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**INTERNET OF THINGS
CLOUD SERVICE**

Asset Tracking: Keeping Track of Business Value

Connect, Analyze and Integrate with Oracle Internet of Things Cloud Service

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The revolution in digital technology means that nearly one-third of the top twenty market leaders in almost every industry will experience disruption by 2018[1]. Companies in asset-intensive industries such as utilities, manufacturing, logistics, aviation and construction will not be immune to this upheaval. Such businesses will find that digital technologies will help them manage their assets more effectively – whether those assets are energy grids, industrial machinery, fleets of trucks, aircraft or excavators – while meeting a range of industry challenges.

These challenges are numerous. Firstly, businesses in asset-intensive industries have been facing the impact of globalization and, for some time now, have had to deal with fierce competition from lower-cost countries. Secondly, many asset-intensive companies have had to deal with volatile supply chains which can be affected by unpredictable events including adverse weather, natural disasters, geopolitical events, and other factors such as the cost of oil. Similarly, public and legislative pressures to minimize the environmental impact of industry are also a major concern for asset-intensive organizations. Finally, these companies are under pressure to maintain exemplary health and safety standards, and to proactively protect employees and others engaged with the company from harm and injury. Poor management of these operational processes increases cost and has a negative impact on profitability.

To meet these and other challenges, businesses must look to embrace digital technology. By utilizing increasingly prevalent, connected, and smart devices throughout the supply chain, businesses can track moveable assets and thereby better control costs while creating new and innovative services for customers.

Marshalling Your Assets

The challenges facing asset-intensive industries are ones that need to be addressed through modern enterprise asset management solutions, particularly through the use of asset tracking systems. Businesses in industries such as fleet management and logistics, for example, need to ensure they can accurately track assets along the entire supply chain, in case of unexpected breakdown or loss. If not, these businesses run the risk of delivery delays and service failures. In the digital era, where customers are simply a click away from competitors' websites, these are mistakes that will no longer be tolerated; delivering the best-quality service each and every time is an absolute priority.

Clearly, businesses also have a duty of care to their customers. Take logistics as an example: customers rightly expect their logistics provider to deliver their goods to the location where they are needed, on time and in perfect condition—particularly in the case of high-value goods. The reputation of customers' brands often relies on the ability of supply chain partners to deliver products in a vendible condition. In cases where goods are consumed by people, such as in the pharmaceuticals and foods trades, the need to maintain the purity and condition of products while en route to market becomes even more critical and is overseen by stringent regulations.
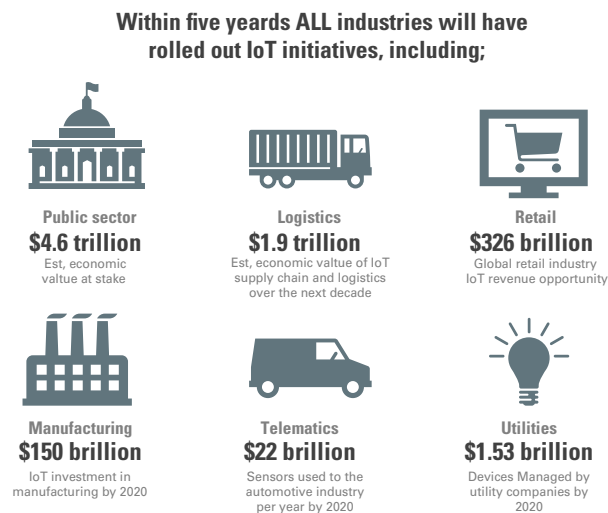
The business case for the use of the Internet of Things (IoT), big data, and advanced analytics in asset-intensive industries is very simple. Even small percentage increases in throughput, availability, and reduced costs amount to very large cost savings, since the output of asset-intensive industries is measured in the billions and trillions of dollars.

It is therefore vital that businesses have access to contextualized, real-time information to enable them to track, trace, and route goods in the most effective way at any given time.

[1] IDC, "IDC MaturityScape: Digital Transformation (DX)", March 2015

Asset tracking provides an ideal solution to these challenges and is one of the primary capabilities enabled by IoT. The availability of low-cost connected devices and sensors that can be embedded into virtually anything has enabled the rise of IoT. These devices can feed back to the enterprise and enterprise applications any data on the location, status, and condition of products, vehicles, and other assets. Consequently, IoT is expected to have a particularly strong resonance for businesses in the logistics and telematics industries.

