

Re-imagining Asset Management with Internet of Things (IoT)



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Executive Summary

A lot has been said about ways in which Internet of Things (IoT) can transform companies. Mind numbing figures in expected savings and CXO surveys showing that majority is already investing or planning to invest in IoT make it a 'must look at' initiative. The moment Internet of Things is brought into an industrial perspective; the benefits are either in one or more of these realms: increasing efficiency, reducing cost or improving customer experience. Industrial Internet of Things (IIoT) has now become a common word in the enterprise arena.

The Internet of Things is becoming a fast adopted technology solution which is moving from the academia to the industry. This is primarily, due to the explosion of low-cost sensors, affordable connectivity, scalable cloud platforms, ingestion, processing and storage capabilities of vast amounts of structured/unstructured data by the big data platforms, ubiquitous mobile applications, and smart machine learning tools. Technology companies and service providers are increasingly bombarding companies with innovative solutions and ways on how they can connect things to radically change their business operations. Companies have moved beyond the acquaintance phase with Internet of Things and are now in the 'let us try' phase.

This paper emphasizes the importance of a smart asset management system in Industrial IoT, its advantages over a traditional solution and the components of smart asset management system.

Demand for Asset Management Solution

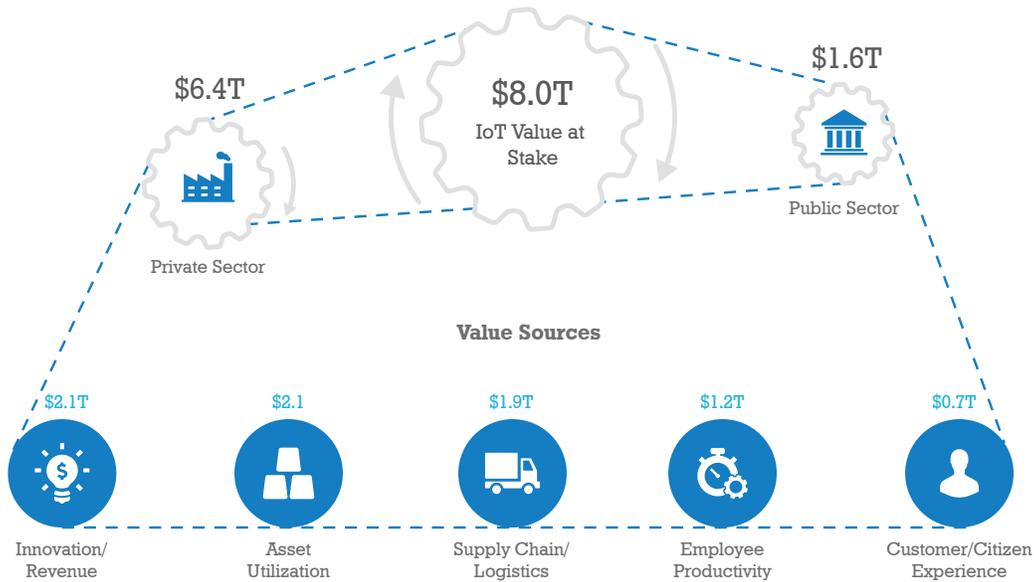


Figure 1

Source: Cisco Consulting Services, 2014

A common and predominant application of the IIoT seen across industries is for physical asset management and monitoring and predictive maintenance. A study conducted by Cisco shows that over the next ten years, the potential bottom-line value that can be created as organizations harness IoT solutions will be close to 8 trillion dollars and 25% of this or 2.1 trillion dollars is from Asset Utilization.

Traditionally asset intensive industries like Manufacturing, Industrial Machinery, Logistics and Transportation, Oil and Gas, Heavy Machinery and Construction, Equipment Rental, etc. are constrained by lack of visibility of their assets and they continuously try to track their RoA. Most of these companies are interested in monitoring their assets, the work each asset is doing, whether it is being overworked or under-utilized, the current location of the asset, the lifetime value of the asset etc. A study conducted by Forrester and SAP shows two-thirds of companies in these sectors are using or planning to use IoT-enabled asset monitoring solutions.

