,000 euros per hour<sup>1</sup>. The average manufacturer now loses around €217,000 annually due to unscheduled downtime, including nearly €50 million in lost revenue alone<sup>2</sup>.** These figures highlight the scale of operational fragility in modern manufacturing, where even small disruptions can lead to missed delivery deadlines, customer churn, material waste and escalating labor costs.

The risk extends beyond short-term disruption – any failure can swiftly damage brand reputation, spark market backlash, and seriously weaken customer and partner trust.

It is no surprise that CEOs view downtime as a top-level board-level business risk, affecting revenue, trust and market value. Or that 93% of manufacturers in a recent study are looking to spend more on observability as a result.<sup>3</sup>

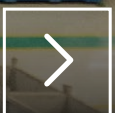
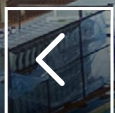
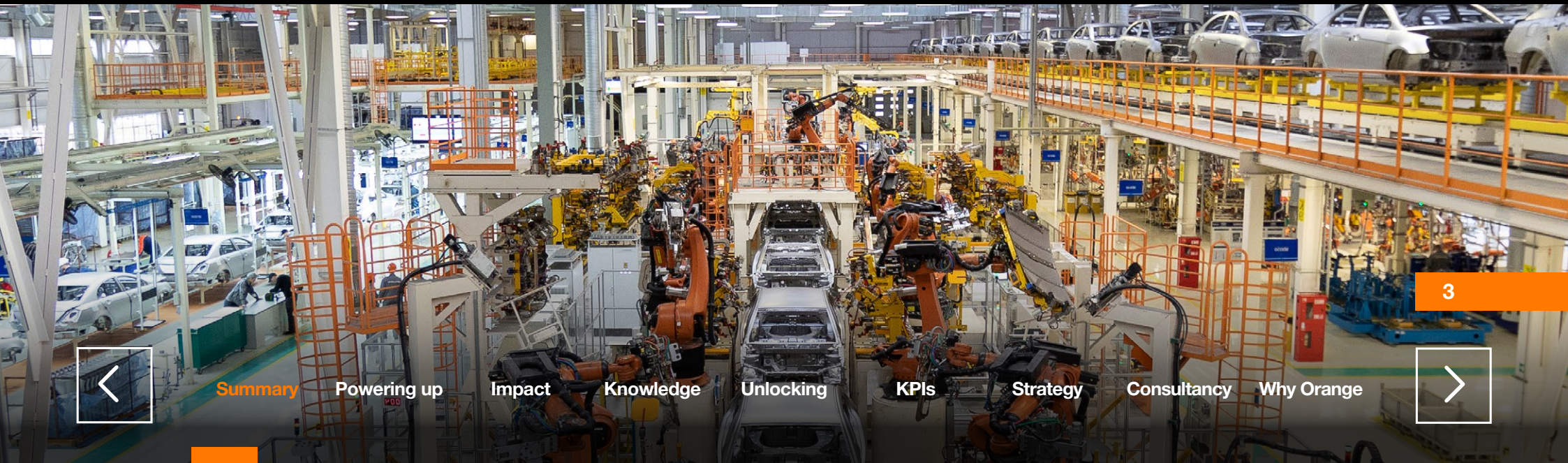
As manufacturers transition to adaptive data-driven ecosystems, observability now becomes the nervous system – delivering real-time alignment across machines, systems and people.

## A wake-up call for manufacturing resilience

As factories connect more machines, sensors and automation data volumes skyrocket. But with data trapped in silos and no clear role risks are only growing.

This data, however, is a goldmine for boosting factories; efficiency and security. It allows for smarter decision-making, optimized processes, decreased downtime, and reduced waste. Observability transforms this data into a strategic advantage, delivering real-time visibility into system and application performance, production flow and health.

Research<sup>4</sup> shows that organizations with mature observability practices resolve issues 30-60% faster and experience material reductions in production-related outrages. This reinforces observability not as a nice-to-have, but as a critical capability that directly shapes competitiveness, resilience, and throughput.



## Turning infrastructure visibility into manufacturing agility

Orange Business, in partnership with Splunk, delivers a unique manufacturing observability platform that leverages its dual strengths in network observability and IT/OT convergence, enabling end-to-end supervision across both operational and enterprise environments. The platform unifies the network, edge, and OT. IT, cloud and security telemetry into a single intelligence fabric. This enables manufacturers to move from reactive monitoring to predictive operations.

This is especially critical in the AI era of manufacturing, where trusted, real-time data flows between OT and IT systems are critical to power accurate, advanced analytics, autonomous operations, and resilient industrial AI at scale. And it is already proving an issue with 35% of respondents to a recent survey admitting data quality is a hurdle to AI readiness.<sup>5</sup>

With deep capabilities in monitoring, analyzing and securing complex environments, we can provide end-to-end supervision view across domains. This 360-degree view creates a connected, transparent and future-ready manufacturing ecosystem. The main benefits include operational efficiency, quality control, predictive maintenance and reduced costs. Security and resilience are the two key business outcomes.

In smart manufacturing, lack of observability equals lack of control. CEOs who act now gain the insights needed to protect trust, valuation and resilience. Those who delay leave their enterprises exposed to unmanaged risk.

This ebook explains how observability can support modern manufacturing by providing real-time insights into equipment, processes and supply chains, enabling two key business outcomes – security and resilience.



## 2 Powering up resilient and smarter factories

Observability has shifted from a 'nice to have' to a critical capability in manufacturing. It is the central nervous system for operations, enabling reliability, intelligence, flexibility, and sustainability across increasingly distributed digital ecosystems experiencing exponential data growth.

According to research<sup>6</sup>, nearly half of manufacturers are in the early stages of their observability journey. Those who have successfully implemented observability tools find that they help speed up problem resolutions. **80% of those using observability say they can identify application bugs within hours or less using the tools. And even though the typical investment is over \$1 million annually, they report an ROI of 2.6 times the initial investment.**

In addition, organizations adopting unified observability are gaining higher uptime, fewer customer-impacting incidents, reduced alert noise, and stronger coordination between manufacturing IT, OT and engineering departments, according to the Splunk State of Observability 2025 report.<sup>7</sup> Unified observability consolidates monitoring data – specifically metrics, logs, traces and events – across an entire IT ecosystem into a single, cohesive platform.