Within five yeards ALL industries will have rolled out IoT initiatives, including;

Public sector
$4.6 trillion
Est, economic valtue at stake

Logistics
$1.9 trillion
Est, economic value of IoT supply chain and logistics over the next decade

Retail
$326 brillion
Global retail industry IoT revenue opportunity

Manufacturing
$150 brillion
IoT investment in manufacturing by 2020

Telematics
$22 brillion
Sensors used to the automotive industry per year by 2020

Utilities
$1.53 brillion
Devices Managed by utility companies by 2020

IDC Press Release, IDC Reveals Worldwide Internet of Things Predictions for 2015, December 3, 2014

There are a number of reasons why businesses should look to deploy IoT enabled asset tracking:

#1 Asset tracking combined with a command center delivers unprecedented control of assets

IoT can provide unprecedented real-time visibility into the status of assets. For example, sensor data from assets can be used to improve asset visibility, availability, and performance. However, when thousands, or even millions, of assets are connected and generating data, it can become challenging to utilize the data. This is why a command center is important to the effective use of IoT data: a command center can enable 360-degree asset visibility across the entire organization. As a result, repairs can be made faster, reducing time-to-resolution by analyzing machine data in conjunction with structured data such as asset databases, production schedules, maintenance systems,quality systems; as well as unstructured data such as knowledge bases.

For example, a railway operator can monitor the rail network through a command center that displays the status of all connected assets—such as track, signalling, equipment and locomotives—on a digital map. In the case of a service disruption, IoT devices on the assets will set off alerts and notifications in the command center, providing details of the causes and effects of the disruption.

This allows the railway operator to manage the network by exception, zooming in to the status and details of any asset that requires attention.

#2 Asset tracking generates value by optimizing the supply chain

By tracking asset status, as well as the movement of products and parts throughout the supply chain, asset-intensive companies can realize long sought-after manufacturing goals such as lean manufacturing, which aims to eliminate waste and delays throughout the manufacturing process.

"Until now these processes have required expensive systems and instrumentation and were difficult to implement. IoT asset tracking makes this approach much easier and more affordable, and holds the promise of optimizing a wide variety of industries and business processes."

Meanwhile, real-time visibility of inventory levels allows companies to provide accurate promise dates to customers, as well as to optimize their own manufacturing schedules. The use of automation and IoT technologies in warehouses for example, revolutionizes warehouse management and order fulfilment in numerous industries.

Asset tracking also enables optimized asset delivery. By integrating sensors in shipping containers, ships, trains, and trucks, asset tracking systems can provide visibility of the exact latitude and longitude of a shipment, allowing shippers and fleet managers make contingency plans well in advance in case of delays. Meanwhile, routes can be optimized for on-time deliveries and reduced costs based on real-time traffic and weather conditions.

For instance, sensor information from a parts bin in the assembly line of an automotive factory can be used to automate the ordering of new stock. When sensors in the bin identify that the stock of that particular part is low, it can send an automated message to the supplier to deliver replacements well before the current stock runs out. In return, the part manufacturer can provide real-time data that the automotive manufacturer would find useful such as the availability of the part, the date the part will be shipped, transit time, and the estimated time of arrival.

Such just-in-time processes have been around for years and have revolutionized automotive manufacturing. However, until now, these processes required expensive systems and instrumentation and were difficult to implement. IoT asset tracking makes this approach much easier and more affordable, and holds the promise of optimizing a wide variety of industries and business processes.

#3 Asset tracking enhances the customer experience and leads to transformational insights

The ability to locate assets in real-time is absolutely critical, affecting the ability of businesses to be responsive to customers and run efficient operations. Combining asset location tracking with live context-aware information, IoT-enabled asset tracking can provide businesses with a centralized view of all assets, whether in transit or not, enhancing their ability to plan and schedule effectively. The result: enhanced customer service, more efficient operations, and the ability to dynamically alter plans according to unexpected events such as theft or service disruptions.

For example, air freight carriers now include track-and-trace capabilities in some of their products. These allow customers to monitor the status of goods during air transit, providing them with peace of mind that their goods will arrive at the correct destination in perfect condition. Such capabilities are ideal for certain vertical industries, such as perishables and pharmaceuticals, where the shipper requires goods to be kept at an optimum temperature to ensure they remain vendible.

Asset tracking also has an important role to play in providing businesses with the insights needed to succeed. This includes providing logistics and fleet management professionals with the ability to easily locate moving and missing assets, keep records of inventory, assign assets based on least-cost routing, and generate compelling customer insights.

#4 Asset tracking can help enable new value-add business models

Take the example of a car rental company. By embedding connected devices into its vehicles, the business can deliver value to the customer through innovative services such as usage-based billing. These are exactly the sort of customer-centric services that will help businesses differentiate themselves to increasingly demanding consumers.

IoT also enables the transformation of manufacturing. The digitization of physical manufacturing processes due to the increasing interconnection of assets such as manufacturing plants and equipment, enables unprecedented control and efficiencies. The ability to tie a variety of business functions and processes together—starting from design and moving to testing, manufacturing, and finally customer service—can create a large variety of benefits. These include greater flexibility, the agility needed to respond to customer needs, early identification of design and quality issues, and precise product genealogy and tracing. Some asset-intensive industries stand to be revolutionized through the use of IoT-enabled technologies such as connected 3-D printers.

