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# Unlocking New Revenue Streams with the Industrial Internet of Things

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Perspective by  
Waterstone  
Management Group

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Hubert Selvanathan, Principal  
Steven Michalkow, Associate

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Chicago | San Francisco  
(877) 603-1113  
[www.waterstonegroup.com](http://www.waterstonegroup.com)

## Unlocking New Revenue Streams from the Industrial Internet of Things

The Internet of Things (IoT) continues to be *the* hot disruptive trend in technology, capturing the imagination of the media, the public, and the investment community. According to the most recent IDC estimate, we are well on our way to seeing over 30 billion connected endpoints (devices, machines, and equipment) globally by 2020.<sup>1</sup> The sheer scale of this growth will undoubtedly spawn a transformation in the way we interact with and learn from the newly smart objects around us. This is especially true in the industrial equipment space.

Already, IoT is enabling companies to more easily and cost effectively gather actionable data from their multitude of industrial assets (turbines, motors, pumps, equipment, etc.). This new information is being used to achieve greater efficiency in core business processes, such as improved manufacturing techniques, proactive maintenance and repair, inventory and supply chain efficiency, etc.

Beyond users leveraging IoT for operational improvements, the most disruptive aspect of this IoT transformation will occur when industrial product manufacturers themselves incorporate IoT-enabled business models into their core products and services.

### The Smart Connected Product Opportunity

Manufacturers of highly engineered products have started to embed sensors and actuators into their products and connect them to the cloud so that they can store, analyze and act on the sensor-generated data. Essentially, they have started to transform their products into smart connected products (SCPs).

These manufacturers are using SCPs to take new offerings to market, delivering a spectrum of value propositions for their customers. As depicted in the chart on the next page, these new offerings largely fall into three categories: connected products, optimized services, and connected intelligence.

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<sup>1</sup> "Worldwide Internet of Things Forecast Update, 2015-2019," IDC, 2016.

## Smart Connected Products Offering Framework

Value capture increases with shift towards outcome-based services and insights-as-a-service

Offering Type	Business Case	Business Model	Operating Model	Examples
<b>Connected Products</b> <ul style="list-style-type: none"> <li>Embedded sensors</li> <li>Cloud connectivity</li> <li>Mobile apps</li> </ul>	<ul style="list-style-type: none"> <li>Product differentiation</li> <li>Feedback loop into product development</li> <li>Potentially higher price for smart products</li> </ul>	<ul style="list-style-type: none"> <li>Upfront product/equipment price</li> <li>Lower COGS due to more focused R&amp;D and efficient service ops</li> </ul>	<ul style="list-style-type: none"> <li><b>R&amp;D:</b> Capabilities around sensors, SW, cloud connectivity, OTA updates</li> <li><b>Service &amp; Support:</b> enhanced processes and tools to take advantage of sensor data for trouble shooting</li> </ul>	  
<b>Optimized Services</b> <ul style="list-style-type: none"> <li>Performance guarantee service packages</li> <li>Proactive maintenance</li> </ul>	<ul style="list-style-type: none"> <li>Additional services revenue</li> <li>Efficiency in services operations</li> <li>Cross-sell / up-sell opportunities</li> </ul>	<ul style="list-style-type: none"> <li>Subscription pricing tied to performance guarantees</li> <li>Investment in continuous monitoring of product performance</li> </ul>	<ul style="list-style-type: none"> <li><b>R&amp;D:</b> Instrumentation to monitor product uptime / performance</li> <li><b>Product Management:</b> Complex service offering design and pricing</li> <li><b>Service &amp; Support:</b> NOC-based proactive monitoring, SLA management (incident mgmt., outages, patches, etc.)</li> </ul>	   
<b>Connected Intelligence</b> <ul style="list-style-type: none"> <li>Sensor data + other sources</li> <li>Insights into production</li> <li>Packaged advice and expertise</li> </ul>	<ul style="list-style-type: none"> <li>New revenue stream</li> <li>Data-as-a-service and other information services offerings</li> </ul>	<ul style="list-style-type: none"> <li>Subscription pricing</li> <li>Investment in data management and analytics</li> </ul>	<ul style="list-style-type: none"> <li><b>R&amp;D:</b> Data management and data mining infrastructure, data science capabilities</li> <li><b>Product Management:</b> Rapid experimentation iterating on information service offerings leveraging existing data sets</li> </ul>	  

