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(intel)

Connected Assets Improve Utilization, Reduce Operating Expense

Asset-intensive organizations rethink their approach to maintenance with a connected asset management solution from Intel and Accenture

"Our IIoT offerings are designed to 'light up' operations, so that companies can pull back the veil on assets and processes to deliver intelligent insight through powerful analytics."

Kreg Schmidt
Managing Director
Accenture Digital

Asset Management that Works Smarter

As equipment maintenance becomes more complex, asset-intensive organizations are seeking ways to work smarter and reduce their operating costs through the Industrial Internet of Things (IIoT). A solution featuring Intel® technology and developed by Accenture helps businesses improve the operational efficiency of physical assets through the application of specialized analytics. This leads to reduced operating and maintenance costs, while improving uptime and production.

Connected Asset Management provides a secure, comprehensive IIoT solution, powered by Intel technologies and Accenture assets and services. The solution includes Intel® IoT Gateways, which converge disparate protocols and securely route data between connected devices and the cloud. Accenture's Connected Platforms as a Service (CPaaS) translates data in the cloud from the gateways into insights that optimize business processes and increase enterprise value. In particular, the solution enables remote monitoring, specialized analytics, and predictive maintenance.

Intel technologies also provide end-to-end security for data from edge to cloud and remote manageability of edge devices. Accenture provides consulting and managed services in support of the solution, in addition to leading industry, digital, and technology capabilities, integration expertise, and a global reach.

To Control Costs, Maintenance is Key

For any asset-intensive organization, the costs to maintain equipment are unavoidable— and they hit the bottom line hard. On average, maintenance costs claim more than 20 percent of operating expenses and 4–7 percent of gross revenues.[1] Maintenance also has one of the largest direct impacts on the availability of plants and assets for production. In other words, if equipment doesn't work, the company can't produce.

At the same time, equipment is becoming more complex and regulations more intense. Companies are dealing simultaneously with aging machinery, data integration across systems and devices, and network security. New regulatory and environmental

MAINTENANCE COSTS CLAIM[1]:

20% of operating expenses

4-7% of gross revenues

Figure 1. Across industries, maintenance continues to claim a large share of operating expenses.

requirements continue to challenge the status quo. To stay competitive, companies need to rethink their approach to asset management with new strategies that reduce maintenance costs, improve uptime, and mitigate the risk for penalties.

Extending Intelligence to the Edge

Enabling intelligent actions and decisions at the field level is the key to improving asset management. To better manage the operations of industrial assets information needs to be processed as close to the asset as possible. By pushing intelligence to edge devices, IIoT systems are able to:

- Deliver timely information on critical events to local resources, without relying on enterprise systems for every action. This reduces processing and response time to events and enables machines to ask for critical help within their local area.

- Reduce data costs by enabling the asset to process low-level data locally and improve the usefulness of the data being sent to the enterprise. This action reduces transmission costs to the cloud platform and reduces overall computing requirements at the enterprise level.

- Improve decisions and control by deploying edge analytics models. Embedding intelligence on edge devices enables each asset to customize its local analytics model to its operating environment. This offers a great degree of autonomy with more granular insights on how each asset is operating.

Predicting Maintenance to Prevent Downtime

Downtime is costly. To avoid problems that can slow or halt production, equipment must be monitored as frequently as possible. However, many of today's control systems limit the fidelity of the data collected, especially in remote locations where systems must work over low-bandwidth connections in harsh environments. By performing more analytics at the edge and connecting these systems to the cloud, companies can not only take real-time actions, but also rely less on network connections.

