

AI, IoT, and supply chain traceability: Your roadmap to connected results



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Introduction

The Internet of Things (IoT) has had a profound impact, leveraging advances in telecommunications to add connectivity to machines and deliver new business models or augment and improve existing ones. What may have started as a line-of-business IoT project must now integrate and interact with, as well as empower, enterprise applications and the people who use them.

The benefits of IoT are widely recognized. In a recent McKinsey survey, 60 percent of executives stated that IoT provided significant insights.¹ Realizing these benefits requires integrating and extending data beyond its original systems. Interoperability and secure information sharing between all people, systems, and things creates competitive advantages across all aspects of business, from customer experience and supply chain to distribution and internal operations.

With AI capabilities delivering near instant analysis of the data you collect, IoT and product traceability solutions can be a game changer for your operation. The challenge for you is how to start without disrupting the projects, people, and systems already in place.

The answer? IoT orchestration.



¹ McKinsey, Taking the pulse of enterprise IoT, 2020

Why do you need an identity-driven IoT orchestration platform?

An IoT orchestration platform unifies siloed IT systems, enterprise software, and edge devices into a single, intelligent control layer. It goes beyond basic connectivity, enabling real-time, responsive coordination across your entire operations ecosystem. A modern IoT platform should also be identity driven, providing secure, contextual access to data. This allows you to automate workflows, embed predictive analytics, and apply AI-driven rules across operations—from asset traceability to inventory optimization.

In this way, the IoT platform becomes more than a device layer. It acts as the digital nervous system of your supply chain. It's a responsive, predictive, and scalable foundation that connects people, systems, and assets into one intelligent loop of action and insight.

With an IoT platform, you can effectively manage the identities of the three key entities of the IoT network: **connected people, connected systems, and connected things.**



Connected people

An identity-driven IoT platform creates a single digital identity for every person—employees, suppliers, partners, carriers, 3PLS (third-party logistics), and customers—who needs access to the IoT network and the associated IoT-enabled products, assets, and the permitted data streams from each based on their established role and purpose. Identities are quickly, often automatically, provisioned, delivered, and managed, securely and at scale.



Connected systems

An identity-driven IoT platform creates a single digital identity that enables secure information integration and sharing between disparate systems over the IoT network. The data can be collected from a wide range of sources, such as warehouse management systems (WMS) or transport management systems (TMS), and presented in the right format to securely connect IoT capabilities with enterprise and external systems. It can then be processed and accessed using AI capabilities and integrations.



Connected things

With a wide range of IoT and traceability devices each using a different set of standards and protocols, the platform provides secure support for an IoT device to connect and share information. It must be agnostic of device type, communications protocol, or data standard to enable legacy or retrofit deployments, while ensuring seamless future technology integration.

Learn how a US manufacturer recovered millions in lost revenue >

The business case for IoT orchestration

IoT orchestration has the power to transform your operations but that requires an identity-driven IoT, AI-enabled platform to help you digest and analyze the wealth of data you provide.

AI-enabled, IoT-connected devices are reshaping organizations' operational dynamics and service delivery. It introduces a new tier of data and asset visibility, while adding thousands of devices to networks and exponentially increasing the endpoints to secure and manage.

Need to make the business case for IoT orchestration in your organization? Here are five key benefits of a comprehensive IoT platform:

Security: An IoT orchestration platform can deliver comprehensive security to protect all IoT endpoints from external cyberattacks, as well as the potential for malicious activities from inside the organization. It ensures trusted connections across the ecosystem by enforcing identity-driven access—critical for enabling real-time, multi-party traceability and compliance.

Connectivity: Each IoT device must be quickly and securely provisioned and managed throughout all lifecycle stages, including tracking and authorizing devices as they are provisioned, registered, activated, suspended, unsuspended, deleted, and reset. The platform needs to provide a secure connection to IoT devices at both the network layer, such as Wi-Fi or mobile communications, and the application layer, such as MQTT (Message Queuing Telemetry Transport) or HTTP (Hypertext Transfer Protocol). This ensures real-time responsiveness across the supply chain and supports dynamic orchestration at scale.

Comprehensive support: A single IoT platform offers wide support for the range of industry-standard IoT devices, such as sensors, tags, and beacons. It allows you to automatically sense the presence of IoT and traceability devices on the network to establish a secure connection and quickly establish the device's credentials or automatically assign them where required.

