

Altizon Systems

The Internet of Things: Your First Step to Industry 4.0

HIGHLIGHTS



Improving
Operations



Optimizing
Assets



Enhancing
Services



Generating
Revenues

Introduction

Connected "things" have for many years provided benefits to enterprises. Examples include automated teller machines (ATMs), airline check-in machines and card-operated door locks.

The Internet of Things (IoT) is evolving beyond these early examples as increasing penetration and greater numbers of use cases have led to much greater utility.

Some of the biggest changes we will see would be manufacturers optimizing their **productivity & reducing machine down time** and Product/Equipment OEMs transforming into service-focused organizations - example being Proactive Maintenance, wherein instead of just selling a jet engine, an Engine Manufacturer can now rent it and charge the customer by usage (load/ hours).

Today the important questions are:

Q. What is the **strategic rationale** for IoT?

Q. Who are the **interactors** (machines, humans and organizational units) in the IoT solution?

Q. Which **processes and decisions** will be enhanced, changed or created?

Q. What **'things'** will the IoT solution connect?

Q. How will solutions leverage IoT **capabilities for business benefits**?

Source: Gartner (July 2015)

Answering these questions, the Enterprises will be able to focus on the core benefits that are most relevant to their organization.

Identifying Benefits and aligning IoT Strategy

The first step is to understand which IoT benefits support your business strategy. Outlining the core benefits and key drivers, will help **CXOs** and Business Leaders to link their IoT initiatives with business and financial performance.

This is the **'why'** step in the IoT planning process. To aid the mapping, we've highlighted the following **four** core benefits for organizations to determine their strategic rationale:

These core benefits and key drivers include:

(1) **Improving Operations:** Productivity and Efficiency (OEE), Condition Monitoring, Predictive Analytics etc.

(2) **Optimizing Assets:** Asset Utilization, Asset Health Diagnostics & Repair etc.

(3) **Enhancing Services:** Machine Learning, Better Customer Experience etc. and

(4) **Generating Revenues:** New Pricing models based on Usage, Real Time Dynamic Pricing etc.

In many situations, often these benefits can be grouped under two fundamental business objectives:

(1) **Increasing Revenues and/or**

(2) **Reducing Costs**

For Enterprises to realize these benefits, it's time CXOs re-invent themselves as **CDOs** or the **'Chief Data Officers'** and exploit information (as a strategic business asset) to meet cost savings and revenue generation objectives.

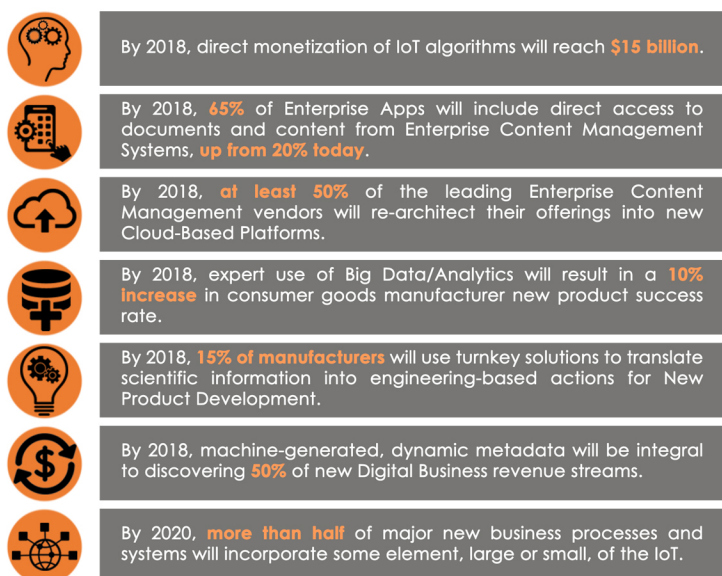
Bottom Line Savings through IoT: Competitive Edge

With the growing competition and the new digital transformation underway, the Enterprises need a new **financial discipline** to focus on growth across all facets of the business, spanning - customers, operations, and performance. And it's a no brainer that the only way to increase the bottom line savings is-increased revenue or reduced cost. To drive bottom line savings, the critical step is to recognize that information is no longer just a business by-product or business performance fuel. Instead it is of mission-critical importance to the business and should be valued and managed as such.

Information infrastructure, deployed on IoT platforms be it **on-premises or a cloud environment**, can provide for much sought after

- (1) **Competitive Differentiation**
- (2) **Operational Effectiveness and**
- (3) **Early mover advantage**

According to a recent Gartner Study (**100 Data and Analytics Predictions through 2020, Gartner Report, March 2016**), Enterprises now seek to adopt Advanced Analytics and adapt business models to keep pace with the competition.



