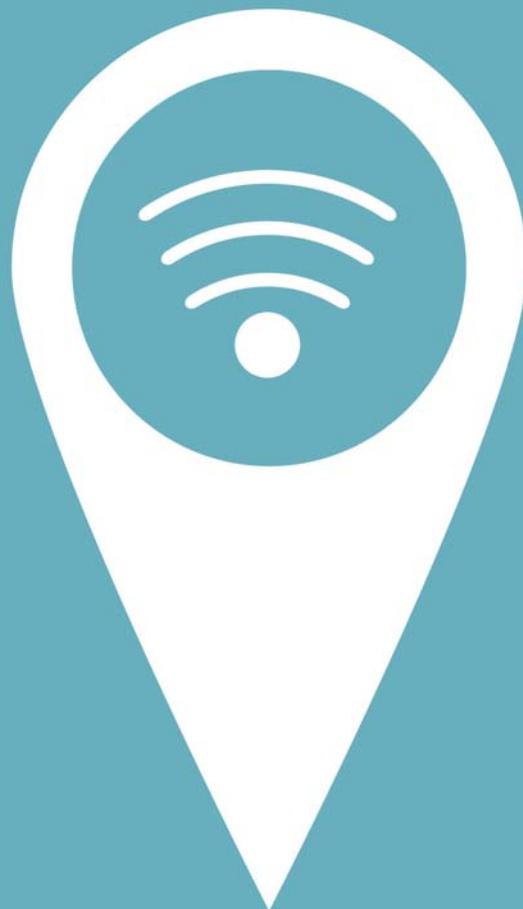


Cutting the Cord: How Wireless Technology Is Transforming Logistics and the Supply Chain



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It may be a gradual evolution, but more and more companies are realizing the benefits of adapting cutting-edge wireless technology to enable supply-chain efficiency, visibility, compliance and predictive analytics.

Wireless systems offer substantial opportunities for cutting costs, eliminating manual processes and improving compliance within the logistics and supply chain arena. But most companies have yet to take full advantage of the technology.

Wireless is gaining traction in the area of mobile field operations, especially for transportation management. Fleet managers can do a better job of keeping tabs on drivers and vehicles, while eliminating many of the paper processes that slow communications and add cost. In addition, field personnel and assets can be dispatched more rapidly and efficiently with “push-to-talk” technology.

“Wireless is what connects people, processes and things, and creates the data that’s used for supply chain [management],” says John Moscatelli, director of business

development for the Internet of Things with AT&T. As a result, he says, data is increasing in both volume and timeliness. No longer must companies rely solely on historical information to make decisions about deploying key assets in the field.

To be sure, they are keenly interested in cutting overhead related to logistics management. Cost-savings are “first and foremost” among customers’ pain points today, says Bill Wark, senior applications sales director with AT&T. At the same time, they’re eager to improve real-time control over critical resources. Wark cites research by UPS and the market-intelligence firm IDC, in which 43 percent of respondents voiced the need to implement technology “in order to have end-to-end visibility of the logistical process.”

All of this suggests that supply-chain executives should be embracing wireless and mobile systems wholeheartedly. Yet

while the technology is indeed making its mark across multiple industries, its presence today is far from pervasive. “Believe it or not, customers today are still at a place where they’re looking at how to move into a mobile transaction environment,” says Doug Clark, AT&T’s national director of mobile field solutions consulting.

Cellphones are, of course, an indispensable part of corporation operations. What’s lacking, Clark says, is a move toward systems and applications that extend that everyday technology into value-added areas. Innovations in data management and GPS tracking, for example, allow for the pinpoint monitoring of people, documents and equipment, as well as the integration of that information into workflow and customer-relationship management (CRM) systems.

Many companies are missing out on “massive market opportunities,” Clark says.



Of the 25 million service-type delivery vehicles on the road today, only a quarter are equipped with global positioning system (GPS) technology. And of the estimated 40 million workers in the U.S. who use paper forms, 95 percent lack an automated alternative. That's despite the fact that the average processing cost per piece of paper is \$7.50, versus just 50 cents for electronic forms.

Why the slow rate of adoption? Clark says it could be a matter of companies not knowing what tools are available, and how simple they are to utilize. A mobile form, for example, is created once, then transmitted to all relevant parties—a process that might take an hour or less. Recreating a complex form manually, by contrast, could take up

to a day, Clark says.

Wark says companies are approaching the technology with a degree of caution. Often they'll focus first on establishing basic connectivity. Then, a year or more later, they might realize that they can't absorb the resulting massive amounts of data. So they'll look to vendors such as AT&T to provide some form of middleware, supported in the cloud. "I have customers who are in their fourth or fifth generation [of the technology]," says Wark. "There are all kinds of capabilities."

In the age of Big Data, it's not enough to have the information on hand. Managers must know what to do with it. Wark speaks of one AT&T customer with more than 270,000 containers that are connected glob-

ally through wireless technology. Beyond merely knowing where a box is, the customer needs to be able to distinguish refrigerated from dry, and monitor the condition of a load in a real-time fashion.

Part of the strategy behind a phased approach to implementing the technology stems from management's need to justify the cost of the system. In most cases, says Wark, customers will work to demonstrate return on investment along the way, using early positive results to justify further acquisitions. Other times they might understand the benefits up front, given the obvious advantage of replacing reams of manual forms and legacy communications with an automated environment.