Analytics: The real value of the IoT platform lies in its ability to analyze the growing volume of information to uncover insight that improves decision-making. The sensor-based information from connected devices must be blended with other data sources to create a more holistic view of IoT network performance and the behaviors and activities of the entities attached to it. With embedded AI, these insights become predictive—transforming operational data into foresight for proactive decision-making.

Integration: API (application program interface) functionality enables IoT and traceability devices to connect and share information with different enterprise applications, cloud services, mobile apps, and legacy systems seamlessly and securely. In addition, the platform's messaging and orchestration capabilities provide the integration layer for transporting data and integrating across devices and systems, eliminating the complexity of creating and syndicating integrations for device-to-device, device-to-people, or device-to-system. This unified orchestration layer drives connected intelligence—a foundation for scaling IoT value across systems, decisions, and operations.

Learn how a steel manufacturer is recovering lost assets and saving \$150K per facility, per year. >

How to calculate the return on your IoT investment

1. Define the objectives and metrics you want to measure.

Sample objectives:

- Improve operational efficiency through the implementation of an IoT traceability platform.
- Enhance supply chain transparency through the implementation of an IoT traceability platform.

Sample metrics:

- Reduce inventory discrepancies by 20%
- Decrease lead times by 15%
- Achieve 100% compliance with regulatory standards
- Cut counterfeiting losses by 50%

2. Assess your current state

- Identify manual processes, outdated technologies, and inefficiencies causing delays and errors in your operation.
- Quantify the costs associated with excess inventories, long lead times, misplaced assets, lost sales, and non-compliance.

3. Estimate implementation costs

Consider:

- Hardware
- Software
- Deployment and integration
- Training

4. Forecast potential benefits

Project the savings you can achieve through:

- Labor savings
- Inventory optimization
- Compliance savings
- Loss prevention

5. Calculate your ROI

Expressing ROI as a percentage allows for easier comparison and interpretation. A negative ROI may indicate that the costs of implementation outweigh the projected benefits and further analysis may be required to optimize costs or revise projections. However, a positive ROI can help you quantify the relative return on your IoT investment to the rest of your team.

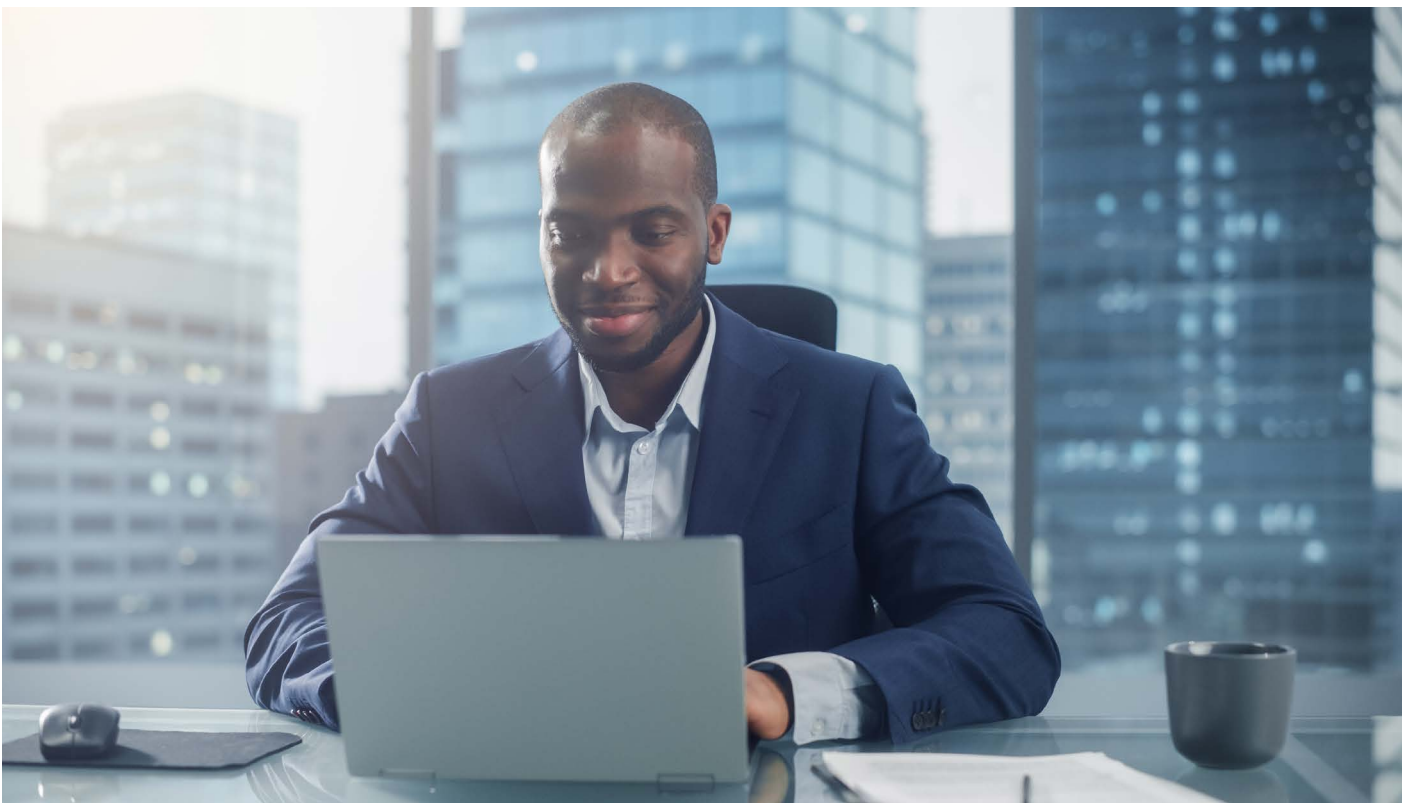
Use this simple formula to build a case for your investment.