Variations of Asset Management Objectives

The physical assets can be categorized into different groups: human and non-human, moving and non-moving, on-premise or field asset. The human asset can be your human resources like shop floor employees, sales executives and field force personnel. The moving assets can be your trucks, train wagons, cranes and rental cars. Whereas the non-moving assets are the huge machines in your shop floor, the boilers, long pipelines, gas cylinders, coolers, network towers, etc. Different kinds of assets bring different challenges and different business objectives for managing them. The manufacturers of assets, OEMs have different objectives from their asset management and the operator or owner of assets have different objectives from their asset management. More often, the OEMs want to monitor customer

data, usage data and improve customer experience by monitoring their assets whereas the owner or operators monitor the data from a heterogeneous group of assets they own, to better manage and effectively utilize them. In this paper, most of our asset management discussion will be restricted towards the latter use case where increasing efficiency from a heterogeneous mix of assets is the primary objective.

The matrix shows an indicative list of asset management/asset tracking applications.

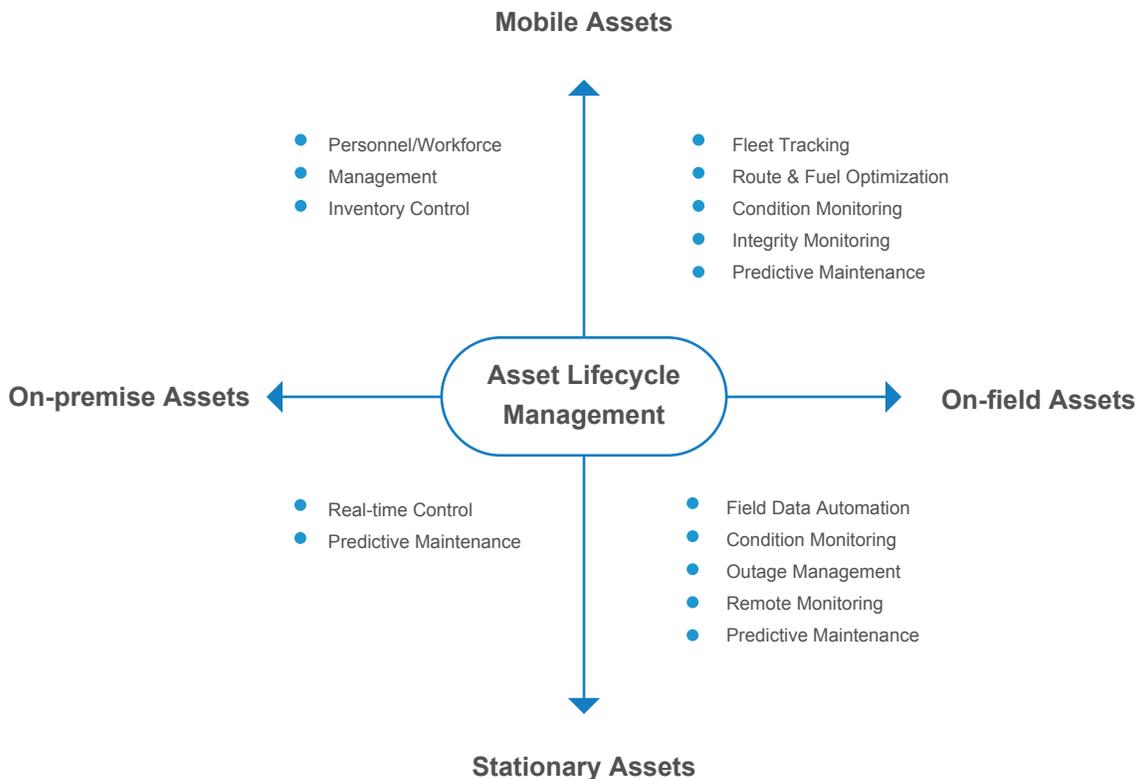


Figure 2: Common Asset Management Solutions for Different Type of Assets

Traditional Solutions

Traditionally, owners/operators of assets have been using technology solutions to monitor their assets and they have been using separate operational technology solutions like SCADA systems for over decades now. The asset management solutions range from EAM applications, tracking solutions range from simple barcode or RFID solutions to GPS solutions whereas the process or asset control is predominantly performed by M2M systems and SCADA systems. All of these co-exist in parallel inside an organization and have been used by different stakeholders for solving different purposes. These solutions have been providing information on the current status, controlling a process, managing assets, plan maintenance strategies, track locations and state awareness but they have all been focusing on standalone functions, separate group of stakeholders and disparate processes.