## Why monitoring alone isn't enough

Some manufacturers may question why they need observability when they already have monitoring tools. In fact, enterprises juggle between 11 and 30 tools to monitor different parts of the stack<sup>8</sup>.

**The issue is that traditional monitoring tools provide limited visibility and are not developed to identify potential difficulty points in complex manufacturing infrastructures.**

Monitoring tools operate in silos and can't correlate complex data from IT/OT environments in real time. Finding root causes is arduous. Engineers often rely on gut instinct to avoid expensive command center calls. These gaps matter because modern manufacturing relies on highly interconnected systems such as programmable logic controllers (PLC), manufacturing execution systems (MES), enterprise resource planning (ERP), cloud analytics, supervisory control and data acquisition (SCADA) systems, IoT sensors and robotics, all of whose behaviors must be correlated, not just observed in isolation.

As if that weren't enough, many monitoring vendors try to lock customers into their solutions by making it mandatory to use their proprietary agents for instrumenting telemetry data.

**Observability overcomes these correlation limitations by delivering deep, unified insights across machines and systems - allowing for proactive issue detection, faster root cause analysis, and continuous performance improvement.** To put this into perspective, this is more of an enablement play, ensuring the infrastructure is ready to support and deliver the applications.

Orange Business specializes in making OT data usable at scale, normalizing telemetry data from PLCs, SCADA systems, industrial gateways and legacy equipment and securely transporting it via industrial-grade networks into Splunk Observability Platform. This is critical in brownfield manufacturing environments where OT modernization must coexist with legacy assets.



## The value of Open Telemetry

Crucially, observability aligns with Open Telemetry standards and can ingest data from legacy OT assets, cloud-native microservices, and all that sit in between, which makes it a fitting solution for mixed-generation factory estates.

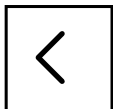
By leveraging Open Telemetry ITOps and engineering teams can harvest richer data with less technical debt, thereby driving better generative AI outcomes, according to a recent report.<sup>9</sup> It also provides other business advantages. **Power users of Open Telemetry, for example, achieve a three times greater positive impact on employee productivity, a doubling of improvement in customer experience, and stronger resilience. In addition, 72% see positive revenue growth.**<sup>10</sup>

In addition, Orange Business adds differentiated value. By integrating Splunk with Orange SD-WAN, private 5G, IoT gateways, and secure cloud connectivity, manufacturers can, for example, gain true end-to-end visibility across the entire production estate. Unlike traditional tool-centric Approaches, it brings observability into the network, edge and OT layers, domains that are often invisible to enterprise IT tools.

## Observability extends way beyond traditional monitoring

Observability extends beyond monitoring tools, offering comprehensive insights into a manufacturer's entire digital ecosystem. This includes real-time insights and predictive intelligence across networks, systems, cloud, the edge, and applications, allowing operations teams to understand what is happening across IT/OT manufacturing environments and why.

Manufacturing infrastructures are inherently fragmented and complex, making it challenging to pinpoint issues. Smart factories, with their advanced technologies such as cloud, AI, analytics and robotics, only make the challenge greater. By correlating data from multiple sources, observability enables manufacturing teams to quickly identify root causes and provide actionable insights in real-time. This enables them to identify and anticipate problems before they arise, thereby ensuring optimal performance and enhancing security.



### 3 Driving business impact beyond technology

Observability creates value across manufacturing management by aligning insights with leaders' priorities. For example, CIOs gain a complete view of service health, cloud dependencies, network performance and cross-domain reliability impacts, providing visibility into uptime and efficiencies. Heads of OT can understand equipment behaviors, control-loop anomalies, PLC/robotic cell performance and early indicators of mechanical degradation, while production managers gain real-time visibility into throughput cycles, downtime triggers and First Pass Yield (FPY) impacting issues.

Compliance and ESG leads gain auditable, time-stamped telemetry across assets, energy consumption, emissions-related data flows and traceability records. This all ensures that observability becomes a shared language across IT, OT and Security ~ Operations (SecOps) quality and engineering teams.

The overarching message here is that manufacturers with advanced observability practices benefit from increased collaboration between teams, fewer customer-impacting incidents, better aligned operational metrics with business outcomes and higher adoption of AI/ML-driven anomaly detection for turbo-charged remediation.<sup>11</sup>

**56%**  
of manufacturers are piloting smart manufacturing, 20% are using it on a scale, and 20% are planning to invest.<sup>12</sup>



## Observability builds resilience into the supply chain

Increasingly dynamic markets and volatile economies mean manufacturers must manage their supply chains better to build greater resilience and sustainability. This requires incorporating localized sourcing, predictive logistics, and data-driven transparency to anticipate disruptions before they happen.

Unified real-time supervision by way of observability can help to predict, optimize and secure critical links in the supply chain, spotting failure points such as:<sup>13</sup>

- Supplier deviations, such as late shipment signals
- Predictive indicators of logistics delays based on live network and application telemetry
- Early detection of warehouse or in-transit anomalies such as temperature fluctuations
- Full visibility on production sequencing to maintain on-time, in-full (OTIF) commitments
- Detection of risks such as theft or falsified shipment records by identifying anomalies in data flows or mismatched event logs.

**A lack of a comprehensive ecosystem view creates critical blind spots in the supply chain, making it vulnerable to internal and external threats. Without robust observability, sensitive data is at risk of leaks and breaches.**

Observability helps protect against and prevent cascading delays, giving planners and line managers confidence in upstream and downstream dependencies.

It does this by providing real-time insights across supply chains and production infrastructures. By correlating IT and OT systems data, manufacturers can anticipate disruptions and reduce waste while avoiding expensive production breaks. Additionally, it is essential not to overlook the significant role of human error in downtime, such as misconfigured software or infrastructure. It can take organizations 18 hours to notice an incident, but observability can provide a route to early detection.<sup>14</sup>



It is essential to underscore that the focus is on ensuring that the underlying digital infrastructure -spanning networks, cloud, and connected IT/OT environments – is fully visible, resilient, and ready to support advanced applications. This is not about the applications themselves, but about ensuring performance through robust observability and seamless integration across all layers.