$$\text{ROI} = \frac{\text{Net Benefits} - \text{Implementation Costs}}{\text{Implementation Costs}} \times 100$$

6. Consider intangible benefits

Not all the benefits of IoT orchestration can be easily quantified. Here are some additional benefits that should factor into your decision.

- Improved brand reputation: Positive customer feedback and increased trust leading to potential long-term revenue growth.
- Enhanced decision-making: Real-time data insights enabling proactive decision-making and risk mitigation.
- Integration of all your people, systems, and things improving the flow of data and information and eliminating silos across your operation.
- Competitive advantage: Early adoption of IoT technology positioning the company as an industry leader.



Learn how the world's largest dairy exporter reduced product recall timelines to minutes. ›

8 top tips to help you select an IoT platform provider

Finding the right identity-driven IoT platform provider can be time-consuming and costly. The following are some brief tips to consider when you begin speaking with potential providers.

Select the specialists...

Look for a provider that is both an identity management and IoT expert.

... not just in one discipline

Choose a provider that understands how to bring together and blend IoT data with information from other sources and present it for analysis to deliver actionable insights.

Avoid fragmentation wherever possible

Select a provider that lets you manage every person, system, and thing on a single, enterprise platform. This includes all the people who need access to the IoT network—employees, customers, suppliers, partners, and contractors.

Don't let your IoT network become another silo

Ensure that the IoT and traceability data you create can be made available across the enterprise. For example, the data from monitoring a production asset in one factory can be used to identify why similar assets in other facilities are under-performing. Look for a provider that can integrate IoT data flows into large enterprise systems and business processes. Can the provider offer integrated solutions in areas such as customer experience management, business process automation, or [B2B integrations](#)?

Think performance, scalability, and availability

Scalability has become a major determining factor when considering IoT platforms. When dealing with an environment that can grow from hundreds to hundreds of thousands of devices remarkably quickly, you need the virtually limitless capacity of the cloud. However, performance and availability are also essential criteria.

Given the variety of relationships within your IoT network, you are faced with many concurrent connections that cannot be allowed to slow or suspend the network. If a disaster does occur, how quickly can you recover?

Remember not all clouds are created equal

Most IoT platforms are cloud-based. This raises data management and confidentiality issues about using the public cloud. Most companies will wish to retain at least some data management and compliance capabilities on premises and the provider must be able to integrate this seamlessly into the IoT platform. In addition, many organizations prefer to implement an entirely private network for all aspects of their IoT environment. Look for a provider that can deliver an IoT platform that meets your security, confidentiality, and compliance requirements.