IoT-enabled Smart Asset Management

IoT-enabled smart asset monitoring means that the traditional solutions, processes, workforce, and assets are made into more cognizant and integrated unit to work as a 'single strategic system' enabling organizations to transform their operations, digitally. Traditionally, these were operating in silos, which have been made into a single all encompassing smart solution with web, wireless and analytics. Thus, offering far more advantages than the traditional solutions. This can be dubbed as the transformational technology which can change the game and disrupt business processes.

IoT-enabled smart asset monitoring solution does everything that traditional solutions do like letting the organizations know where the asset is, what is the condition of the asset, manage asset lifecycle, control processes, etc. Also, it adds intelligence to automated workflows, real-time alerts, insights from data, dynamic edge control of assets, predictive maintenance, cross-domain analytics and real-time visibility.

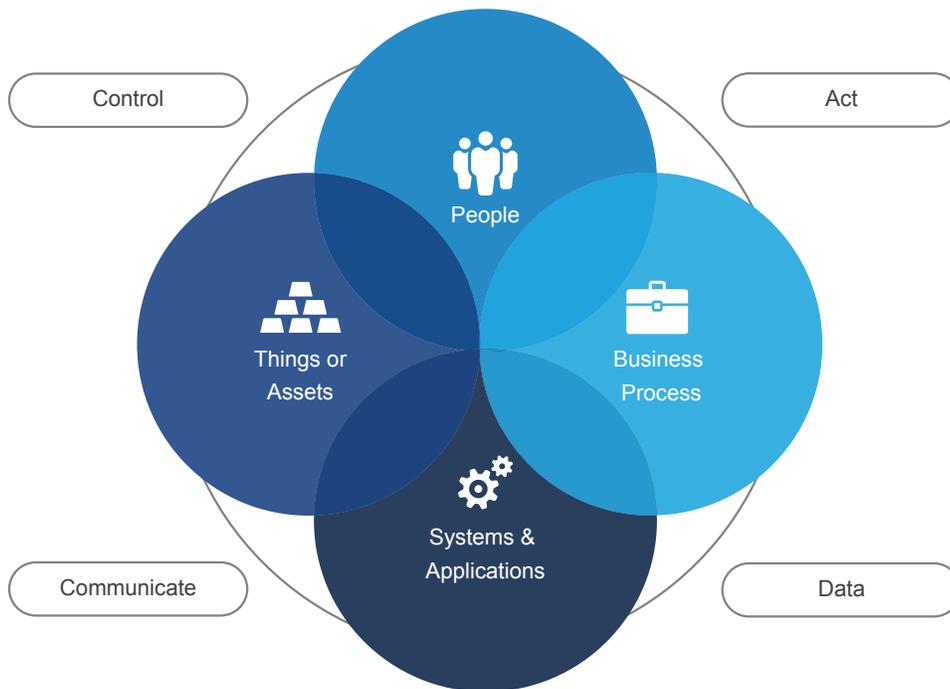


Figure 3: IoT-enabled Solution Mesh

IoT Smart Asset Management solution typically comprises the following:

1. Remote Asset Tracking
2. Asset Health/Condition Monitoring
3. Asset Lifecycle Management
4. Asset Workflow Automation
5. Predictive Asset Maintenance

There can be a lot of derived solutions or variations of these to make it specific to an industry or a business process. For example, condition monitoring can be as simple as monitoring if a fuel storage tank is full or not to an extent where we can monitor the level of harmful gases, employee vitals etc. in a hazardous environment. One such use of Smart Asset Management in a manufacturing industry as shown in figure 3.