**This infrastructure-led visibility approach significantly improves supply chain KPIs, including lead-time variance, cycle time predictability, and recall containment rates.** It also supports compliance standards, such as the NIST Cybersecurity Framework, ISO Quality Management, and industry-specific traceability requirements.

Orange Business excels in this area due to its in-depth expertise in secure connectivity, hybrid cloud management, and end-to-end visibility across IT and OT domains. This allows manufacturers to monitor, optimize and trust the performance of their digital foundation.

## Bridging the OT-IT to enable cyber-resilient manufacturing

Manufacturing leads other industries in the total number of cybersecurity incidents.<sup>15</sup> Cyber resilience is pivotal to seeing and securing everything across OT and IT systems.

Traditional monitoring tools do not provide sufficient depth to gain true insights into the latency of connected machines, bottlenecks in data flows between IT and OT systems, underperforming manufacturing assets, and potential security vulnerabilities. Programmable Logic Controllers (PLCs) anomalies may not be correlated with Manufacturing Execution System (MES) alerts, leaving critical blind spots that can delay issue mitigation and expose threat surfaces, for example. By integrating observability with Zero Trust capabilities, enabling continuous verification, and facilitating policy enforcement, teams can detect threats early, maintain uptime, and ensure operational integrity. The impact is tangible. For example, a 1% drop in first-past yield (FPY) may sound insignificant in terms of defective products. But in a high-volume production line, this can have a major financial impact in terms of wasted materials, labor and delayed shipments.

**Splunk's 2024 analysis found that 46% of manufacturers reported experiencing data breaches in their cloud infrastructure.** Those blind spots between OT and IT systems are a leading contributor to prolonged downtime and delayed detection. Observable indicators such as unexplained PLC write attempts and SCADA polling anomalies or spikes in east-west traffic go unnoticed without unified observability practices.

**46%** of manufacturers reported attacks on cloud-based infrastructure, which explains why cloud security is a top-rated initiative.<sup>17</sup>



**With over 80% of organizations stating that they can find and fix problems faster with observability, speed is crucial when cyber incidents impact operations. Hidden downtime data shows that 67% of CFOs advise boards to pay ransom demands,** highlighting how tightly operational disruption is tied to financial exposure. Thus, observability isn't just about monitoring infrastructure – it is about gaining insights into exactly how performance, security, and business outcomes connect in real-time, so leaders can react before small problems escalate into critical issues.<sup>18</sup>

From sensors and PLCs at the edge to ERP systems and AI in the cloud, organizations demand a unified telemetry fabric to gain end-to-end visibility across the manufacturing estate. The edge-to-enterprise flow enables real-time monitoring, faster issue detection, and stronger alignment between factory-floor activities and business outcomes.

Observability is crucial to cloud infrastructure security, as it helps secure complex dependencies in cloud and manufacturing environments. It provides real-time insights into system behaviors, such as unusual network traffic, helping to identify vulnerabilities, detect and respond to threats, and ensure compliance with industry standards.

A unified observability and security posture enables an integrated view that is critical as production increasingly relies on distributed cloud, edge and on-premises systems. Benefits include:

- Rapid correlation between OT equipment behaviors and IT system events
- Early detection of compromised credentials or unauthorized access to automation systems
- Shortened mean time to detect (MTTD) and mean time to respond (MTTR) across hybrid environments
- Continuous validation of software and firmware integrity across distributed manufacturing plants

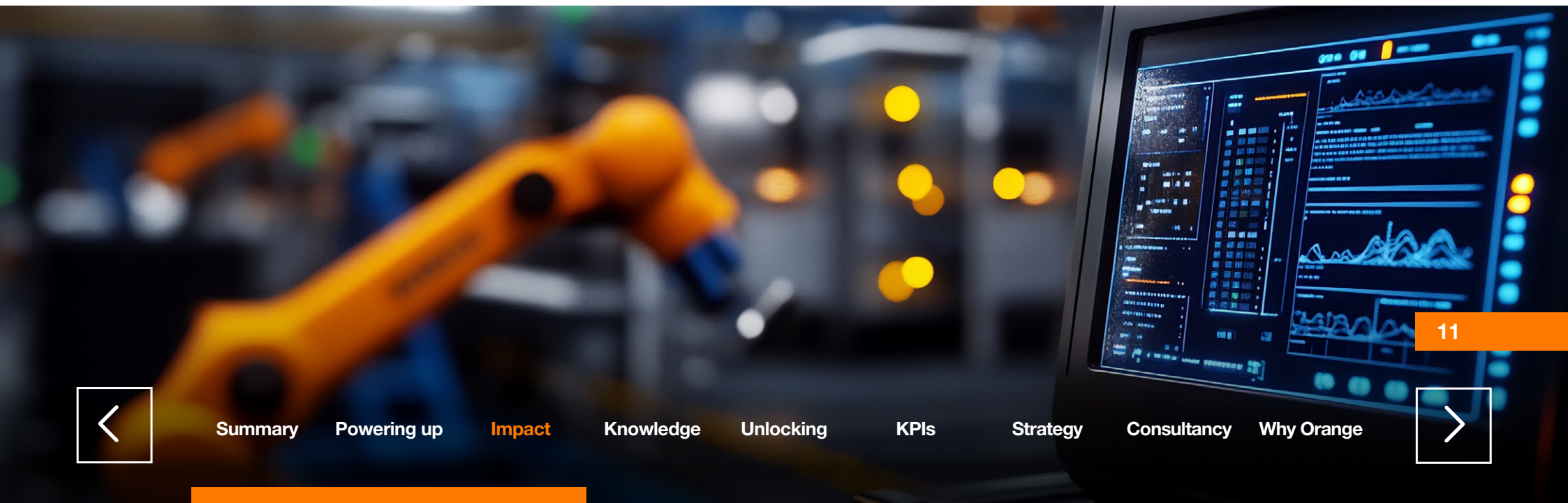
## Boosting business outcomes with observability and AIOps

Observability on its own is a comprehensive supervision solution. AIOps (Artificial Intelligence for IT Operations) brings significant additional value, scaling visibility to handle large, complex data sets, highlighting critical insights, and reducing alert noise.

