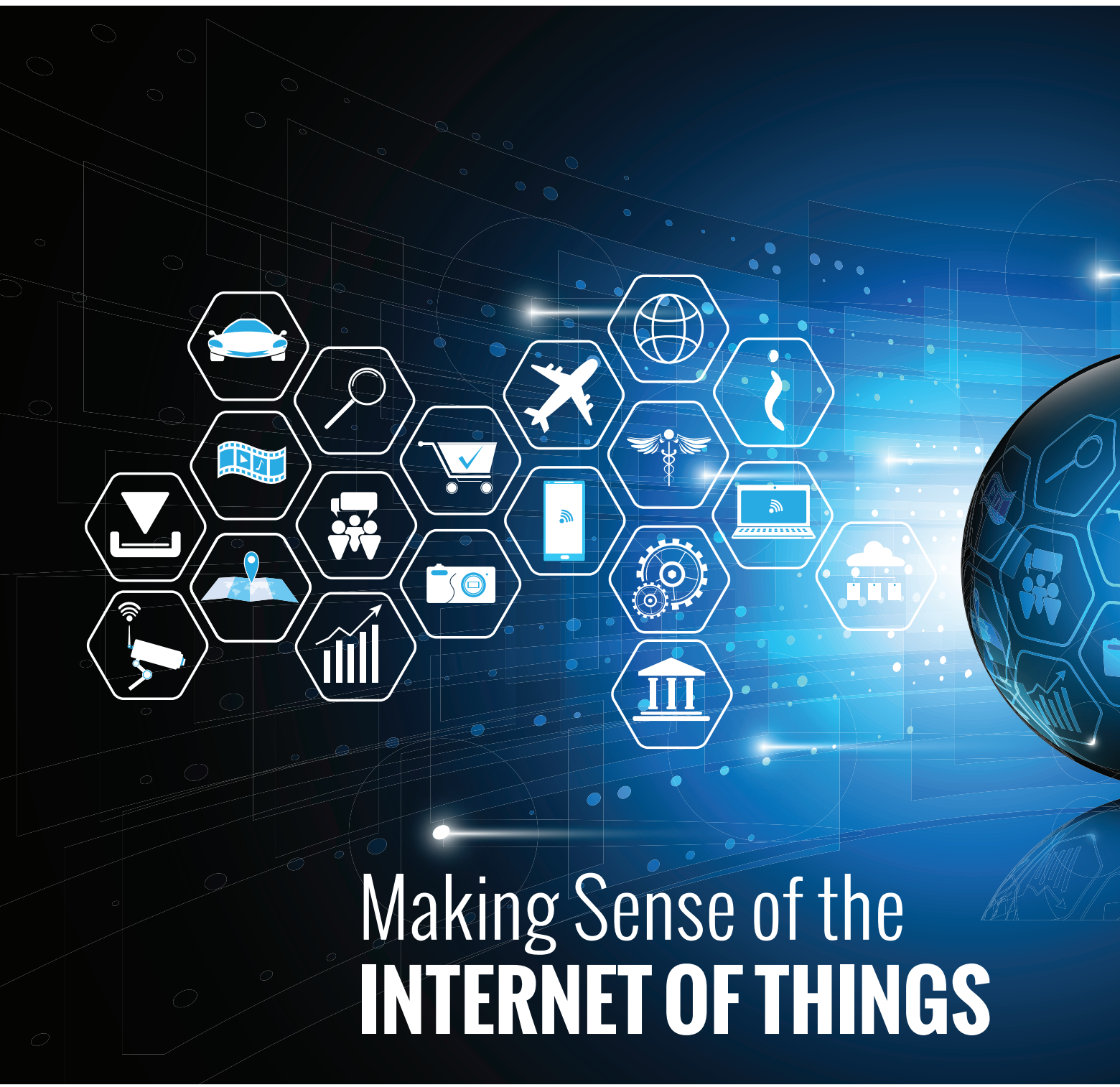


Making Sense of the INTERNET OF THINGS

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A discussion about how the Internet of Things and big data are affecting supply-chain operations – with a particular emphasis on their application to the warehouse.

The Internet of Things has reached a level of maturity that makes the phenomenon impossible for supply-chain managers to ignore. The new world of connected devices and "big data" presents them with an unprecedented opportunity to acquire real-time visibility of goods in transit and in inventory. But the IoT also comes with a set of challenges, not least of which is how to manage the resulting flow of information without becoming drowned in data. Following are excerpts from conversations between SupplyChainBrain editors and industry experts about how the IoT can be effectively deployed in the warehouse and elsewhere in the supply chain.

Bill Wark,

director of sales, North America, Sigfox:

The Internet of Things is one of the key areas that is seeing a tremendous amount of growth. It's providing technologies to the marketplace to help optimize processes.

Kristi Montgomery,

vice president of innovation, research & development, Kenco Innovation Labs:

The Internet of Things is changing how we collect data within our warehouses and our transportation solutions. You hear about the advent of Big Data. A lot of that is coming from the Internet of Things, and the connected devices that we now have in the supply chain. They're delivering information to us in a different way, with a lot more information in real time than we've ever had in the past.

Marco Nielsen,

vice president, managed mobility services, Stratix:

I see a lot of customers becoming very interested in the Internet of Things. They want to understand its scope, and the ecosystem around it. The ecosystem is a bit fragmented at this point in time, with companies doing a lot of different things. Once there are more standards around it, along with the right applications and security, they'll be able to understand its full impact.