Smart Asset Management - Future Vision Scenario in a Manufacturing Context

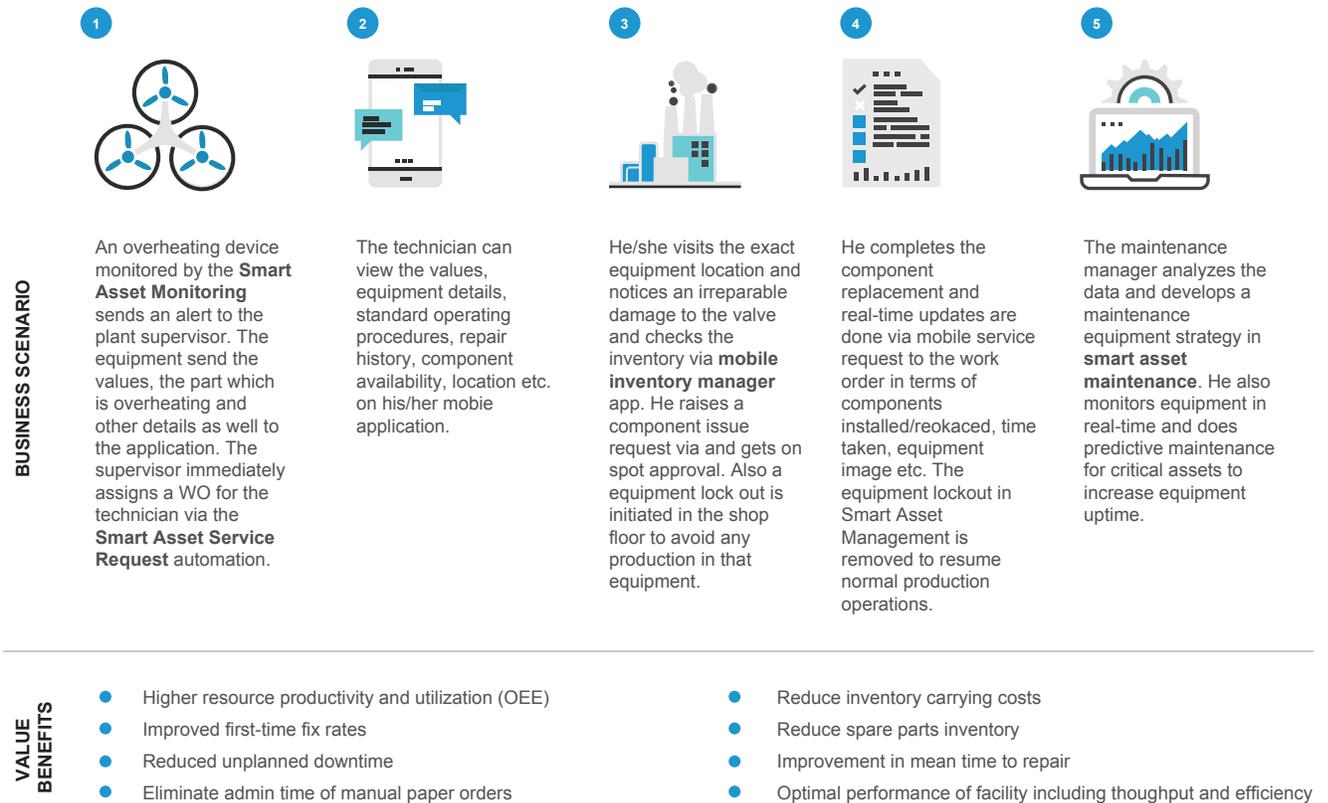


Figure 4: Smart Asset Management in Manufacturing

Advantages of Smart Asset Monitoring over the Traditional Solution

Most companies which have assets on premise or are spread across geographies have a horde of problems to deal with. Like poor health of assets, excessive maintenance costs, high mean time to repair, theft, pilferage, underutilization, under performance and more. IoT-enabled Smart Asset Management brings in a more holistic approach to asset management and asset monitoring rather than a module-based approach. IoT-enabled Smart Asset Monitoring provides the right visibility for organizations to overcome these challenges. The key advantage of IoT is the ability to get to the domain data and seamlessly integrate it with a unified solution so that the management has insights to make the right decision. IoT solutions bring in the inherent value of Automation, Innovation, and Digital Transformation.