A platform for today—and tomorrow

Your platform provider should be able to customize its service offering to your requirements today, while being flexible enough to change over time. Your contract and SLAs should set out how you will benefit as the provider introduces software upgrades and enhancements. Be sure that the services give you the future proofing you require.

A partner—not a provider

You cannot work with your provider in the traditional client and supplier model. This has to be a partnership. Take the time to ensure that the provider you select is a good cultural fit—will the organization work with you in the way you want? And, can you see a long-term relationship with this provider?

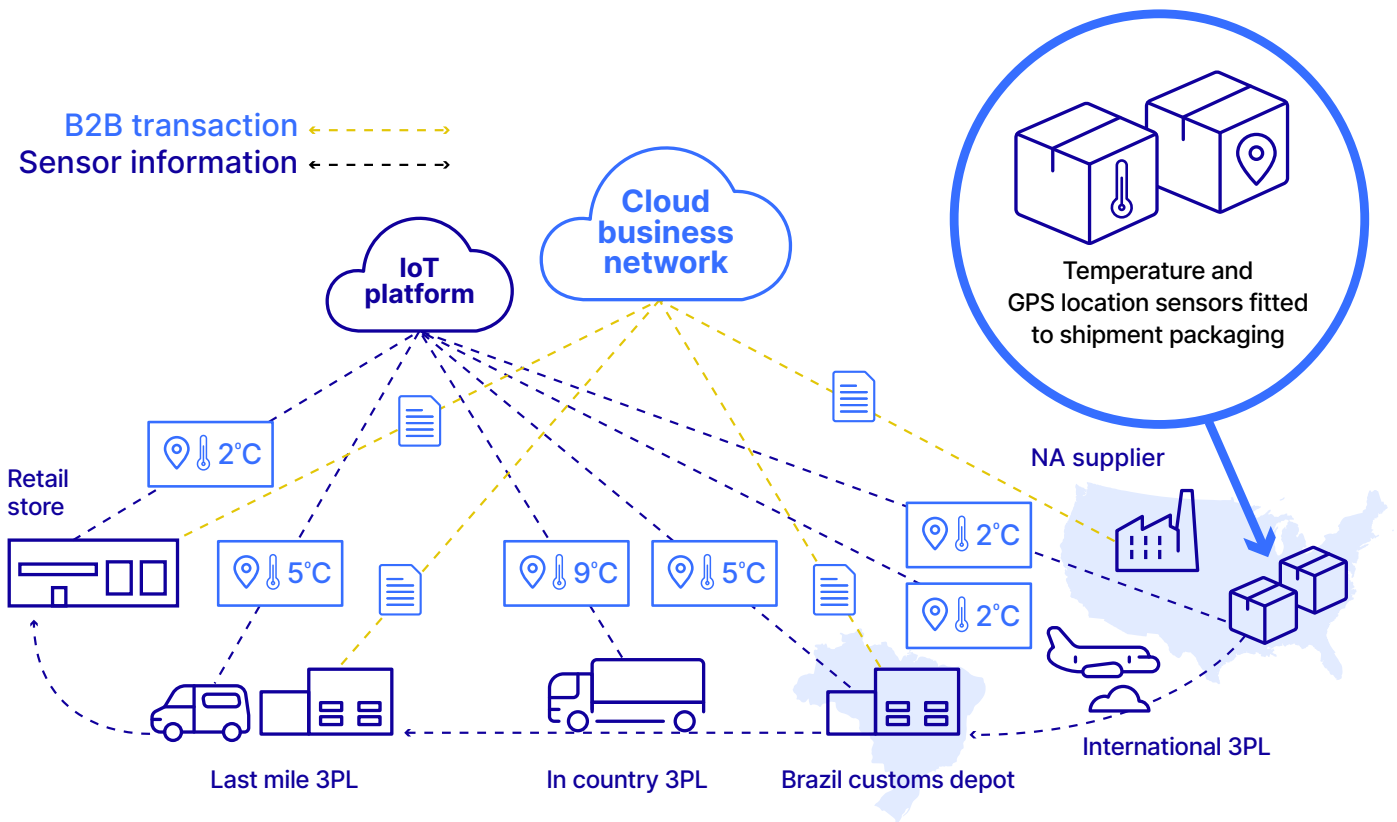
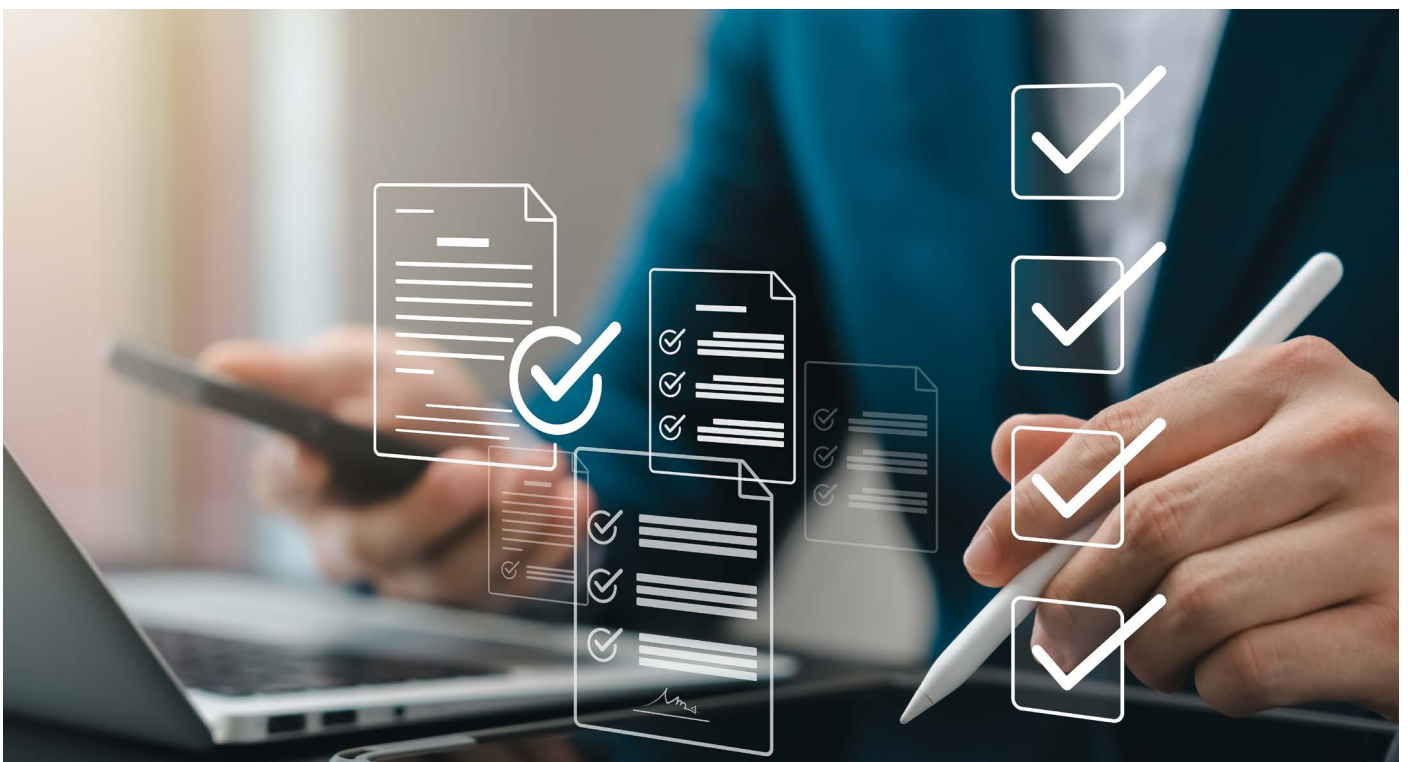