**Generative AI tools are already considered part of the solution by many organizations, with 65% of respondents to a study confirming they are using Gen AI tools to address downtime. Of those, 75% claim to see considerable benefits, especially when it comes to overall resilience.<sup>19</sup>**

Using AIOps with observability insights complements one another by providing advanced analytics, automation, and intelligence to manage IT operations proactively. AIOps integrates AI and ML into IT operations to automate tasks like event correlation, anomaly detection, and root cause analysis, enabling faster problem resolution. Additionally, it effectively forecasts and prevents future issues.

Observability can be highly effective in smaller manufacturing sites combined with human insight, allowing teams to fine-tune operations to maximize performance and provide quick remediation. However, in large, complex manufacturing environments with huge IT/OT landscapes, AIOps significantly enhances efficiencies, predictive capabilities, and business impact.



## 4 Seeing more, knowing more, manufacturing smarter

Manufacturing increasingly depends on a complex digital infrastructure ecosystem that supports production automation, quality assurance, supply chain operations, and customer engagement. These systems are crucial for manufacturers to collaborate on maintaining operational efficiency, performance, safety, and profitability.

Observability can also overcome many hurdles on the factory floor, from limited visibility into production bottlenecks, delayed incident detection, and difficulty linking operational metrics to faster decision-making and building more resilient operations.

**In Splunk's Observability in Manufacturing brief,<sup>20</sup>, real-time visibility was cited as the most effective method of reducing downtime and identifying bottlenecks across hybrid IT/OT estates.** By unifying telemetry from PLCs, MES, sensors, edge gateways and cloud applications, operations teams can gain a shared operational truth that shortens MTTR and improves throughput consistency, ultimately enhancing productivity.



## Full-stack observability, automation and business-aligned insights

Observability platforms provide manufacturers with end-to-end supervision across assets – infrastructures, equipment and applications that can be aligned with business goals. It integrates data from the entire IT stack, such as logs, metrics and events, into a single platform to provide a comprehensive view of both infrastructure performance and health. This eliminates the need for multiple, distributed tools, streamlines troubleshooting, provides faster issue detection and enhances digital resilience.

Features include:

- 60 view into infrastructure, applications and the edge
- Cross-domain correlation – network, compute, storage and service layers
- Automation, incident detection, alerting, remediation and in some cases self-healing
- Insights align with business outcomes such as reliability, resilience and user experience.

# 80%+

**More than 80% of manufacturers say they can find application issues in an hour or less using observability.<sup>21</sup>**

## A 360-degree view of your IT-OT infrastructure

Through a single pane of glass, **observability provides manufacturers with a unified view to monitor the behaviors of systems, machines and applications in real-time.**

This is extremely valuable in complex industrial estates where a fault can originate in one domain, such as a misconfigured edge device, and manifest itself downstream in a different layer, such as quality inspection systems. Splunk case studies show that when manufacturers correlate infrastructure metrics, OT events and application traces, they can reduce troubleshooting times by 50 – 70% during root cause investigations.<sup>22</sup>

### From data to action: correlating signals and insights across the stack

Observability brings the enormous advantage of correlating signals and insights across the manufacturing environment. By connecting data from multiple sources, teams can rapidly identify root causes, reduce mean time to repair (MTTR), and maintain production continuity.

Advanced AI-driven monitoring and AIOps capabilities enable the process to be proactive, allowing manufacturers to detect and resolve issues before they impact production lines, order fulfilment, or customer experience.

### Understanding system behavior at the edge

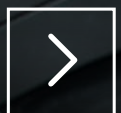
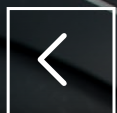
Edge observability is becoming a strong business enabler in modern manufacturing. End-to-end edge observability enables manufacturers to monitor and understand system behaviors at edge locations in real-time, where applications directly interact with users and devices.

Manufacturing at the edge typically refers to production lines, sensors, and local control systems such as PLCs, SCADA, or edge gateways close to physical manufacturing processes.

Edge observability collects and analyzes data exactly where it is generated – at the edge, such as from manufacturing equipment without relying on constant cloud connectivity. Telemetry data is processed locally with AI analytics applied in real-time. For example, this gives manufacturers immediate insights into production ratios and quality on manufacturing lines. This supports faster decision-making, reduced latency and enhanced resilience, even in limited cloud connectivity scenarios.

**By analyzing data at the edge, teams can identify early signs of system failure, prevent costly downtime, flag waste or processing issues, and enable engineers to fine-tune manufacturing equipment to operate optimally.**

Edge observability is most valuable where fast, reliable decisions are critical. It supports millisecond-level monitoring in robotic work cells, reduces quality variation in continuous manufacturing and ensures resilience in low-bandwidth or regulated environments where cloud access is limited. It also enables predictive maintenance on older equipment that produces noisy or intermittent data. By analyzing signals locally first, manufacturers can act instantly while sharing enriched data with the cloud for long-term optimization.





## Enhancing digital twins with real-time insights

Splunk observability enhances digital twin frameworks in manufacturing by providing real-time data from machines, sensors and industrial systems. By collecting metrics, logs and traces, it ensures the digital twin reflects the actual production environment, enabling accurate monitoring, anomaly detection and performance insights. This integration also supports maintenance and process optimization. Analytics can simulate failures, schedule repairs proactively and test workflow improvements, for example.

Orange Business leadership in 5G, SD-WAN, and secure data transport is a key differentiator here, as it gives enterprises end-to-end control and visibility into how their data is moving. By owning the network from access to the cloud, Orange can address any blind spots and complexities that can cause issues and slow down operations. This enables real-time observability to go beyond technical metrics and spotlight how performance, security, and user experience directly impact business outcomes.



## Taming manufacturing data sprawl: the growing challenge

Manufacturers often run a mix of legacy OT systems such as SCADA, PLCs, and MES alongside IT applications such as ERP, CRM and cloud analytics. As these systems were not designed to be interoperable, siloed data accumulates across production lines, factories, and enterprise systems, resulting in what is known as data sprawl.