### 1. Connected Products

As described earlier, embedding sensors and cloud connectivity into core products enable manufacturers to make them smart and connected. This capability allows manufacturers to establish a feedback loop between customers and product engineering by collecting data on the actual usage of their products and leveraging those insights to inform ongoing product development. In some cases, manufacturers are able to charge a marginally higher price for the smart and connected version of their core product. Largely, manufacturers are absorbing the incremental cost of this new capability as an investment towards better understanding their customers and the context in which they use the products.

**Example:** Hunter Fan Company, a 128-year-old manufacturer of ceiling fans, recently launched a line of connected home fans. The value proposition to end customers is the ability to remotely control their fans using a smart phone, thus enabling better energy efficiency, convenience, etc. The value to Hunter Fan Company is visibility into how their products are being used, e.g., how frequently fans are being turned on, for how long, energy consumption patterns, etc.

## 2. Optimized Services

Beyond traditional product warranty services, manufacturers have started to leverage product usage data to design new service packages with higher value product performance guarantees and service level agreements. Preventative maintenance is a good example of this; manufacturers are combining field information from SCPs with product configuration data to provide preventative maintenance information and activity in advance of any potential faults or failures. Manufacturers are explicitly monetizing such services, often pricing these services as a subscription, which drives a recurring revenue base.

**Example:** Rolls Royce's recent line of IoT-enabled jet engines have the ability to analyze in-flight data to generate real-time safety assessments and determine what specific areas of the engine will soon be in need of maintenance. Not only does this result in a safer flying experience, but it also delivers a time- and cost-savings service that helps airlines avoid in-flight engine irregularity warnings, which require a full-engine inspection.<sup>2</sup>

## 3. Connected Intelligence

Connected intelligence offerings build upon optimized services by delivering point-of-use information that can ultimately drive business outcomes. By augmenting information gathered from a user's smart connected product with external data sets, providers are generating broad-reaching data analytics, which in turn can help their clients make more informed business decisions. These services are being monetized as data-as-a-service and related-information services offerings, often priced on a subscription basis.

**Example:** John Deere's precision agriculture services are pushing very hard on this vision. Through its SCP offerings, John Deere is merging incoming data from end-point devices on farming combines, tractors, etc., with weather and environmental information to provide expert services to farmers. These services range from identifying the most fertile and fruitful locations in a farming location to advice on which crops are best to grow where on the farm and when.

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<sup>2</sup> <https://digit.hbs.org/submission/rolls-royce-internet-of-things-in-aviation/>

## The Business Model Imperatives of the Industrial Internet of Things

Successfully transitioning from a manufacturer of things to a provider of smart connected products and services requires a fundamental business and operations transformation. Managing an IoT-enabled SCP and services business is radically different from managing a product/equipment-centric business in several key ways:

- Software and related services are an integral part of the market offering and solution.
- The business model is driven by recurring, subscription-based products and services.
- Engaging the customer on an ongoing basis and delivering a meaningful customer experience throughout the product's lifecycle is critical.

To successfully operate an SCP and services business, manufacturers must execute three main strategic shifts to their business and operations:

### 1. The Shift from Hardware to Software

Software is essential to ingest, analyze, and respond to data emerging from sensor-enabled equipment. Any end-to-end IoT solution will need hardware and software, and enterprises that don't have experience in software will need to figure out how to address this shift in order to play.