The technology never stops evolving,

and the landscape can become transformed along the adoption path. Moscatelli says new innovations such as self-charging devices for the tracking of trailers can help customers in ways they might not have imagined a year earlier. Meanwhile, the cost and size of devices continues to shrink, influencing the buying decision. "It's a really dynamic market," he says. "It has so many facets."

The level of a given customer's educa-

rates. It relieves companies of the burden of maintaining software on site, while eliminating many of the headaches that accompany upgrades. But the cloud also offers a less obvious advantage. According to Clark, it is helping to drive the decentralization of information-technology management within many companies. Purchasing decisions that were previously the sole prerogative of the I.T. department are now being made at the

implementing cloud-based applications results in a simplified consumption model and the possibility of a faster return on investment, Clark says.

Wireless capabilities are finding success in multiple industries that require a high degree of oversight. Clark describes the broader market as "any vertical that has a compliance activity." Beyond the obvious area of commercial transportation, there are applications that aid transit services, the



tion about wireless capability will depend, of course, on the size and sophistication of the company in question. Supply-chain specialists such as UPS, FedEx or Ryder, along with high-volume shippers such as Coca-Cola, are well up on developments in the technology. But others might not have the depth of knowledge, let alone the purse strings, to play the role of early adopter.

The maturing of the cloud as a basis for delivering applications and systems is having a dramatic impact on adoption

line-of-business level.

"For off-the-shelf solutions, with the cloud becoming so pervasive, line-of-business owners are able to consume these applications without having to wait for or go through I.T.," Clark says, adding that AT&T increasingly finds itself in conversation with the former individuals.

The cloud has also streamlined the adoption and use of sophisticated wireless systems. Combined with the plug-and-play nature of many modern fleet-management devices, the ease of

plumbing industry, home healthcare, energy and utilities, to name a few.

The energy sector in particular has a need for solid documentation associated with regulatory inspections, says Clark. Companies in that area "must be able to retrieve that data very seamlessly." Legacy systems that require optical character readers tend to generate huge volumes of paper that might be stored in remote locations and be difficult to access.

Yet another driver behind wireless technology is the coming of the Internet of

Things, a term that describes any number of devices communicating with one another without the need for human intervention. IoT's predecessor was machine-to-machine (M2M) technology, but the new term describes a much vaster universe of people and devices, says Wark. It especially acknowledges the explosion in use of tablets, smartphones and other mobile devices.

AT&T draws on the IoT as a means of providing services that range beyond transportation management to "a total, end-to-end solution," says Wark. Utilizing the immense amounts of data that are generated within that environment, the provider partners with device designers and manufacturers to connect multiple operators and countries on a global scale.

Moscattelli says the IoT allows AT&T and its customers to go beyond mere real-time monitoring into the area of predictive analytics. For example, a truck owner might possess data on such details as brake, battery and starter life, or even the number of activations that an individual truck lift gate can sustain. The information can then be used to predict failures and direct necessary repairs, maintenance or replacement before they occur.

The same goes for making decisions about dispatching transportation equipment and choosing routes. Companies today are armed with more historical and real-time data than ever before on road conditions, weather patterns, traffic density and the like. The information allows for virtual on-the-fly plotting of the best route and time of day for getting product from origin to destination.

"What you're seeing is more and quicker information being used to make better decisions," says Moscatelli. "It's all coming from sensors and devices."

Cutting-edge users of the IoT can go a step further. Say that a printer is set to run out of ink at a certain point. Prior to that happening, the unit can instruct the user's computer to automatically order a replacement cartridge, then confirm the order, issue the shipping notice, provide notification when the item is in transit, and report on delivery.

IoT applications take on an even more vital role when used in the control of hazardous materials. They can detect storage-tank levels and automatically request a fill without the need for human inspection,

Moscattelli says.

Unlike the old M2M applications, the IoT generates "an astounding amount" of data that affects day-to-day business operations, says Moscatelli. "It's not just knowing where my delivery or truck is, but also why is my product there? How is it handled? What's the temperature? Is it delayed, and if so, why?" In such cases, he says, "it tells me something I can avoid the next time I ship to my customer."

do a better job of utilizing cellular and Wi-Fi technology within distribution facilities. They'll be able to capture even more data at the individual item level, and track in a more granular fashion. Wearable devices and sensors will support the gathering of additional intelligence on product characteristics, location, usage and consumer buying habits.

Clark says more companies are beginning to realize the benefits of mobilizing



The merging of wireless technology, mobile devices, the cloud and the Internet of Things means that companies today can draw on multiple tools, both customized and off the shelf, to address their particular connectivity and visibility needs. In the process, it has taken a provider like AT&T from its roots in basic telecommunications into a far broader offering that recognizes the need for uniting the disparate elements of global supply chains.

There's more to come. Wark says devices and tags will get even smaller, and

their business processes, taking data from the field and integrating it back into the organization. There are still plenty of legacy mobile devices in use—including some 13 million walkie-talkies—but they will gradually give way to tools that tap into broadband networks, he says.

For customers and service providers alike, it's a world roiled by constant change. Still, the goal remains the same. As Moscatelli puts it, each new advance allows companies "to find operational efficiencies—to do more with less." ○