Migration from just '**Descriptive Analytics**' to '**Descriptive**', '**Predictive**' and '**Prescriptive Analytics**' will be the key step to convert this vision into strategy.

As the "**algorithm economy**" becomes pervasive in the market, predictive & prescriptive analytics solutions will become main-stream. The key is having the right information, at the right time, in the right place.

Key Findings

For instance, Predictive Analytics for Machines/ Equipment using IoT Platforms will:

- (1) Significantly reduce Machine **Downtime costs**

- (2) Improve **Asset Utilization**

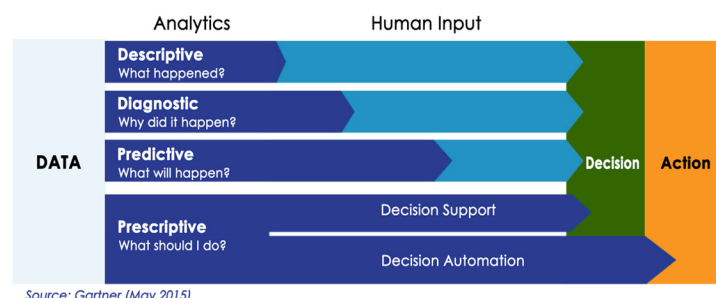
- (3) Enable more timely maintenance to increase **Machine Up Time**

- (4) Prevent unexpected **Equipment Failures**

- (5) Improve **Machine Performance**

- (6) Help reduce Field Service calls by **Proactive Preventive Maintenance** and

- (7) Reduce **Total Cost of Ownership (TCO)** by optimizing Asset Maintenance



But the relevance of each of these benefits will vary by industry. For e.g. the **Asset-intensive "heavy" industries** (for example, utilities, oil and gas, mining and metals) may gravitate toward optimizing assets, with improving operations and maximizing return on assets.

Their concept of differentiation moves to asset care, to provide reliability at minimal cost, and to create the optimal balance of efficiency (the cost of providing the assets in service) and effectiveness (the availability for production or revenue earning service).

While in the context of **Smart Cities**, conserving resources (for sustainability) and optimizing assets could be the focal priorities.

Key Business Objectives and Visions:

As such mapping the benefits to the high level business objectives and associated key performance indicators become even more relevant to justify moving forward with IoT. But there are simply too many variables and too many endpoints ('interactors') to identify, map and jump from planning to deployment.

As a first priority, plan an '**iterative approach**' that allows you to experiment with relatively small scale implementations and manage any risks.

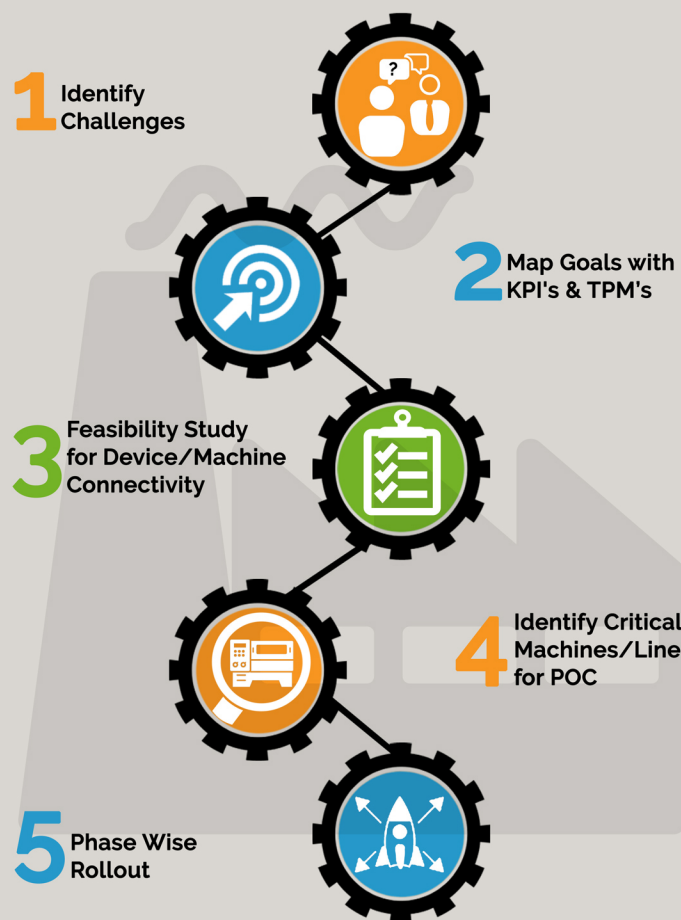
Set solution scope to test the feasibility of the desired IoT use case:

- (1) **Identify** Challenges
- (2) **Map** Goals with KPIs (Key Performing Indicators) and TPM (Top Performing Metrics)
- (3) **Conduct** Feasibility Study for Device/ Machine Connectivity
- (4) **Identify** Critical Machines/Line for POC (Proof of Concept) and
- (5) Finally **implement** phase wise rollout

The next step is to set the **solution scope** and identify **which processes** are important for achieving the identified benefits.

For a simple business case of a Manufacturing plant, the benchmark of leveraging IoT capabilities could be based on improvement in **OEE (Overall Equipment Effectiveness)** or **OPE (Overall Plant Effectiveness)**.

START YOUR IoT JOURNEY INDUSTRY 4.0



As per the best practices in a lean production:

- An **OEE score of $\geq 95\%$** is excellence: manufacturing only good parts, as fast as possible, with negligible down time.
- An **OEE score of 85%** is considered world class for discrete manufacturers. For many companies, it is a suitable long-term goal and so on and so forth.

As a baseline, leveraging IoT solutions by integrating the shop floor (Manufacturing Plant) with the top floor will be measured against improvement in OEE, productivity, efficiency and visibility. So whether it is the **OEE, OPE, APM (Asset Performance Management), TPM (Total Productive Maintenance), Condition based Monitoring, Predictive Analytics or Machine Learning capabilities**, every industry

specific benefit once mapped to the key metrics, can quantify the desired business outcomes — for example **% increase in revenue, reduction in customer churn rate, time to completion, % reduction in cost per job** etc.

Essentially these steps help expand the ways the huge volumes of data/ information can generate top- and bottom-line value to the business, especially through expanded analytics initiatives and business process automation.

It is this new and transformed application of **Six Sigma in 'Real Time' – the Industry 4.0 revolution** that provide new opportunities for value creation to both the Consumers and the Enterprises.

Looking Forward

Today most IoT projects are in the midst of '**legacy**' or '**brownfield**' implementations. And accordingly the architectural requirements will differ to migrate or transition the 'brownfield' to 'greenfield' systems. For e.g. integrating into existing ERP, MES (Manufacturing Execution System) or other similar Enterprise systems will drive many architectural requirements. This doesn't limit the legacy systems and infrastructure to leverage the new business models of IoT.

However, in some situations like this, custom solutions will be required to meet the specific business requirements. As such, given all the complexities and complications, the Enterprises must assess both the **functional completeness** and **scalability** of the partnering IoT platform.

With most Enterprises having multiplicity of systems with **heterogeneous mix of machines, disparate plant layouts, diverse connectivity protocols, different controllers** etc., a seamless integration of an IoT platform is of essence.

Understanding the requirements for diverse functional capabilities, we at Altizon focus on standard platform concept rather than just point solutions.

Our IoT solutions encompass **industry-specific use cases, lowering costs and implementation risk, and speeding deployment**.

With Altizon, the Enterprises can Connect Any'thing' (devices/ machines – be it **manufacturing equipment, processing instruments, enterprise assets – fixed or moveable, smart cities** etc.) and push the data securely and reliably through an **OPC Server** to our flagship IoT platform, **Datonis™**.

Managing billions and billions of tags in a **highly scalable** manner, Datonis™ helps you collect data both **locally** and **remotely**.

Once the benefits are aligned with the business objectives, a **pilot project** is executed to help the Enterprises get a better sense of how the technical implementation will follow. Once you've verified the initial business case, you're ready to develop the **technical architecture**.

Business Case:

For e.g. : One of Altizon's customers, a very large Automotive Component supplier (Plastic Moulded Modules, Engine Valves, Machined Forgings, Exterior Lighting and Electrical Systems) to major **automotive** companies globally aimed their IoT strategy at

(1) **Monitoring Line Efficiency : OEE and OPE**

(2) **Defect Tracking**

(3) **Idle/Non Idle Time Reasoning and**

(4) **Systems & Controls for Operational Efficiency**

(5) Integrating IoT data with Line of Business

Application(s) like SAP, ERP etc.