Figure 1: IoT sensors being used to provide pervasive visibility of a shipment moving through the supply chain.

Key capabilities checklist for an identity-driven IoT orchestration platform provider

Use this checklist to help you assess potential IoT orchestration platform providers:

- ✓ Is the IoT platform powerful, scalable, and global?
- ✓ Does it support the widest range of devices, standards, protocols, and data formats?
- ✓ Can the platform securely manage every type of relationship taking place on your IoT network—device-to-device, device-to-person, person-to-system, device-to-system, etc.—at scale?
- ✓ Can the platform handle multiple concurrent relationships and have the capacity to prioritize the most important data passing over the network?
- ✓ Can the platform automate the provisioning, authentication, monitoring, and management of all devices, people, and systems connected to your IoT network?
- ✓ Does the platform offer advanced analytics and dashboarding that allow you to gather all the important data on the IoT network and make them easily accessible to everyone who needs it?
- ✓ Does the provider offer change management expertise to deal with the constant evolution of technology, business processes and workflows, and commercial strategies?
- ✓ Does the provider offer full program management capabilities for your identity-driven IoT platform, where required, covering aspects, such as technical implementation, day-to-day management, incident handling, and ongoing maintenance?
- ✓ Are AI and advanced analytics part of the provider's offerings? This combination is fundamental in delivering use cases, such as predictive maintenance and pervasive visibility.
- ✓ Does the provider offer global cloud-based infrastructure and applications that provide regulatory compliance and service levels for your identity-driven IoT platform?



7 use cases for IoT orchestration, product and asset traceability

1

Recover lost revenue and protect brand integrity

Counterfeiting cost a global economy more than \$500 billion in 2022.² But by leveraging QR codes, RFID, and other simple technology combined with an IoT orchestration platform, companies can easily track events across the product lifecycle/supply chain to:

- Identify and shut down counterfeit or grey market sales activity in real time.
- Prevent damage to the brand image/reputation.
- Increase revenue through reversal of counterfeit or grey market sales.
- Prevent potential public safety risks.
- Investigate illicit activity through geo-location data reporting.

Product traceability in action: US manufacturer recovers millions in lost revenue

With the OpenText product traceability solution, a US manufacturer reclaimed millions in lost revenue from illicit counterfeit activity, recovered a \$6-million stolen trailer, and shut down unauthorized sales channels.

² US Chamber of Commerce, Making the Grade: Avoid Fake and Counterfeit Goods When Back-to-School Shopping, July 2023

2 Remove the mystery of intralogistics and keep operating schedules intact

According to KPMG, 67 percent of organizations consider meeting customer expectations for speed of delivery a critical force affecting the structure and flow of their supply chains over the next 12 to 18 months.³ But poor planning, supply and labor shortages, inventory issues, and a lack of communication can slow your operation.

Adding IoT to an internal or external supply chain will:

- Reduce supply chain interaction costs by identifying bottlenecks and addressing them in real time.
- Eliminate lost in-plant raw materials that affect production schedules.
- Proactively replenish parts and raw materials and automate ordering on low inventory to prevent stockouts.

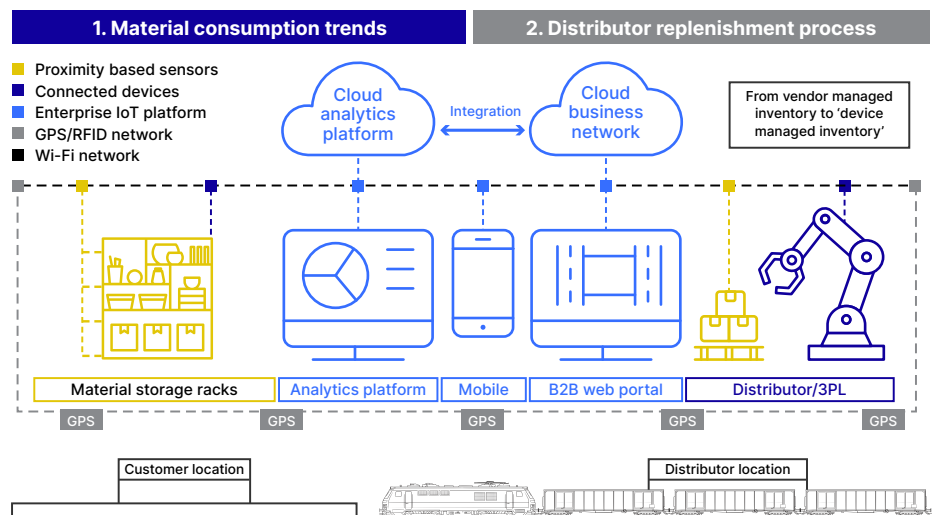


Figure 2: IoT and analytics combine to deliver proactive replenishment from the distribution center to a customer's door.

IoT-powered track and trace in action: Canadian company tracks millions in inventory, recovering millions in lost revenue

A Canadian high-tech company can track entry, exit, and location of more than \$100M in inventory using an OpenText IoT and a hybrid solution, including BLE and RFID, scaled globally with 24/7 support.

