



The Internet of Things

How “Process Robots” are Transforming Supply Chains

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The Internet of Things is real. Morgan Stanley estimates that 75 billion devices will be connected to the Internet of Things (IoT) by 2020. So what does IoT mean for your supply chain?

This brief discusses how the “Internet of Things (IoT)” is related to a revolution taking place in supply chain management.

So what is the IoT? Basically, it refers to data communication among a large range of assets or devices—from your fridge to your oven, or more pertinently from your inventory to its container, from the container to the carrier, from the pallet to the warehouse. The more your assets can “speak” to one another and share data, the more they can work together to help you improve your processes.

This trend is real. Morgan Stanley estimates that 75 billion devices will be connected to the IoT by 2020.

So what does IoT mean for your supply chain? Think about an electronic workforce of process robots designed to count your inventory items in real time, on demand, with no mistakes made. You pay them nothing, and they never complain. They even alert you to any issues related to orders, inventory levels, or shipments, taking action to reorder items when they drop below minimum thresholds.

Sure there are certain start-up costs, but consider the following scenario:



Scenario: Hiring vs. Offshoring vs. Automating

Based on your current S&OP plan you need to add twenty full time employees to handle the additional order-entry and logistics workload anticipated once the new product launches in nine months.

Unfortunately the S&OP process wasn’t integrated well between business functions and a budget for this effort was never established.

You determine that automating the process makes the most sense until IT comes back with a quote of \$1.5M and 18 months of effort given standard ERP development guidelines. With a nine month deadline this is a non-starter.

Falling back to sourcing options, you determine that you could hire the 20 employees in the US for \$1.5M or for \$500k in India. Thus it appears offshoring is the way to go.

Luckily, given today’s network-based technology, another option is to have your company’s business process analysts develop a set of process robots to do the work for less than half of what it would cost to offshore the work. On a Platform like ONE these robots could be developed and deployed in less than 3 months.

So are these process robots something out of Star Trek? No, in fact process robots are being deployed across many of the most complex and data rich supply networks today.

Given the growing popularity and acceptance related to the Internet of Things, it is time to elevate these process robots so they can more easily interact with users working to solve today's business problems.

For the most part these process robots have been hidden from view, lurking deep in the bowels of our supply networks solving a range of problems from simple matching of tagged services to some of the harder supply chain problems which may require some level of optimization or advanced mathematics. For example a process robot may be used to establish optimized min/max stocking levels for inventory based on desired customer service levels at retail. Depending on whether these items are fast or slow movers, promotional items, seasonal items etc. will determine the algorithms the robot uses to set the target inventory levels. Basically it is a data-driven approach with business rules being applied to the data through the process robot.

Given the growing popularity and acceptance related to the Internet of Things, it is time to elevate these process robots so they can more easily interact with users working to solve today's business problems. Think about a service like Angie's list. A basic financial transaction involves a buyer, a seller, and a middle man. In this case a simple process robot can match a buyer with a set of sellers ranked by a survey of seller performance. Thus Angie's list is a market maker of sorts.

Now let's apply this same thought process to a full supply network. Today it is possible to design process robots which can match supply and demand across a global supply network. This is accomplished similar to Angie's list where available services are tagged for search. The difference is that a properly designed supply network is a powerful B2B framework comprised of highly valued assets and capabilities.

The providers of these assets and capabilities are able to subscribe to the network in a way where process robots can expose their availability through a set of contracting rules and pricing constructs. The advanced platform which powers the robots also provides the process infrastructure so that not only can supply and demand be matched, but a transactional business infrastructure is made available in real time in order to conduct business. This is truly a market maker revolution.

The innovation is that the platform is cloud-based and layers across the existing ERP systems which have been deployed by various companies in the supply network. Otherwise it would be impossible to access the assets or capabilities or even understand whether they were available for trade given the rigid structure of the existing ERP process flows. For the typical ERP system to develop the asset relationships and transactional process flows to support these types of opportunistic and adaptive trading relationships would take years rather than the real time environment supported by the generation of cloud platforms.

And now think back to our original S&OP problem above that drove the need to develop a set of process robots in the first place. Having process robots work on our behalf to solve the problem, rather than through an outsourced contractor, makes the data available to share across the network.



A cloud-based planning layer can enable the sharing of all data (for example the S&OP data discussed earlier) across key stakeholders: manufacturing, distribution, logistics, retail, sales, marketing, brand management etc.

Pioneers of platform as a service (PaaS) and cloud infrastructure like One Network have made significant progress in permission-based access and data level security, causing supply chain leaders to reevaluate the deployment of a cloud-based planning layer over their core enterprise systems.

A cloud-based planning layer can enable the sharing of all data (for example the S&OP data discussed earlier) across key stakeholders: manufacturing, distribution, logistics, retail, sales, marketing, brand management etc. This enables collaborative and iterative simulation planning all the way though to transactional execution which takes into consideration pertinent factors such as current demand, projected sales scenarios and supply constraints like lead time and capacity.

What is changing today is the visibility, access, and control provided by cloud platforms in relation to these process robots and the big data that drives them. Just like the dawning of the World Wide Web through the first Interface Message Processors (IMP's or routers) developed by Frank Heart and his team at BBN in the early 70's, the Internet of Things (IoT) could change the way we do business forever.

With the access we now have to the robots through recent advancements in dashboard design and human interaction, we can combine the best parts of automated decision making with exception based management all facilitated through an easy to use management dashboard, a window of sorts into the world of robot based process automation.

While 2014 is still early in the IoT game, we won't have to wait long for this global supply network of the future to arrive. It is already becoming pervasive in the medical device market, with home health taking center stage through both specific devices designed to monitor various conditions to general devices like smart phones enabled with software to track high blood pressure.

In One Network's future vision for the "Internet of Things", each item you may manufacture or sell is tagged. You know exactly how many you have, and where each one may be in the world at any given time. The same applies to your employees, trading partners, vendors, and peers. It's time to deploy a platform that will create competitive differentiation for your company, your employees, your trading partners, and your shareholders.



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