Mark Wheeler,

director of supply chain industry solutions, Zebra Technologies Corp.:

The main idea behind application of the Internet of Things to the supply chain is [determining] location. Real-time location solutions (RTLS) are growing rapidly. We see a lot of interest in different operating environments. The combination of active RTLS and passive item-level tagging is very powerful, in terms of achieving supply-chain visibility. In addition, we see IoT playing an important role in the use of sensors, combined with analytics.

Montgomery:

The Internet of Things is driving a lot of connected devices that we never had before. We're doing a lot of work with drones, head-mounted augmented reality devices, iBeacons and

sensors. We're even mounting IoT devices on lift trucks, so that we can tell how fast they're going, how they're moving through the facility, and whether there are any near-misses and things like that. There's a lot of potential for using the Internet of Things in the supply chain, to innovate and transform the way business is done both inside and outside the warehouse.

Tony Dobson,
managing director, Snapfulfil:

There is a plethora of data in the warehouse at the moment. People are producing dashboards to present the information, and information overload is happening. The future is all about exception management. The intelligence of the software will determine the priority of information. In the past, the picture has been historical in nature, but what we're looking at now is real-time data that can react to what's happening within the warehouse. You might be doing goods-in in the morning, and picking in the afternoon. There are carriers whose deadlines must be met. On a higher level, we're doing analyses that say, "It took you this long to pick an order, and it takes this long on average, therefore you need to plan the work better, and get more people in." That can only be done in real time. The data can be mined and managed, to control the little nuances that go on in a warehouse. That's where the real savings are, by giving people access to real-time data.

Wark:

One way the Internet of Things is helping in the supply chain is allowing companies to utilize the technology to track containers. They can also do preventive maintenance or, in some cases, stream the data down to customers, so that they can take advantage of real-time visibility of assets going through the entire supply chain.

Steve Simmerman,
senior director of sales, JDA:



A lot of data is being generated. It has an impact not only on systems, but also on the people you need to analyze the data and drive those systems. So we're seeing a lot more analytics being put on top of warehouse-management and labor-management systems. The vast amount of data that you have to process and monitor is enormous. But with the right approach and the right people, it's tremendously valuable.

Montgomery:

There are some downsides that you have to be prepared for in managing data. That's key to implementation of the Internet of Things – figuring out what you want to do with that data.
Wheeler: We can generate all this data, but the value is in the analytics. It makes business sense out of all that information, and then closes the loop with appropriate actions.

Chris Heslop,
senior marketing manager, Honeywell:

To confront the challenge of having huge amounts of data that's potentially drowning the manager, you need analytics tools, and the capability to capture the data. For example, in the distribution center, if you've got pickers and a voice system, each time there's an interaction in the system – pick this, put it here, confirm the number – we can capture that data. That gives you the ability to carry out analytics. You can then acquire the insights by which you take correct actions. That's the kind of stuff that customers are talking to us about – to be more efficient, and understand where the errors are occurring.

Wark:

In the past, in order to implement Internet of Things technology, it would be too costly to track a pallet or container throughout the supply chain. Either the hardware was too expensive, or the service providers were charging too much. Today, the hardware is priced to the point where companies can address that need economically.

Dobson:

The Internet of Things has come to the warehouse. Warehousing software has evolved for 35 years, and has always been the last thing to be modernized. Now we're seeing technology like HTML 5 that can operate on any device. Warehouse supervisors are wandering around with tablets and phones. I don't know how the device manufacturers are going to keep up. You can use an Android phone now as well as a Honeywell Tecton five or six years ago. The Internet of Things is here, and visibility and automation are starting to happen.

Nielsen:

One of the benefits that I see in IoT in the warehouse and other industries is the ability to effectively gather data. Data is the new oil. It's all about how you can harvest it, and use it for your business. IoT brings us to the next level. So it's important to have your back-end systems in line, and also know how to use the data afterwards.

Simmerman:

The Internet of Things is affecting warehouses. We're seeing a resurgence, for example, of radio frequency identification, both at the D.C. and store levels. Through the technology hype cycle, we're starting to see those technologies take off and go mainstream.

Nielsen:

The timeline for [full deployment of] IoT in the warehouse? It might be a couple more years. But I think it's important to look at what's currently available, to start looking at the road maps and try to understand the technologies as they evolve. At least that way, you're not caught off guard. It's also really important in the competitive landscape.

Montgomery:

First thing you have to do is take a step back and decide what your problem is. What are you trying to solve? The Internet of Things is something that everybody wants to say they're doing, and talk about how they're using it. But it's really important to first ask what the problem is, and what your customers are looking for. Once you've determined that, big data is going to be a huge issue. You need to ask, what do I want to do with this data, how much do I need it, and how often do I need it? For instance, we're using robots in our facility, and they're connected directly to the internet. They can report every movement to me, every time they raise their arms to pick a product. I don't need to know that. What I do need to know is what product did they pick, and how much of it do I have left on the shelf?

Nielsen:

The steps necessary for a company to embrace IoT include asking how this impacts your business, and how it can effectively change it. How is it impacting the vendors that you deal with, and your end customers? You should be looking at how you can increase volume, productivity and information about how your business is working. And hopefully get more revenue out of it.

Wark:

The future is hard to predict, because technology is moving so rapidly. In my opinion, we will have the capability to provide and manage real-time visibility for the entire supply chain of any type of product or service, by using sensor-based technology. Customers need to embrace it, adapt to it, deploy it, and trust it.