To illustrate how edge intelligence can transform real-world operations, consider a simple tank management use case for oil production. Tanks are located within oil fields to store products created by oil pumps. Each tank needs to be checked and maintained to ensure sufficient capacity to store incoming oil. Today, technicians make scheduled visits to each tank, much like a paper route, to perform checks and maintenance whether it is needed or not. Without real-time visibility, it could take anywhere from two days to two weeks before tanks are checked and statuses are updated. During this time, if the tanks are full, any loss in production or oil spills would go unnoticed.
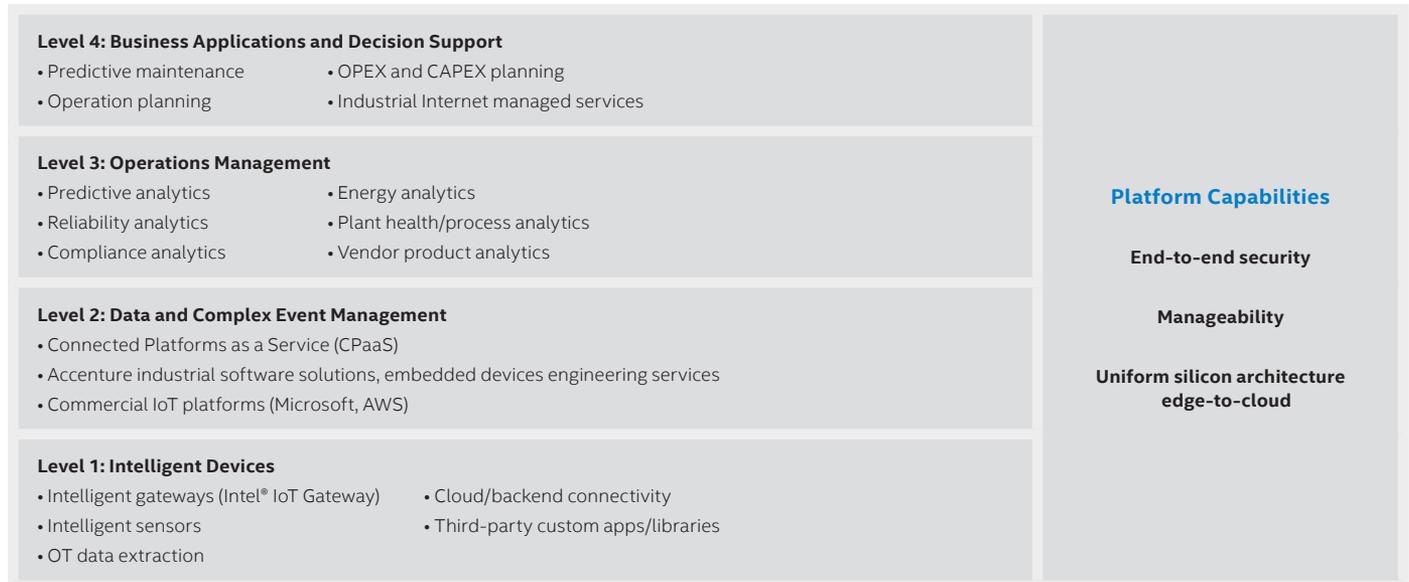
Now consider a scenario in which tanks are outfitted with proper field devices and computing capabilities. Once tank volume reaches a certain level, an alert is triggered to send a snapshot of the current tank and dispatch a technician for immediate service. In this scenario, the tank is enabled to "ask" for what it needs and provide technicians with the necessary context to best provide service. The technician's workflow is also optimized, as he or she is responding only to the equipment that needs to be serviced. This basic autonomy allows operators and technicians to focus on purposeful and higher-impact work, instead of spending valuable time doing routine checks.

It's just one way IIoT is changing how assets are managed, and the possibilities are endless for industrial, energy, manufacturing, transportation, and other markets. Devices that are modernized with smart connections can now interact with their environment and pass data along to other smart devices, networks, and applications. The results range from reduced operating and maintenance costs to improved uptime and production.

ASSET MANAGEMENT BENEFITS[1]

5-25%
production boost

3-5%
asset utilization boost
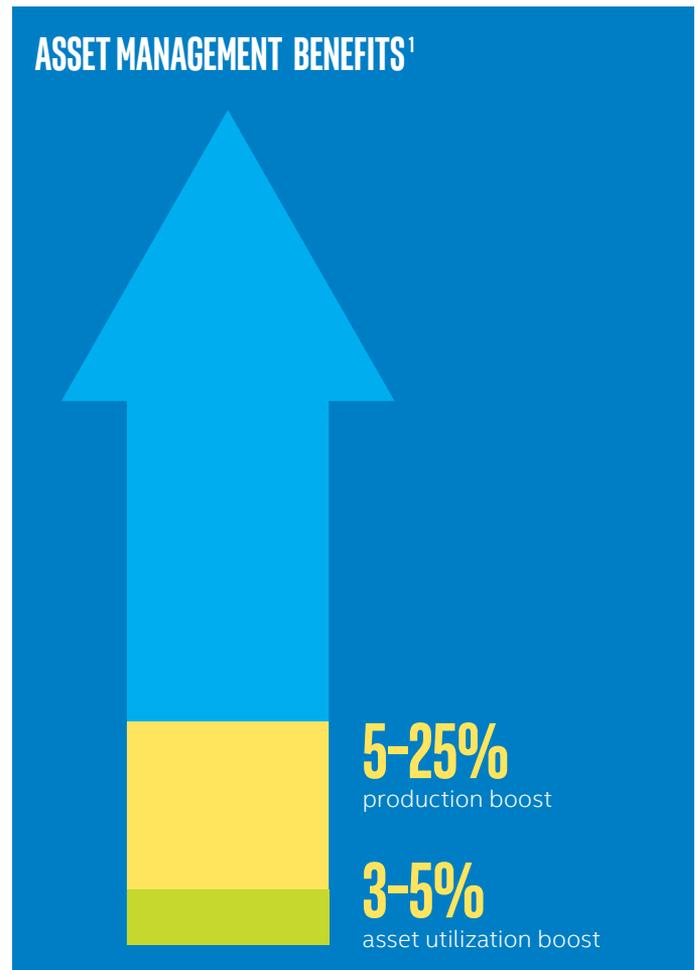
Figure 2. Asset Management can drastically boost production and asset utilization.