Inconsistent formats, fragmented governance, and a proliferation of connected sensors and devices all churn out data. This data is stored locally and often inconsistently structured, causing management and visibility issues.

**In a survey, 76% of manufacturers say data sprawl is one of the most formidable obstacles to managing downtime. This results in delayed incident response, duplicated efforts and inconsistent reporting across manufacturing plants.<sup>23</sup>**

Instead of adopting a unified strategy, many manufacturers invest in digital initiatives on an ad hoc basis, with no overarching strategy. This leads to poorly set-up data pipelines and disconnected analytics environments.

**Observability addresses the issue of data sprawl in manufacturing head-on by integrating and correlating insights across machine systems and processes. This transforms fragmented data into a unified view of performance and system health.**

By unifying and contextualizing data across OT and IT environments, a single, real-time, holistic view of the manufacturing ecosystem is created. This empowers teams to ensure the smooth operation of manufacturing processes by promptly detecting and resolving any issues.

High-quality, normalized data is essential for scalable AI – without it, ML models falter. Data quality is critical for effective predictive analytics, and observability is what sustains it across complex environments.



## 5 Unlocking Industry 4.0 with observability

Cloud computing is pivotal to scaling Industry 4.0 strategies for manufacturers, enabling them to increase automation, improve data analytics, and enhance production efficiencies.

In manufacturing, we are seeing an increasing number of applications spread across distributed infrastructures and multiple cloud environments.

Containers and Kubernetes, core to cloud native computing, are transforming manufacturing. Containers allow consistent software deployment across environments, cutting down on integration hassles. Kubernetes enables manufacturers to easily scale up and down, as well as monitor and manage containerized applications, automatically restarting or relocating them in the event of a failure.

This shift creates a challenge in managing and securing increasingly complex software-defined manufacturing environments that are dynamic, interconnected, and reliant on real-time data for optimum performance.

A recent report from Splunk highlights that manufacturers moving to cloud-native architecture often face challenges such as complex microservices, hidden dependencies and rapid deployment cycles. Strong observability is crucial for tracking behavior across thousands of services and ensuring that new deployments do not unintentionally impact production systems.<sup>24</sup>



## Gaining maximum value from cloud native investment

This transformation builds a distributed environment from the shop floor OT, including sensors, robotics, SCADA, edge computing for real-time digital twins, and cloud platforms hosting AI, ERP, and analytics. The major hurdle for Industry 4.0 is bridging the connectivity gap between physical assets, production lines, and cloud-native services to enable seamless and secure data flow across all layers.

Additionally, cloud-native technologies significantly increase the complexity of application topologies. With thousands of microservices and containers, teams struggle to fully view their estate, making it nearly impossible to manage availability and performance. This is further exacerbated by accelerated deployment cycles, which leave traditional monitoring tools struggling to keep up.

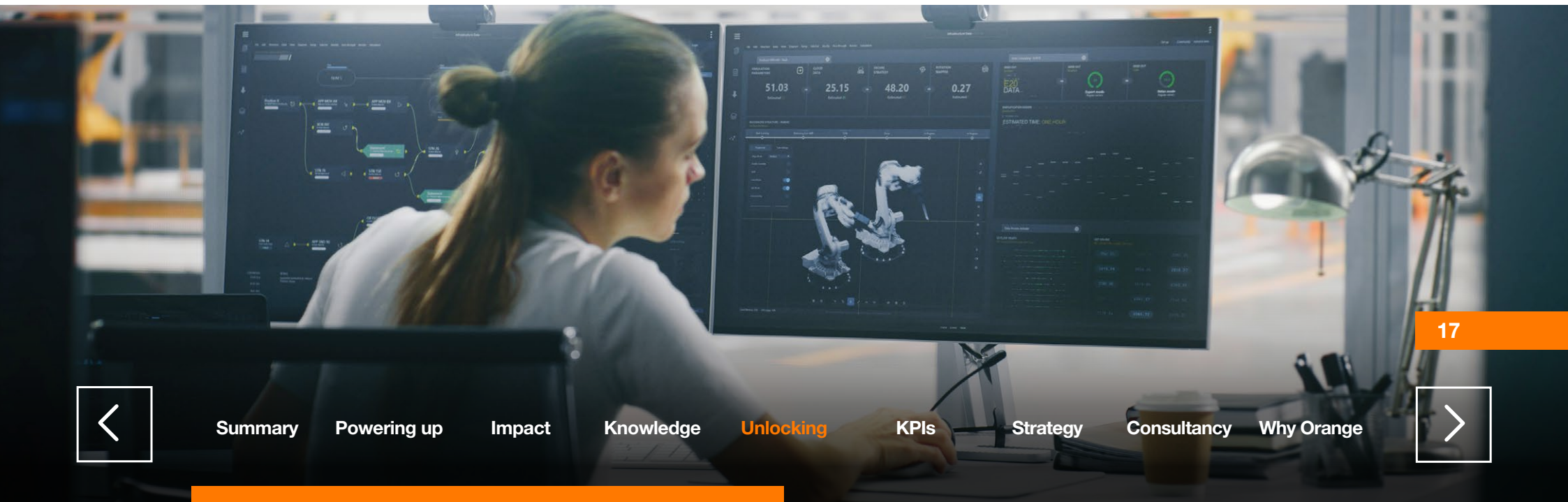
Experience from Splunk shows that cloud-native production applications often fail because of misconfigurations, broken API dependencies or latency introduced by new deployments. Observability enables teams to quickly identify the root cause of these failures and restore system reliability.

