

PINC WHITE PAPER

The Four Forces Driving Supply Chain Innovation

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American businesses spend more than \$1.45 trillion annually in the transportation and logistics industry, which amounts to 8.3 percent of Gross Domestic Product—two-thirds of which involves over-the-road freight movement of approximately 500 million trailer shipments across 250,000 facilities.

Because companies still depend upon outmoded means to track and manage transportation, it is not unusual for trailer shipments to go missing temporarily or even permanently. This coupled with the inherent inefficiencies of how trailers are handled, translate into time delays, increased labor, lost inventory and, more importantly, customer dissatisfaction.

In this paper we will look at how companies can embrace these four forces to improve collaboration, control and efficiency of supply chains:

1. Customer Focus: Now more than ever, organizations must turn everything upside down to understand why they're doing what they are doing. Ultimately, it's all about providing value to the end customer and aligning organizational resources accordingly.

2. The Internet of Things: Much like the use of motion and smoke detectors in the context of home security, how can you leverage sensor technology to accurately locate, track and measure the movement of inventory?

3. Execution: Companies understand that the path to greater efficiencies and predictable quality of service is to have their supply chain processes standardized, consistently executed, and continuously analyzed for improvement. This is all about specialization, repetition, automation, replication, and analysis. Today most approach this problem with their continuous improvement teams analyzing problems with time and motion studies. Is there a better approach?

4. Convergence: There still exist masses of paper trails and manual processes in the supply chain. How do you replace this paper trail with systems that are integrated into your logistics information system grid so you and your partners are on the same page.

Customer focus

Companies commonly depict their customer centricity using the “inverted pyramid” (shown below), placing customers at the top of their corporate hierarchy.



This view of employee empowerment in satisfying customers has worked well for traditional brick-and-mortar businesses for decades. With the advent of omni-channel approaches, we engage customers through multiple parallel channels, with which comes a whole new set of challenges in customer interaction and fulfillment.

Customer sophistication is growing, which brings additional expectations, which might include:

- Tell me what I can get, at the right price, delivered on my schedule, at the location of my choice and preferably today
- The fact that you don't have the advertised item in stock or easily on-hand, isn't my problem
 - As a repeat customer, I expect 99 percent on-time delivery
 - I hate surprises or hidden charges
 - Over time, I want the same product at better prices and delivered faster
 - If I have a problem with a product, I want you replace or refund without any discussion or hesitation

While this looks like a very reasonable list of expectations, the sad truth is that there are a limited number of companies that are able to meet most of these additional expectations. Those that can are the ones that understand that they must

embrace an “outside-in” perspective of customer alignment and have a significant core competence in technology.

Where do you start? Simple. Initially, just take a look at where process is captured manually, using pen on paper or fingers on keyboards. Chances are, these areas in the business that create latency in customer interactions.

If you’re truly interested in customer delight and turning the organization upside-down to do so, why not approach your supply chain technology enablement in a similar way.

The Internet of Things (IoT)

The supply chain industry is going through a dramatic shift. Large entities—like Amazon—are disrupting the status quo through commerce execution transacted at light-speed. This market pressure is coupled with unprecedented industry forces demanding improved profit margins, better safety, reduced carbon footprint, and security of product and corporate systems. Progressive companies have responded to this pressure by taking a hard look at how they can innovate and transform their supply chains to remain competitive and improve business outcomes.



“Faster, Better, Cheaper” continues to be the theme, but with a more passionate focus on the customer. Why? Because in the age of “instant gratification,” companies understand that consumers want to have a simple but powerful experience that enables them to transact easily and securely on any device and have product in their hands that same day.

To attain such velocity, control, and consistency would find most supply chains creaking at the seams, as companies struggle to keep the lights on while attempting to make such radical improvements. “Radical improvement” initiatives for most large enterprises have come in the form of multi-year, multi-million dollar rollouts of legacy capabilities from the large software companies. Unsurprisingly these vendors are themselves also wrestling with the same challenges of adapting to rapid change driven by increasing customers’ needs.

These software vendors are stuck in a similar mental model of responding to the challenge by cobbling together a few basic functional enhancements so that they may adequately compete with each other in the marketplace with “me too” offerings.

Radical improvements require transformational thinking and the application of a new wave of innovation.

Consider for a moment a home security use case. Would you hire a security guard or buy a home security service? Unless you’re Justin Timberlake or the President of the United States, chances are you would enroll in a service from someone like ADT?