Beyond core software engineering and design capabilities needed in R&D, new operational capabilities are needed in areas unique to software such as:

- Sales capabilities oriented towards selling a hardware + software + services solution
- Customer onboarding capabilities to implement the solution and activate the service
- Upkeep and support of the service on an ongoing basis, including the ability to field customer inquiries ranging from simple password resets and service outage problems to new feature requests
- Product release management oriented towards high frequency software releases, pushed over-the-air to end-points and devices

#### Shift from Hardware to Software / Services

##### Considerations:

- How can I incubate a new line of business oriented around SW and services?
- How do I develop new roles and skillsets (i.e., SW developers vs. product engineers)?
- How do I build a new more rapid development and sales processes?
- How do I evolve my maintenance and customer support businesses to handle remote support, OTA updates, new releases, etc.?

## 2. The Shift from a Transactional Business Model to a Subscription Business Model

Product-based businesses have traditionally been built around a business model wherein investments are made often in support of lengthy product design and engineering cycles. The selling model is typically designed around a one-time sale of the product and associated services at the start of the customer relationship. Providing technical support to customers and end users is often in the form of warranty support over a limited period of time after the sale.

By contrast, a subscription business model is characterized by significantly accelerated product engineering cycles with frequent product updates and releases. The selling model is designed in equal parts around the upfront sale as well as ongoing contract renewal at the end of the subscription term. Providing customer support for users is an ongoing endeavor throughout the customer lifecycle. All of these business model characteristics drive an economic model that is fundamentally different from that of the product-based business. It requires new ways to monetize services, a different set of C-Suite and Board level metrics, and an adjustment to the resource allocation and investment decision model.

### Shift from Transactional to Subscription Business Model

#### Considerations:

- Can I deliver value by enabling customers' business instead of just selling a product?
- How do I move beyond break/fix support toward consultative partnership with customers?
- What is my system design for maximizing customer renewals?

## 3. Defining a Customer Success-Focused Experience

Increasing customer adoption of services is the mechanism for ensuring continuous customer engagement and a greater share of the customer wallet. For this reason, technology providers are reinforcing customer adoption as the mission-critical activity of their business models. Customer Success has become the buzz topic around this area, but this simple concept can be complicated in execution.

Driving Customer Success is not just about making sure customers know how to use the service; it is about ensuring that customers are made successful in their business endeavors through the use of the offering. It is a much more consultative and collaborative approach between provider and user than in previous models—an approach that requires an end-to-end transformation of the customer experience. From making sure customer implementation of the offering is in accordance with industry best practices to moving beyond a break/fix mentality in customer support, ensuring Customer Success is as much a change in mindset as it is a series of tactical programs and initiatives to enact.

### Defining a Customer Success-Focused Experience

#### Considerations:

- What's my plan to embrace more continuous customer engagement?
- How do I demonstrate continuous value delivered across the whole customer lifecycle?
- What are the customer experience measures I need to emphasize as a means of driving adoption?

## The Time to Act on This Transformation is Now

The Industrial Internet of Things (IIoT) is forcing manufacturing companies to transform into technology companies. The coming years will be very exciting, but also tremendously challenging. As manufacturers embark upon this business transformation journey, they need look no further than the technology industry itself for lessons and advice on how to successfully navigate such a technological disruption. The cloud and as-a-service business models have had a tremendous impact on the software industry, requiring companies to drastically rethink how they market and run their businesses. Hardware companies, themselves manufacturers of highly engineered products, are undertaking the hardware-to-software transition. For manufacturers, it isn't a question of if, but when smart connected products take off. Those that begin the transformational journey early will be well positioned to capitalize on the IIoT opportunity.

**Waterstone Management Group is a boutique management consulting firm that helps companies and investors capitalize on transformational technology opportunities such as the Internet of Things, Cloud, and Big Data. Leveraging our extensive Technology, Services, and Customer Success experience, we guide our clients as they embark upon and successfully navigate the digital transformation journey. To learn more about the opportunities and challenges presented by the Industrial Internet of Things, please contact:**

**Hubert Selvanathan, Principal**

(650) 513-2528

[hselvanathan@waterstonegroup.com](mailto:hselvanathan@waterstonegroup.com)

**Steven Michalkow, Associate**

(312) 508-6172

[smichalkow@waterstonegroup.com](mailto:smichalkow@waterstonegroup.com)