A LAYERED CAPABILITY VIEW OF ASSET MANAGEMENT

Level 4: Business Applications and Decision Support
- Predictive maintenance
- Operation planning
- OPEX and CAPEX planning
- Industrial Internet managed services

Level 3: Operations Management
- Predictive analytics
- Reliability analytics
- Compliance analytics
- Energy analytics
- Plant health/process analytics
- Vendor product analytics

Level 2: Data and Complex Event Management
- Connected Platforms as a Service (CPaaS)
- Accenture industrial software solutions, embedded devices engineering services
- Commercial IoT platforms (Microsoft, AWS)

Level 1: Intelligent Devices
- Intelligent gateways (Intel® IoT Gateway)
- Intelligent sensors
- OT data extraction
- Cloud/backend connectivity
- Third-party custom apps/libraries

Platform Capabilities

End-to-end security

Manageability

Uniform silicon architecture edge-to-cloud

Figure 3. Intelligent sensors collect data from devices. Data is then routed and analyzed. Finally, it is used to inform predictive maintenance, operation planning, and other business initiatives. (Graphic courtesy of Accenture.)

Connect, Manage, and Analyze Operations

Asset Management can boost production by an estimated 5–25 percent and increase asset utilization by 3–5 percent.[1] It can increase maintenance productivity by 10–15 percent, make equipment more available, and extend the asset lifecycle. Through a combination of Intel technology and Accenture services and integration, organizations using the Connected Asset Management solution can benefit from:

- Global asset visibility and control
- Advanced industrial analytics
- Optimum maintenance strategy
- Minimal downtime
- Reduced CAPEX, OPEX, and total cost of ownership

Intel and Accenture Connected Asset Management

Connected Asset Management provides a scalable and secure end-to-end connected architecture. At the heart of the solution are Intel IoT Gateways, which connect legacy and new systems and secure data flow between devices and the cloud.

"Intel IoT Gateways enable a secure IoT ecosystem that allows our clients to connect, compute, and communicate through their IT, operational technologies, assets, and products," said Kreg Schmidt, Managing Director, Accenture Digital. "This lays a foundation for our clients to evolve from products to services and outcomes. It also enables further autonomy in their revenue and performance models."

One of the major challenges in connecting operations to the cloud is the variety of standards and siloed nature of many control systems. Intel IoT Gateways abstract these differences and provide a streamlined interface to the cloud. These gateways provide support at multiple layers of the solution:

- **Performance at the edge** that enables near-real-time analytics, local decision making, and tighter process controls
- **Advanced security** for trusted data from edge to cloud and protection from costly attacks
- **Scalability** for varying levels of gateway performance, with a broad range of support from Intel® Quark™, Intel® Atom™, and Intel® Core™ processors
- **Manageability** for secure remote upgrades and services
- **Faster, more flexible deployment** with a platform that supports a wide range of operating systems and ecosystem applications

INTEL® IOT GATEWAY

Along with providing essential connectivity, the Intel IoT Gateway acts as a data router and filter between data-generating sources—such as sensors and intelligent equipment—and the cloud. It enhances data security, accelerates actionable insight, and more importantly, saves money—with the Intel IoT Gateway, companies can securely transfer only data that has operational relevance to the cloud, lowering costs for data transmission and cloud storage.

Accenture, an industry leader in digital and technology services, provides a range of IIoT solutions for industry-specific challenges and opportunities, including connected operations and asset management. For its Connected Asset Management solution, Accenture provides business strategy and optimization consulting services, delivery of application development and monitoring services at scale, and Accenture CPaaS, which enables remote monitoring, specialized analytics, and predictive maintenance.

Lower Operating Costs, Greater Uptime

IIoT solutions can benefit virtually any asset-intensive organization, especially those that stand to gain from preventive maintenance. The Connected Asset Management solution offers strategies to lower maintenance costs, reduce downtime, and mitigate unplanned capacity losses. Through smarter operations, it can also help companies reduce penalties, improve service level agreements, and expand upon the use of renewable energy.

Learn More about IoT

For more information about Intel IoT technologies, visit intel.com/iot.

To learn more about Intel IoT Gateways, visit intel.com/iotgateways.

To learn more about Accenture digital and IoT capabilities, visit accenture.com/digital.

1. Wireman, Terry, "Benchmarking Best Practices for Maintenance, Reliability and Asset Management, Third Edition." Industrial Press, August 2014, new.industrialpress.com/benchmarking-best-practices-for-maintenance-and-reliability.html.