**Observability provides the answer by correlating infrastructure health, application performance, and end-user experience. It enables teams to understand deployment behaviors, reduce downtime by troubleshooting more efficiently, and optimize performance through a single user interface.**

It begins by collecting telemetry data from OT devices and PLCs at the edge via gateways, IoT platforms, and SD-WAN networks. This data is correlated with that of cloud platforms to detect issues and enhance efficiencies. Cross-domain dashboards provide comprehensive visibility, enabling engineers to trace problems from a single sensor on a robotic production line to a digital twin in the cloud, allowing them to identify and resolve the root cause quickly

**Ultimately, this observability foundation enables AIOps, automation and self-healing capabilities, driving faster incident response, higher uptime and more resilient industrial operations.**

With observability in place, manufacturers can confidently adopt edge-to-cloud architectures, stabilize digital twin synchronization and scale AI without performance being undermined by data or model issues. It also strengthens cyber hygiene across hybrid systems and reduces manual troubleshooting, allowing Industry 4.0 initiatives to scale without introducing additional operational risk.



## Enabling truly smart manufacturing through connected observability

Orange Business is helping manufacturers move to Industry 4.0 and prepare for Industry 5.0, reimagining their operations by providing connected cloud-native ecosystems that deliver supervision and control from the factory floor to the cloud.

We ensure seamless data continuity using our expertise in 5G, SD-WAN, edge computing, and data security at rest and in transit. This enables information to flow securely from sensors in production lines to edge gateways, AI models, enterprise systems, and analytics platforms, supporting smart manufacturing.

At the center of this transformation is observability, the ability to see, understand, and act on everything happening across these increasingly complex digital and physical environments. Through integrated architectures, Orange Business enables data to become actionable insights, contributing to operational excellence.

Our approach enables manufacturers to gain connectivity, business-strategic observability, and intelligence, transforming the manufacturing ecosystem into a self-aware, adaptive infrastructure that drives sustainable growth and competitive advantage.

**Combining Splunk Observability Cloud with the Orange Business global industrial connectivity speeds up deployment and reduces integration burden for manufacturers.** Together, this supports secure data pipelines from legacy OT assets up to high-performance cloud analytical environments, creating a foundation for Industry 5.0 and human-centric augmented operations.



## 6 Addressing your manufacturing KPIs

In manufacturing, operational KPIs directly drive financial outcomes. Poor visibility into downtime, throughput, quality control and delivery performance rapidly translates into lost revenues, reduced margins and increased brand risk.

Clear, real-time insights enable industry leaders to protect uptime, better control costs and consistently meet customer expectations – turning operational performance into both a competitive and financial advantage.

**Observability directly supports key manufacturing KPIs by providing real-time insights into every aspect of the production process, offering a single, trusted view of operational data across the entire manufacturing ecosystem.**

In addition to supporting KPIs, observability delivers value across diverse stakeholders, from CIOs seeking to align OT and IT performance with business outcomes to OT teams, application owners, and compliance officers who rely on accurate, real-time intelligence for informed decision-making.

Observability transforms operational data into strategic insights, providing decision-makers with the clarity needed to drive growth, manage risks, and achieve business goals.

Correlating machine, sensor, MES and cloud data make KPIs clearer and predictive, accelerating evidence-based continuous improvement.

**78%**  
of engineering professionals surveyed  
said observability provided a positive  
impact on product and service uptime  
and reliability.<sup>25</sup>



# How observability accelerates 12 key manufacturing metrics

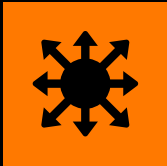
- 1 Monitors production throughput to optimize and balance workloads**  
Detects and addresses production slowdowns early, reducing bottleneck discovery from hours to minutes.
- 2 Spots any bottlenecks in cycle time**  
Identifies root causes of production delays faster for sustainable fixes.
- 3 Monitors Overall Equipment Effectiveness (OEE) to pinpoint inefficiencies**  
Links losses to availability, speed and quality to pinpoint precise failing events for efficiency gains.
- 4 Supports First Past Yield (FPY)**  
Boosts FPY by detecting defects early by correlating process, environmental and operational data
- 5 Monitors scrap and rework rates**  
Identifies process variability or equipment drift early to prevent waste.
- 6 Predicts Mean Time Before Failure (MTBF)**  
Pinpoints breakdowns before they occur, forecasts equipment failures using combined OT, IT and historical data.
- 7 Reduces Mean Time to Repair (MTTR)**  
Speeds up repairs with contextualized alerts, cutting analysis time from minutes to seconds.
- 8 Enhances inventory turnover management**  
Improves visibility across supply chains. Correlates supply chain data for better demand planning and faster turnover.
- 9 Ensures asset utilization**  
Optimizes the use of assets to ensure maximum productivity. Exposes under- or overused machines for optimized productivity.
- 10 Maintains energy efficiency**  
Tracks and reports energy usage and carbon footprint. Monitors usage, detects spikes and supports sustainability reporting.
- 11 Enhances safety and compliance**  
Real-time monitoring improves workplace safety and ensures adherence to standards. Detects early warning signs and maintains audit-ready records.
- 12 Improves ROI**  
Measures operational improvements and downtime reductions for financial gains.

## 7 Five pillars of an observability strategy for manufacturing

Production environments are increasingly complex and interconnected, combining IoT, SCADA systems, MES, ERP, and cloud analytics. Without a clear view, it is impossible to understand what is happening across the production lines and beyond. For example, problems with machines, sensors, or software applications may go unnoticed.

An observability strategy should encompass five key pillars to provide an overarching map for end-to-end visibility, enabling proactive decision-making, security, compliance, and sustainability, while driving continual operational and financial improvement.

1



### Unified data ingestion across IT/OT environments

Manufacturing is made up of fragmented systems. Collecting data from OT and IT systems into a single observability platform eliminates silos, enabling holistic insights across the entire manufacturing ecosystem. Edge-to-enterprise data ingestion unifies telemetry from PLCs, SCADA, gateways, microservices, and cloud platforms into a single system, bridging the gap between traditional factory floor OT data and enterprise IT data.

2



### Cloud-edge integration

Data from edge devices and on-premises systems are often time-sensitive, while cloud platforms provide advanced analytics. Integrating them ensures real-time visibility and actionable insights. Manufacturers run AI/ML at the edge for real-time detection, while observability ensures these insights integrate seamlessly with cloud analytics and enterprise reporting.