³ KPMG, The supply chain trends shaking up 2023

3 Remove ghost assets and recover lost equipment

According to Forrester, anywhere between 10 and 30 percent of lost, stolen, or broken assets are still on balance sheets in the average organization.⁴ Applying IoT eliminates the challenges of traditional asset track and trace to drive better:

- Asset inventory management and knowledge of how much inventory is owned, where it resides, and its status is critical. This is key to reducing the time associated with lost or misplaced assets. It helps prevent inventory theft or loss.
- Asset optimization: Quickly see when an asset is being under-utilized or where it's operating outside its optimum operating conditions.
- Track and trace assets that matter, wherever they are in your operation.

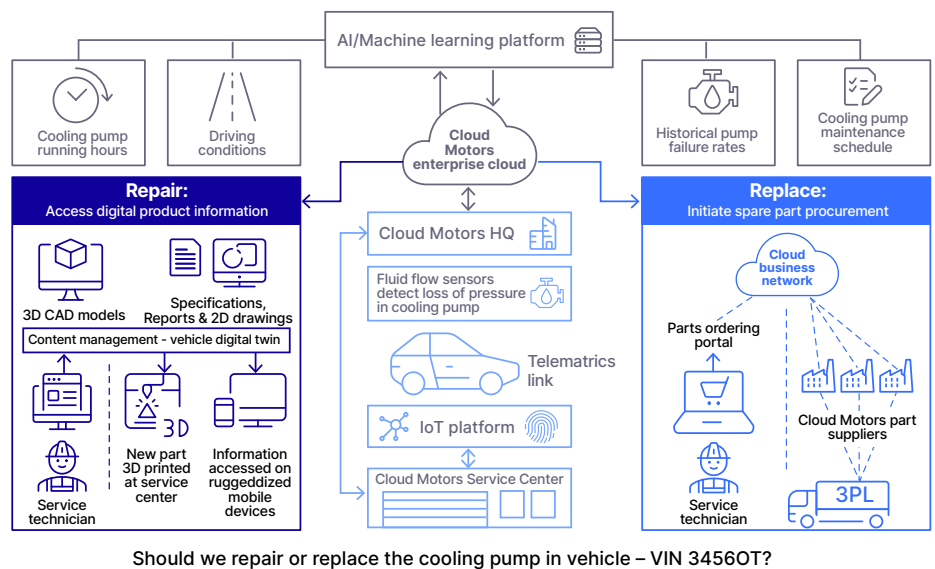


Figure 3: Blending data from different sources to build a data lake to create a single source of the truth for IoT data.

Asset track and trace in action: Global steel manufacturer locates lost pallets and saves significant costs

With OpenText IoT, a global steel manufacturer estimates that eliminating pallet loss of \$50-80K/year based on 100 pallets, will achieve total savings of \$150K per facility per year.

⁴ Forrester, Building your digital business case: The ROI of track and trace solutions, 2018

4 Build digital twins of your critical assets and your supply chain for predictive foresight

The **digital twin** can deliver more benefits than a PLM system for product-based companies. McKinsey suggests that digital twin technologies can increase revenue by up to 10 percent, accelerate time to market by as much as 50 percent, and deliver a 25-percent improvement in product quality.⁵

Building digital twins of your assets and your entire supply chain can ensure:

- Timely maintenance, including predictive maintenance.
- Improved productivity and cost reductions by preventing over-maintenance.
- Near real-time monitoring of assets and simplified, turn-key processes.