They would provide you a package of sensors measuring key aspects of your home’s security. These sensors would then be connected through a network to ADT’s mission control room, where software is looking for exceptions and where specialists are ready to intervene, should they be required. Mobile enablement means you have the ability to be in control of lights, house temperature, video feeds, and security from your smart phone, ensuring your engagement throughout the whole process.

Now, in the context of today’s supply chains, companies tend to have the equivalent of ‘security guards’ at their facilities who are armed with pen and paper or fingers on keyboards, ready for action. Isn’t it obvious that there are better approaches to assure velocity, control and consistency? Why can’t the ADT approach be applied to the supply chain industry?

The concept and application of the Internet of things (IoT) is not new, and has been with us for more than 15 years—the home alarm system being a perfect example of this technology. Its relative significance has been gaining momentum due to its convergence with two other factors—ubiquitous broadband connectivity and mobile smart devices.

With these 3 factors combined, IoT is now more relevant and useful to the extent that IoT devices outnumber people on the planet, and will continue to grow at a faster rate than the human birth rate. The current applications of IoT in the marketplace are just the tip of the iceberg of what is to come.

Imagine a truck and a loaded trailer arriving at a distribution center (DC). Since the load had left its source facility, the destination DC has been automatically tracking its progress. Fed via the truck's telematics system, the yard management System (YMS) has been continuously optimizing its expected journey within the facility based on its predicted arrival.

It's goal is to accelerate ingress into the facility and to optimize the scheduling of unloading. Instructions and outlooks of what to expect on arrival at the facility have been periodically messaged back to the driver's smart device. As the truck arrives at the facility, a read of the trailer's RFID tag positively confirms that the load has arrived at the location, recording the precise time and day.

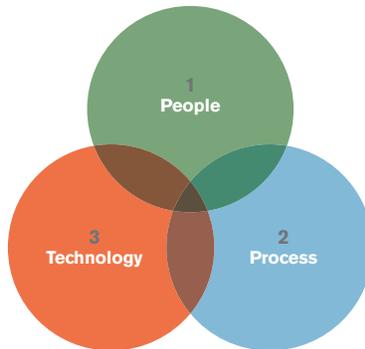
Information linked to the load is automatically retrieved and displayed on the kiosk screen at the unmanned gate. As the truck pulls up to the unmanned gate, it's weighed and cameras capture a 360-degree image of the trailer. The driver confirms the details of his load at the kiosk screen with a single click, and is instructed where to drop his current load and pickup his new load.

Throughout the trailer's visit to the DC, it's regularly scanned to confirm its location. Real-time information of the trailer location and status is relayed to the carrier and other interested parties. At the end of its visit, the trailer leaves and begins the next leg of its journey. Meaningful information relating to the carrier and trailer visit have been captured for future analysis.

This example articulates the use of multiple types of IoT sensors. By no means exhaustive, the driver's cell phone, truck telematics system, RFID tags, RFID readers, video processing, weight scales and smart kiosks all played their part in minimizing human interaction and automating the entire visit.

Execution

As large companies grow, organically and by acquisition, it's not unusual to have a lack of standard processes and technology for similar functional jobs across the enterprise. While employees naturally strive to do the right thing for the company, this lack of consistency across the organization results in disparities in expected results.

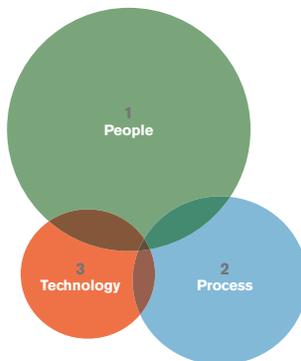


With the interplay between people, process, and technology, most companies attempt to automate repetitive tasks, so employees can focus on more difficult business problems.

When reviewing areas of the business that have significant opportunities for standardization, the obvious example would be the finance department. Hence, the proliferation of ERP systems. These systems have morphed over time as new modules are bolted on, such as order management and human capital management, making them increasingly unwieldy and bloated.

Not surprisingly, these products are expanding to address supply chain needs. Let's review how these offerings have moved the proverbial needle for enterprises based on our experience in such engagements over the years.