3



### AIOps-driven intelligence loop

Manual monitoring cannot keep up with the dynamic demands of modern manufacturing. AI-driven analytics detects issues, predicts failures and automates root-cause analysis for faster remediation. Continuous learning from these operations fosters a proactive and self-improving environment. Splunk AIOps uses anomaly and drift detection with adaptive thresholds to filter noise, reduce false positives and prioritize critical issues in high-volume telemetry environments.

4



### Security, ESG and compliance

Manufacturers are facing expanding cybersecurity risks, stricter regulations and sustainability targets. Continuous observability provides auditable data trails and insights to address these. Security, ESG, and compliance are strengthened by detecting anomalies, tracking energy and emissions, and providing tamper-evident telemetry that meets regulatory standards.

5



### Continuous improvement requirements and ROI metrics

Observability must deliver on measurable business value. Tracking KPIs and ROI ensures iterative optimization of processes across the manufacturing journey, supporting improved efficiencies and cost reduction. Many manufacturers use an observability 'value matrix' linking use cases to measurable outcomes like reduced downtime or improved supply chain performance to make investment cases clearer to management.

# Scaling observability: clear metrics for tangible business outcomes

Start with a single use case and scale up, defining clear metrics to measure success. Establish exactly how data will be harvested, analyzed, and acted upon, supported by prioritized alerts and dashboards that provide real-time insights to prevent data sprawl.

It is vital to maintain a consistent enterprise-wide approach to metrics, automate where possible, and highlight business cases that demonstrate how observability delivers measurable value while meeting both business and IT goals.

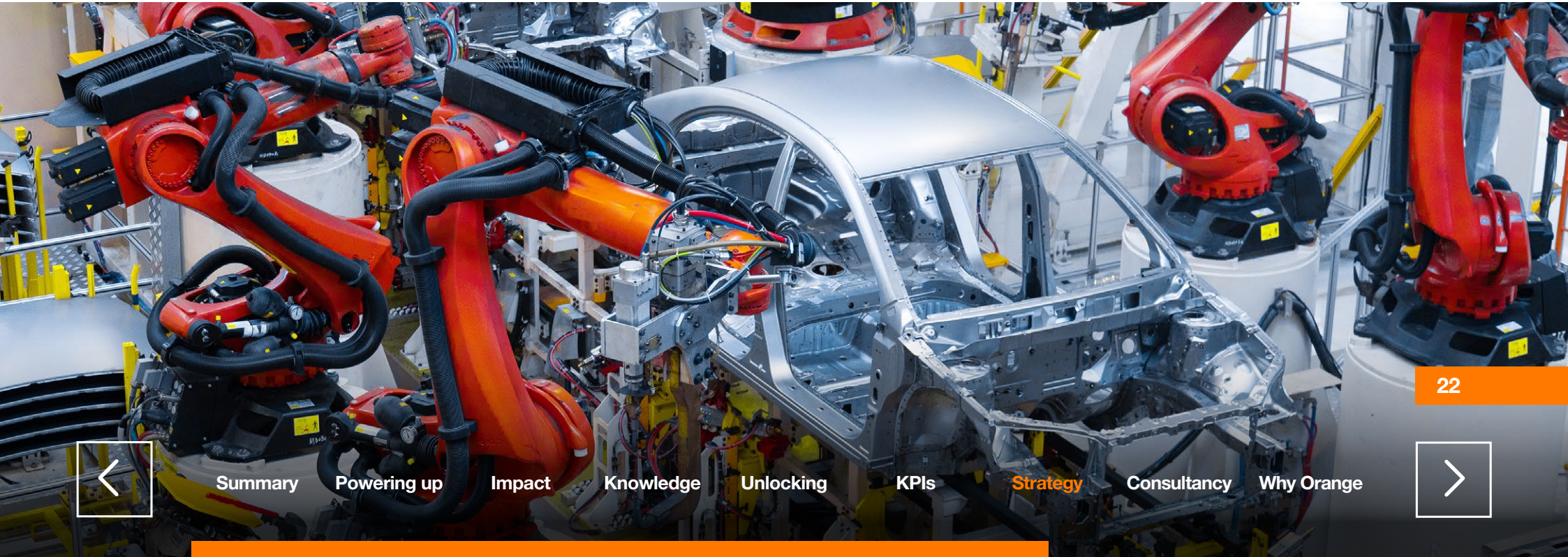
Case Study

Visibility gives an automotive manufacturer 70% faster mean-time-to-repair

An automotive manufacturer lacked visibility into parts, equipment and machines on the assembly floor, forcing teams to take a reactive approach to troubleshooting while clocking up expensive downtime.

The automotive manufacturer had vast amounts of data but wasn't utilizing it to its full advantage. The use of machine learning, IoT, observability, and predictive analytics has increased efficiencies, bolstered safety, and proactively identified and solved problems before they become machine failures or interruptions on the production line. By expanding access to data, it now boasts a 70% faster mean to repair.

These predictive analytics also fuel innovation, enabling the team to safely create new parts and better understand how components work together.





## Actionable intelligence significantly reduces downtime for clothing manufacturing

An international clothing manufacturer sought to reduce downtime, gain cost efficiencies, and have complete visibility over its operations as part of a significant transformation from on-premises to scalable cloud systems.

Prioritizing visibility across its technology stack, the company adopted Splunk AppDynamics. The company is using the solution to unify previously disparate application and network monitoring efforts. This has provided real-time insights into what is happening across all its databases, applications, and cloud instances, enabling an understanding of data flows and proactively identifying any potential issues that may impact the business and its customers.

As a result, the company has virtually eliminated costly service and application downtime, avoiding revenue losses and dips in customer trust in the purchasing process.



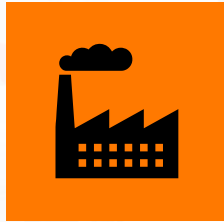
## A leading industrial automation manufacturer reduces energy costs by 20-30%

With fast increasing energy costs and growing regulatory requirements, a leading industrial automation manufacturer lacked visibility across its IT and OT environments. Its teams required unified real-time data insights on energy use to control better costs alongside data on its carbon footprint for reporting and optimization purposes.