They had a disparate collection of assembly lines with different machines (**things**) namely honing, pressing and grinding machines across different plants. They'd spent millions of dollars in capital expenditure in setting these machines up but they had almost no shop floor visibility and inaccurate mapping of data to transform it into actionable information.

Altizon helped them with connecting all their machines together and shift the data on to the Cloud which could be easily streamed to Altizon's flagship IoT Platform, Datonis™.

You can imagine Datonis™ as a massive pipe in which all the tag information can be injected. You've the ability to set rules and index, store & analyse the data in various formats.

Altizon helped the customer by building **Visualization Dashboards** which shows the values for these tags and in the manner in which they change.

With information at their fingertips, plant managers could identify and resolve issues up and down the supply chain to increase efficiencies, improve profitability, and raise customer satisfaction.

Leveraging Datonis™ IoT Platform, they could outline the different Implementation Issues such as:

- (1) Should Change-over time (Machine Availability) affect the OEE score?
- (2) Should lunches and breaks affect the OEE score?
- (3) How should reworked parts be counted?
- (4) Should the OEE be based on units of parts or units of time? (E.g. For discrete manufacturing (e.g. stamping, packaging) it is typical to measure in units of parts. For process manufacturing

(e.g. refining, blending) it is typical to measure in units of time.

Not only this, they could also see and share

- (1) The **overall production** details in near real time
- (2) **Machine wise production** - Number of component/ parts produced, visibility on reported and unreported idle times,
- (3) **Cell wise history report** to help compare machine types (pressing vs. honing vs. grinding etc.) had better productivity for a given time range.
- (4) **Total jobs completed** for every productivity slot for a given cell (machine type)
- (5) Data around **scrap, rework, drop count** etc.
- (6) **Plant Production Report:** Reported and Non Reported productivity reports (no. of jobs done) for a custom date range.
- (7) **Overall Performance Report** and a rich array of information which is collected from the machines from the assembly line with zero manual intervention.

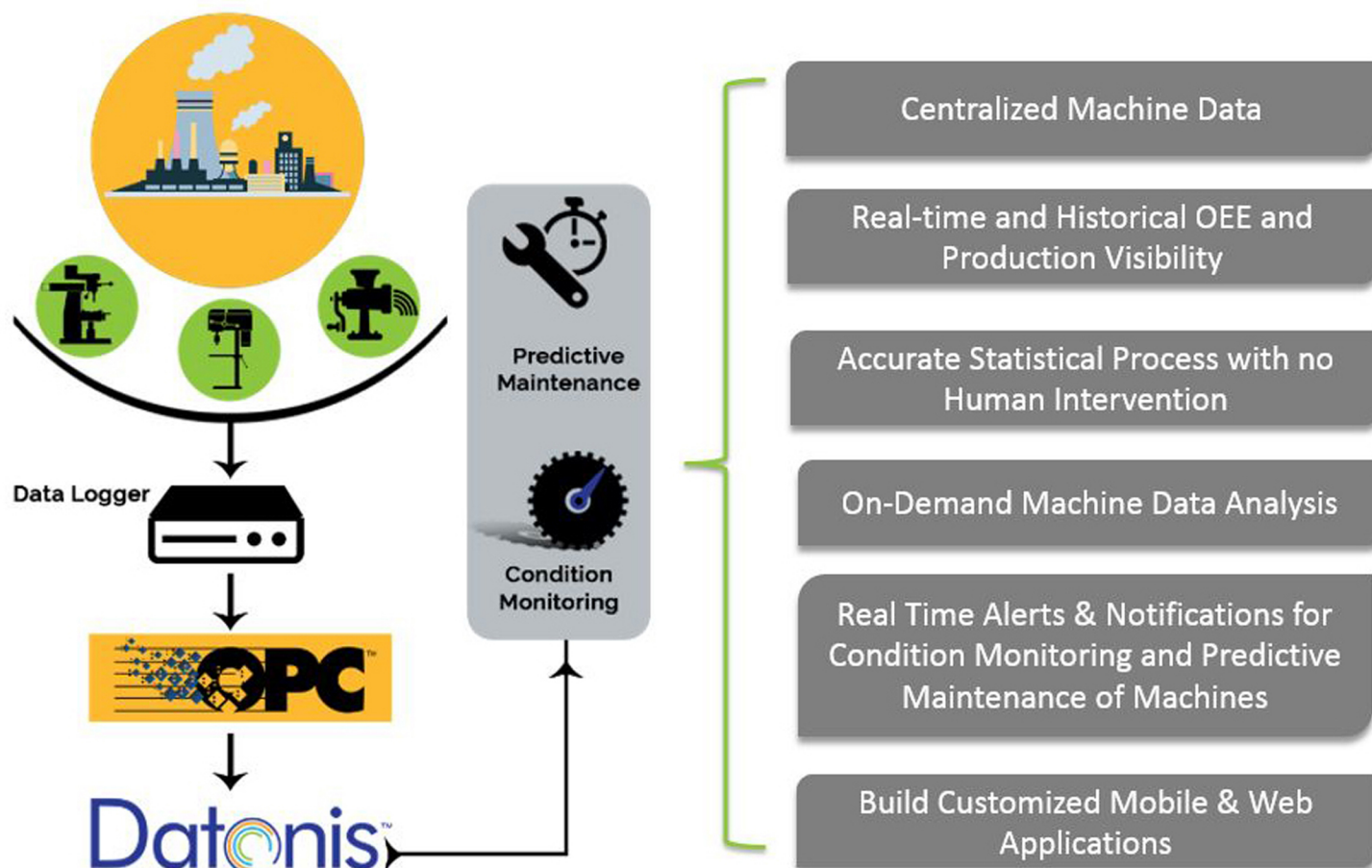
By pulling all the required tags in an **OPC server** and collecting this information automatically from their assembly line in real time, they could build **rich web applications** on top of this for historical and real time data analysis, improving OPE & OEE, asset monitoring, condition monitoring, predictive analytics and machine learning applications.