Before significant IT investment:

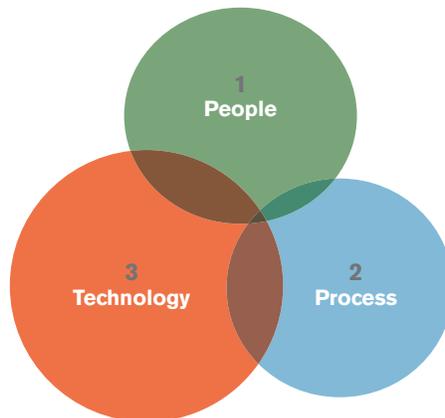


Not surprisingly, most companies believe that they have more employees than required, and thus represent the most significant expense item on the income statement, ripe for optimization. Using the example of an ERP implementation,

many invest in the technology and start standardizing the processes as part of the implementation.

The end intent here is obvious: The expenditure on what is displacing people has to be an order of magnitude less than the initial people expense, and processes are expected to operate significantly more efficiently than before.

After significant IT investment:

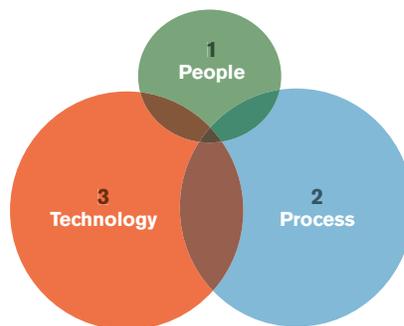


Like most home renovations, ERP implementations take far longer than planned, are more expensive than was initially expected, and the end results are not exactly what was envisioned.

While you've certainly achieved some level of technology enabled process efficiency, and displaced much headcount, it never achieves the scale you originally desired. The new ERP system requires that the organization retool all staff and train on new processes that are alien to most.

Inconsistent training results in flawed data input and data inconsistencies. Many employees voice concern that many new processes are not as efficient as those that have been replaced, and that it is rather difficult to get meaningful decision-making data out. It's not unusual to have huge multi-year technology budgets where the professional services component of the effort is significantly more than the software license itself, as the enterprise manages the huge change management effort.

The scary part is that it is never over. IT continues to spend more than 80 percent of its budget on maintaining existing systems—rather than continuing to focus its time on innovating new business enablement powered by technology. And the reality is that the system that you've proudly spent millions of dollars and multiple years to implement is now obsolete, superseded by more advanced offerings in the marketplace.

Ideal state:

While the newly installed global ERP systems have achieved many objectives—including becoming the ultimate repository for all things financial—the system fails to meet expectations. It is not uncommon to have the following realization:

- **Manual tasks still persist:** Take a visit to any large manufacturing plant or distribution center and talk to employees. You will understand that processes continue to be tribal knowledge based and lack efficiency.

- **Much data never actually makes it into the system:** During your site visit, look for large stacks of paper, especially those organized in filing cabinets. Chances are, you're looking at a paper trail that's using processes that are not codified in an information system.

- **Data integrity is always questionable and never timely:** The vast majority of the data in the system was put there by people. People are only human and errors in inputting data into any computer system are frequent and inevitable. Unquestionably, when you insert people in the critical path of any information flow, a significant lag in relaying data occurs.

- **Data driven decisions seem to require significant effort to realize:** There's a reason why spreadsheets continue to be a corporations No. 1 business application, because trying to manipulate the data and get business guidance directly from your ERP system is almost impossible.

So what does the organization have to do to establish equilibrium of focus on technology and process while diverting valuable people resource to more significant challenges and needs in the organization?

The simple answer is to take a non-traditional approach. Four key areas to contemplate include:

- **Focus on data:** Everything people do on a computer—from e-mail to google search—is generating masses of data about the user. And much like the “inverted pyramid” organizational model to alter the company's view on delivering exceptional customer experience, progressive companies are making data the “master” and the ERP system the “slave.” This means that a more rigorous focus on driving a more systematic approach to capturing data closer to its source, minimizing lag time, improving data accuracy, optimizing processes and accelerating business decisions.

- **Automate data collection:** Paper, e-mail, fax, or phone calls are not the optimal vehicles for data interchange. Rather, find technological ways to automatically capture the information with minimal human intervention.

- **Focus on the key jobs you are solving for:** Instead of having your organization conform to the processes and job functions your new ERP system dictates, take a more holistic view of where the opportunities for process efficiencies exist. This means focusing on an impactful business processes rather than organizational design, and breaking down processes to a more fundamental level.

Organizations are recognizing that the establishment of a Center of Excellence is a good first step to challenge the ways existing tasks are done. Once you have standardized processes with reliable data capture, you now have the foundation for improving execution by basing decision making on insightful analytics.