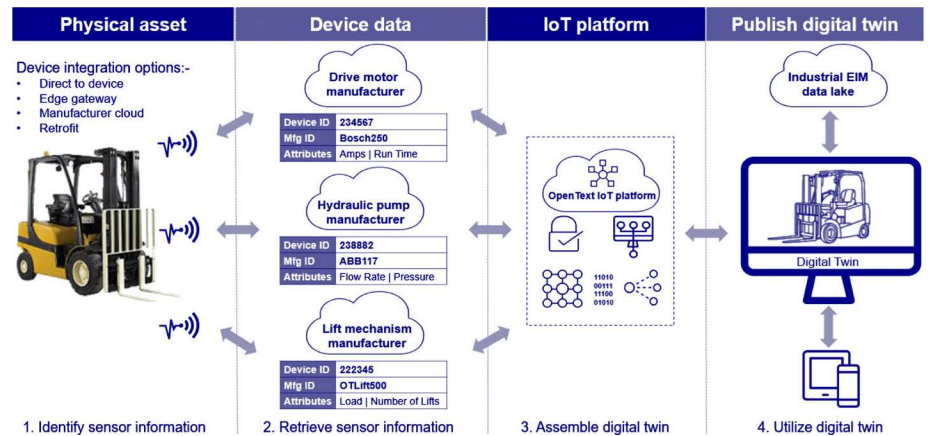


Figure 4: Leveraging IDoT to establish a digital twin of a physical piece of equipment

The digital twin in action: Global manufacturer tracks vehicles in near real time

With the OpenText IoT solution, a global auto parts manufacturer gained the ability to track vehicles across multiple surfaces with a 0.2 millisecond monitoring SLA that tracked status and improved asset intelligence. IT was also able to reduce and better manage vehicle traffic flows during peak times, simplify business processes for a team with limited resources, and deliver a turnkey solution for both hardware and software.

⁵ McKinsey & Company, Digital twins: The art of the possible in product development and beyond, 2022

5 Establish “trust in source” traceability and build consumer confidence

Gartner recently reported that service is down at 38 percent of companies, cost is up at 69 percent, and 62 percent must deal with frustrated customers.⁶ But what if you could change that?

[Product traceability](#) can restore consumer confidence in your products and is a gamechanger for customer service. These solutions can:

- Establish product provenance for your partners and consumers.
- Deliver quick, comprehensive responses to safety concerns.
- Enable data collection and business intelligence reporting for actionable analytics and alerts.
- Assure consumers of where and when a product is manufactured, its expiry data, and authenticity.

Product traceability in action: The world’s largest dairy exporter reduces product recall timelines to minutes

With products such as infant formula that “meet people when they are at their most vulnerable,” this dairy producer became the first to introduce such a high level of product provenance and traceability. It ensured recalls within minutes and allowed customers to scan unique QR codes on each product and receive instant product provenance information from a multilingual customer portal interpreting more than 20 unique data attributes before and after purchase.

⁶ Gartner, Supply Chain Logistics: Driver Greater Business Impact, 2023



6

Improve customer engagement

Brands must adapt and renew their relationship with consumers wherever they choose to engage. Brands are realizing that their products and packaging needs to connect directly with consumers:

- Create a product-specific engagement point with connected products or packaging.
- Achieve omnichannel marketing by creating a one-to-one channel in which to connect with consumers.
- Improve transparency and communicate to consumers the ability to convey “trust-in-source.”
- Build brand loyalty through specific marketing campaigns and integration with rewards programs.

Product traceability in action: Multinational pharmaceutical and nutrition company increases market share and strengthens customer relationships

Increased transparency and customer engagement were key drivers for this multinational company that engaged Opentext product traceability solutions for sample management, loyalty and rewards, and quality and recall. It was able to track the effectiveness of a nutritional sample product program from sales reps into healthcare provider waiting rooms and finally track if a scan or sale occurred. The company also expanded its market share with serialized codes, ensuring loyalty and reward redemption that tracked products from the plant level with production line integration into the loyalty vendor integration on a global basis.

7

Monitoring the condition of a shipment is critical

An international online retailer says monitoring shipments for impacts, tilts, and temperature helped it reduce damage by 90 percent.⁷ By adding IoT devices (such as temperature or shock sensors) to cargo and assets, an organization can provide condition-specific visibility across the supply chain. Here is what you can expect from adding condition-based monitoring:

- Spot inefficiency patterns and track waste and costly spoilage due to mishandling or out of scope environmental settings
- Deliver new service levels or offerings for customers beyond location-based shipment tracking

Harness the transformative power of an IoT platform

Turn complexity into clarity. Discover how AI-powered orchestration helps manage connected people, systems, and assets—efficiently and at scale.

[Explore OpenText™ Aviator IoT >](#)

Want to build an intelligent and responsible ecosystem? Also explore:

- [OpenText Core Secure Access](#) – Learn how to secure your IoT ecosystem and manage access confidently
- [OpenText Core Product Traceability](#) – Ensure end-to-end visibility and traceability across your operations