By leveraging the Splunk Sustainability Toolkit in collaboration with Electricity Maps, a comprehensive electricity data platform and integrating it with its Factory Orchestration Platform (FOP), **the manufacturer has gained IT and OT observability, which has enabled it to cut energy costs by 20-30%, reduce energy use by 15% and achieve a 25% plus reduction in greenhouse gas emissions.**



# Manufacturing observability journey: adopt, scale, industrialize

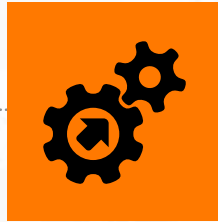


## Adopt

### Pilot & Foundation

- Basic visibility and control
- Instrument OT, network & cloud
- Rule-based alerts
- MTTR ↓ 20-30%

0-3 months



## Scale

### Expansion & Intelligence

- Predictive analytics
- Cross-domain correlation
- AI-driven anomaly detection
- OEE ↑ 3-5% Downtime ↓ 30-40%

3-9 months



## Industrialize

### Autonomous & Resilient Ops

- Self-healing systems
- Autonomous operations
- Continuous optimization
- Predictable throughout, compliance by design, sustained ROI

9-18+ months

Powered by  **Business** 

## 8 Bridging the OT/IT divide through consultancy

Many manufacturers struggle with the integration aspect of observability because their data is often siloed, non-standard, legacy, and unstructured.

### OT/IT alignment through discovery assessments

A structured consultancy route is essential to bridge this OT/IT divide, making OT data usable by modern observability platforms. Conducting a discovery assessment is the first step in helping manufacturers gain an overview of their OT data landscape, including how the data behaves and travels across systems.

A site and system audit complements this, providing a detailed inventory of data sources, interfaces and protocols, allowing manufacturers to assess their readiness to adopt an observability platform. The ultimate goal is to bridge incompatible formats and protocols, establishing a safe and secure path from the production floor to the observability platform. This also ensures OT data integration supports operational requirements and meets regulatory and compliance demands.

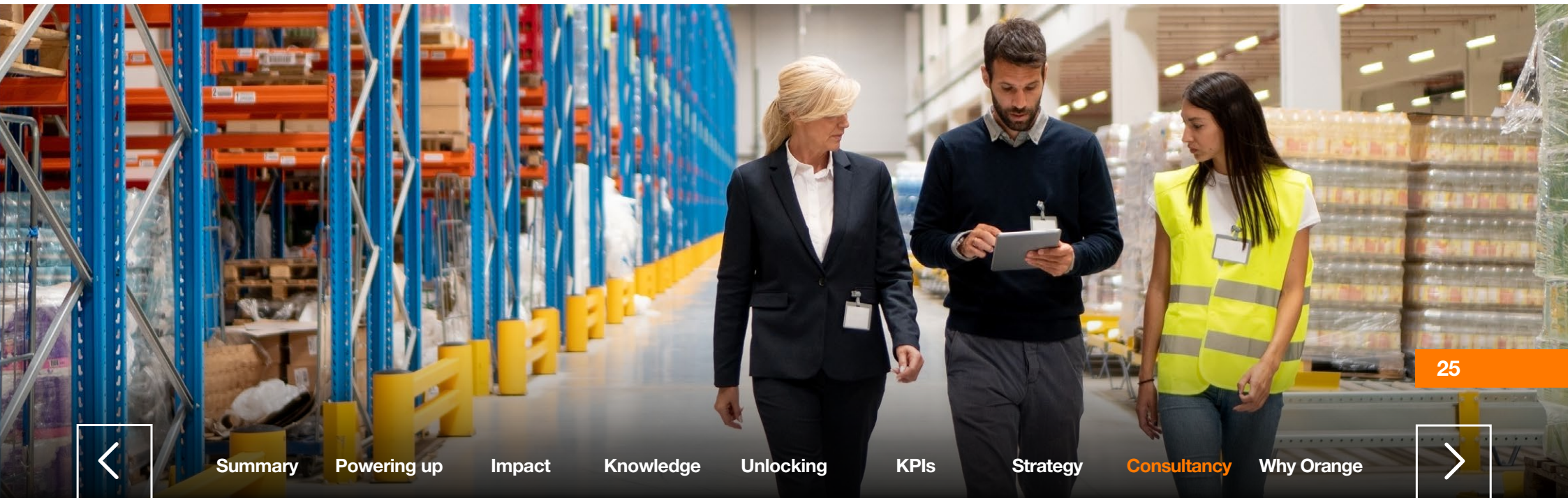
### Orange Business approach: from assessment to optimization

Through our structured methodology, comprising assessment, architecture, deployment, and optimization, Orange Business helps manufacturers understand their data landscape, design interoperable architectures, and implement observability that delivers on its promise of real-time insights into production health, efficiency, security, and compliance.

Our architects collaborate with your OT, process and security teams to build secure, reliable data pipelines and dashboards to drive key business outcomes including FPY and energy efficiencies.

### Proven OT/IT consulting experience across diverse industries

Our consulting strength lies in making fragmented OT data usable and visible through standardized interfaces and secure connectivity, alongside best-in-breed strategic partners such as AWS, Cisco, and Splunk, to integrate observability tools into complex manufacturing environments.



## 9 Why Orange Business for your OT/IT observability journey?

Unlock the full potential of your manufacturing operations with Orange Business and our partner, Splunk, a Cisco Company. We provide you with complete operational visibility by transforming raw data from your production lines and systems into real-time, actionable insights. Together, we can help you anticipate disruptions, optimize performance, and drive efficiencies, making your manufacturing operations smarter, more resilient, and future-proofed.



**Industrial connectivity leadership:** We drive industrial transformation through 5G and IoT connectivity.



**End-to-end observability:** We provide seamless integration across networks, edge, cloud and security for complete visibility, faster insights and smarter operations across your manufacturing environment.



**Proven track record with Splunk Observability and Security:** Splunk is a trusted partner delivering multi-domain observability that turns data into actions and ensures security and performance at scale.



**Unified digital operations:** We bridge IT, OT, security operations (SecOps) and AIOps in one operating model – boosting resilience, agility and innovation.



**Secure, reliable global networks:** Designed for industrial traffic



**Expertise in multi-site, multi-country deployment:** Ensuring standardized data pipelines and actionable insights across locations.



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