Automation

Traditional solutions brought in a lot of information but lacked insight. There was a lot of human involvement, offline data crunching, and iterations to perform actions. The time lag made lot of actions either reactive or excessive/preventive.

IoT solutions connect machine with people, with processes and systems in ways like never before. This facilitates automation. The human intervention is needed only for decision making rather than performing mundane tasks, rule-based preset actions, measuring field data, collecting audit logs for regulatory compliance. The primary advantage of Smart Asset Monitoring is automating all of this. Thus, increases the accuracy, reduces cost, improves process efficiency and eliminates non-compliance. Physical checks, routine tasks and periodic monitoring can all be reduced drastically and now be made based on the actual condition and usage of the asset.

For example, a leading telecom company is using IoT based Smart Asset Monitoring solution to automatically adjust antenna alignments and has reduced ownership costs by eliminating unnecessary manual trips to the telecom tower sites.

Innovation

The possibilities of bringing in innovative value-add with Smart Asset Management is endless. Data analytics at the edge help real-time and near real-time decision making with the help of machine learning and other advanced intelligence. Data from multiple machines integrated with information about the product usage can unlock new insights which were never seen before. This will enable the management to come up with innovative decisions and solutions to face the common challenges that their business has been facing for many years.

For example, a company called Sharper Shape is using drones and machine learning as a part of their asset monitoring to watch the trees that are in the risk of falling into power lines to proactively avoid disruption.

Digital Transformation

Digital age businesses are transforming themselves to uniquely combine product and service to offer their product as a service. An IoT solution like Smart Asset Management is a key to bring in new service lines or new business models into the company. Traditionally, the company's physical assets which were seen as a cost or a burden in the balance sheet can now be effectively managed to bring in additional revenue. With more data, control and insight a company is able to look at trends where they can identify new market opportunities. Capitalizing on those opportunities can bring in more revenues to the company. Figure 4 shows the value chain of data that can transform organizations and move from their existing technology to become a smart and cognitive organization.

For example, a leading crane company based in the United States was previously offering their crane rental services for days or months. With Smart Asset IoT solution, they are looking at enabling Lifting as a service for their customers where customers can pay for the load they want to lift rather than paying it for the entire day/month. The company as well can have better control over the equipment usage and can get more revenue from usage of the cranes.

Conclusion

The 'Internet of Things' is here to stay. Smart Asset Management is a new generation concept and a comprehensive enterprise asset management application. It proves to be successful in enabling asset owners to manage and maintain their plant, facilities, and equipment in a much more efficient manner. Smart solutions like Smart Asset Management will be disruptive in nature. Leaders of organizations have little choice either to get onboard proactively or be forced to adopt by the competition or to be disrupted. Success will come from partnerships and the entire ecosystem players. Involve experts in the technology to advice on the impact of this in your business. The rewards at the end of the journey will make the journey worthwhile.

This whitepaper is written by Raakesh Rajan, Senior Consultant - Digital Business Consulting, RapidValue.

Raakesh is part of the Business Consulting team at RapidValue. He helps clients to add value to their business through digital initiatives. He has experience implementing large-scale digital transformational initiatives and products. Raakesh has worked on multiple domains such as Manufacturing, Heavy Equipment, Retail, and Oil & Gas industries. Prior to RapidValue, he was part of Strategy Growth Initiative team at Accenture, to identify the right digital technology solution and the adoption strategy.

If you'd like to know more on this subject or learn more on IoT solution offerings by RapidValue, please reach out to us at contactus@rapidvaluesolutions.com. We'd be happy to hear from you!

About RapidValue

A global leader in digital transformation for enterprise providing end-to-end mobility, omni-channel, IoT and cloud solutions. Armed with a large team of experts in consulting, UX design, application development, integration and testing, along with experience delivering projects worldwide, in mobility and cloud, we offer a wide range of services across industry verticals. We deliver services to the world's top brands, fortune 1000 companies, Multinational companies and emerging start-ups. We have offices in the United States, UK and India.



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