These cases demonstrate the overriding benefit of deploying IoT-enabled asset tracking. It helps businesses to differentiate their customer service – the single, most important business imperative for the digital world.

Start Transforming Your Business to Drive Growth and Value

As businesses rise to the challenge of digital transformation it is essential they look to IoT immediately. The technology has matured: it is well beyond the hype phase, with many digital leaders already exploiting the technology to enhance the maintenance of moveable assets, increase the security of high-value shipments and innovate through usage-based billing mechanisms.

There are three key steps to successful IoT-enabled asset tracking:

1. Embrace the cloud: The rise of IoT is mirrored by the rise of the cloud and the two technologies complement each other perfectly. Offering high degrees of agility and the ability to remotely collect huge volumes of data from any and all mobile assets, the cloud is the best performing and most cost effective way to realize asset tracking.

2. Embrace real-time data: Asset tracking demands enterprises collect a high volume of on-the-fly data, which needs to be processed and analyzed in real-time. Organizations will realize the business advantages of IoT only when they can capture, sort, piece together, and make sense of data collected from a wide variety of device types.

3. Embrace integration: Businesses must ensure that IoT devices are integrated completely with the wider enterprise, particularly with asset tracking applications and the devices—both fixed and mobile—that will run these applications.

Connect, Analyze, Integrate

To derive value from Internet of Things, enterprises need not only to collect this data but also to secure, analyze, and integrate it with enterprise applications and processes, generating the actions that define and drive the value proposition. Oracle Internet of Things Cloud Service lets organizations connect, analyze, and integrate IoT data.

Connect - Securely and reliably connect any device in any market to bi-directionally transact data, accelerating your time to market with an open, secure, and scalable platform.

Analyze - Perform real-time, big data, and predictive analytics to deliver the enriched enterprise data that enables you to identify new services and improve customer satisfaction.

Integrate - Ensure the right data is available to the right application at the right time using open interfaces and pre-integrations with Oracle's platform-as-a-service (PaaS), software-as-a-service (SaaS) and on-premises enterprise application offerings to reduce total cost of ownership for IoT data-enriched applications and processes.

"To derive value from IoT, enterprises need not only to collect this data but also to secure, analyze, and integrate it with enterprise applications and processes, generating the actions that define and drive the value proposition. Oracle IoT Cloud Service lets organizations connect, analyze and integrate IoT data."

"Remote asset tracking is a vital tool for businesses as they look to embrace digital transformation and create new and compelling services that will enable them to compete effectively. Oracle IoT Cloud Service enables all such organizations to address their customers' needs."

Why Oracle? Because with more than 400,000 customers – including 100 of the Fortune 100 – and with deployments across a wide range of industries in more than 145 countries, Oracle offers a comprehensive and fully integrated stack of cloud applications, platform services and engineered systems. Oracle also has decades of expertise in managing and extracting value from data.

What's more, Oracle IoT Cloud Service empowers companies to unlock even greater business value from the many Oracle technologies and applications they already rely on to run their businesses. For example:

• Oracle's JD Edwards' customers can leverage Oracle IoT Cloud Service to drive real-time tracking. Oracle IoT Cloud Service can provide information about assets in real-time, detect usage patterns or exceptions and trigger processes in Oracle JD Edwards' application like resource planning or contracting
• Real-time asset data provides customers with improved insights into processes, inventory and risk. With Oracle IoT Cloud Service, Oracle E-Business Suite EAM customers can get real-time sensor-based data into their dashboards, enabling tighter high value asset management and cost control..

Conclusion

From increased visibility of shipments to enhanced security and care of assets in transit, IoT-enabled asset tracking enables a level of customer service not possible in the past. It provides customers with peace of mind that their goods are in safe hands, while enabling logistics and fleet management professionals to do their jobs more effectively and efficiently. These operational enhancements can prove all the difference in an ultra-competitive market. In short, remote asset tracking is a vital tool for businesses as they look to embrace digital transformation and create new and compelling services that will enable them to compete effectively.

Oracle Internet of Things Cloud Service enables asset-intensive organizations to address their customers' needs. The Oracle platform has been designed to IoT-enable an organization quickly and with low risk. In addition, Oracle is uniquely positioned to help line-of-business managers simplify their IoT planning and implementation. Oracle IoT Cloud Service can integrate new IoT systems with enterprise applications. And it empowers organizations to generate value from IoT devices by correlating and integrating the right data at the right time. With Oracle IoT Cloud Service, your company can deliver innovative products, services, and business models to transform your digital business.

If you would like to find out how Oracle IoT Cloud Service can transform your approach to asset tracking visit oracle.com/iotdiscoveryworkshop to sign up for a complimentary IoT Discovery Workshop.

For more information on the Oracle IoT Cloud Service,
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