Reports could be generated for custom date range along with day wise, week wise, month wise and year wise reports.

This was one of the examples to highlight the digital transformation underlying the **Internet of Everything' (IOE)** to achieve both **revenue growth due to increased sales** and **service cost savings**.

Smart Manufacturing | Global Automotive Supplier Leverages Datonis™ to Improve OEE by 10% in 3 months

Use Case: Overall Equipment Effectiveness



Specific to this business case, Datonis™ helped the **Automotive Component Manufacturer** realized **10% immediate Improvement in OEE** across the plants in a **span of 3 months** and enabled **Condition Monitoring of machines**.

And what best, Datonis™ can deal with billions & billions of tags in a highly scalable manner. It is not only limited to connecting machines on an assembly line but also those remote from the assembly line.

About Altizon

Altizon has emerged as a leading partner for enterprises in an IoT driven world. **Datonis™**, the flagship platform of Altizon is the platform of choice

for top Enterprises in **Manufacturing (both Discrete & Process), CleanTech, Smart City applications etc.** for their IoT initiatives.

Enterprises rely on **Datonis™** for critical applications around OEE, OPE, Condition-based Monitoring, Predictive & Preventive Maintenance and Machine Learning.

And as it turns out, with **100+ Enterprise Users (including SIs, OEMs and Enterprises)**, our customers have successfully leveraged our IoT solutions for their specific business requirements across verticals:

Manufacturing

- Device Management
- Identity Management
- Centralized platform to integrate and view data from multiple and heterogeneous sources
- Remote Monitoring of OEE (Overall Equipment Effectiveness) and OPE (Overall Plant Effectiveness)
- Improved Asset Utilization
- Supply Chain Optimization
- Idle/ Non Idle Time Reasoning
- Direct visibility into the Operating parameters of the machines/ devices in real time
- Customized dashboards with threshold breach and downtime Alerts
- Historical Analysis and Predictive Analytics based on usage patterns
- Ability to monitor Productivity and plan Production Schedule
- Data driven Analytics for Process Optimization

Smart Cities

- Connected Energy and Water meter : Plug and Play Water and Power Monitoring Appliances
- Smart grids, with automated grid control and smart lighting systems, which adjust based on weather and traffic.
- Real Time Data and Analytics
- Fully automated Bill Generation and Payment Collection processes
- Smart Locks
- Smart Tracking devices
- Smart Parking Utilities
- Smart Home Appliances

Solar (Renewable Energy)

- Data logger to tracks conditions and operating status (Battery, Grid and Solar)
- Smart utility meters, and solar generation to enhance Energy Usage.
- Site Health Analysis to predict System Failure
- Improved Power Production

So get **Datonised** and leverage this Industrial transformation with our IoT solutions now.

Altizon is the world's first Industrial Internet Platform company focused on making Enterprises Internet of Things(IoT) ready. Our customers are using our flagship IoT Platform, Datonis™ for Condition Monitoring, Predictive Analytics, Operations and for driving Consumer Insights.

www.altizon.com