With so much focus and time spent on Big Data, It is what you do with it that makes collection worthwhile. Once you have it, use technology enabled process execution to orchestrate meaningful value such as real-time exception management

Convergence

When supply chain professionals discuss supply chain execution, their focus is typically put on transportation management systems (TMS) and warehouse management systems (WMS). The yard management systems (YMS) capability and importance is mistakenly undervalued.

It's the YMS that sits at the intersection of transportation and the warehouse, and is only recently being positioned as a key component of supply chain execution. This is because the YMS is critical in optimizing the flow of freight across a broader network, from dock door to dock door.

While some ERP software companies have offered a few more application screens to provide limited YMS capabilities, they fall short of what the best-of-breed providers can offer. More importantly, IoT enabled YMS capabilities provides the greatest value, in optimizing efficiency of freight movement, asset utilization and automatic exception handling.

By taking a more network-centric view with an enterprise-class YMS provider, progressive shippers and third-party logistics (3PL) providers are seeing the advantage of looking across their transportation network as a whole. Their control towers can now see how all of the yards are operating—in a yard-of-yards view of their world. This consolidated view enables the shipper or 3PL control tower to measure compliance to processes, track KPIs, see over-the-road freight in real-time, manage/carrier performance and safety compliance, and have a record of the actions taken on those assets over time. IoT enablement (with GPS,

radio frequency identification (RFID), and telematics) takes all the ambiguity out of the equation.

As more transportation and logistics services are outsourced to 3PLs, gaining visibility across this complex network of multiple service providers and having access to the shipping data from the myriad of proprietary IT systems been challenging at best.

Research firm Gartner began exploring the concept of supply chain convergence several years ago. Defined as the ability to synchronize and optimize an end-to-end process across the supply chain, convergence is a revolutionary concept that could address a daunting challenge today: synchronizing end-to-end business processes.

“The logistics sector is ideally placed to benefit from the technological and methodological advancements of big data, powered by the internet of things” says Bart De Muynck, research director at Gartner. “Sophisticated data analytics can consolidate this fragmented sector and bring together data from TMS, WMS, and YMS systems in order to create true value to shippers, 3PLs, and carriers. The power of the data lies in combining multiple data sources (TMS, WMS, YMS, and telematics) and multiple types of data from inventory data to driver data.”

Four Forces in Action

Since implementing PINC’s Advanced YMS three years ago, Daimler Trucks North America, LLC, of Portland, Ore., has experienced such benefits. According to Roderick Flores, IT project manager of vehicle electronics, the company previously used a clipboard and paper notes approach to yard management. Using its IoT enabled YMS, the solution can pinpoint exactly where vehicles are in its yard—right down to the exact yard and parking space number.

The company also knows how long the vehicles have been sitting and can avoid late or detention fees charged by firms that “weren’t getting their trailers back on time,” says Flores.

Daimler Trucks also has better oversight of truck contents and knows when vehicles must go directly to a dock and when they can be parked out in the yard. The solution provides automated trailer check-in and identification as well as real-time trailer tracking using PINC’s patented Real-Time Location Systems (RTL) technology.

Having achieved its targeted 12-month ROI for the YMS, Daimler Trucks has also seen improved business customer satisfaction, 99 percent trailer yard accuracy, and a 50 percent reduction in trailer move time. According to Flores, the company has also eliminated its radios, handwritten move requests, and trailer trucks, while gaining access to “accurate, real-time visibility of yard truck and driver effi-

ciency,” he says, “and visibility to trailer aging—a benefit that’s cut our detention fees in half.”

Building on the success of PINC’s YMS deployments, Daimler is now leveraging the same IoT cloud platform for manufacturing execution, finished goods tracking, inspection, transport and extending out to the dealer network.

Flores notes: “What we have found with the PINC platform is that we can now treat a high-value asset much like a trailer and be informed about the life of that asset during each stage of its life—from parts to the truck sitting on the dealer lot.”

When companies like Daimler Trucks adopt supply chain execution innovation strategies, the benefits are remarkable. Equipped with real-time information on which to base their decisions, shippers become more agile and better able to handle variable demand. Even unpredictable and unforeseeable “Black Swan” events become more manageable due to the real-time information flow being delivered across the supply chain.

Responsive, efficient and predictable supply chain means having real-time visibility of your assets and inventory. “PINC’s secret sauce is our pioneering work in RTLS,” says Matt Yearling, CEO of PINC Solutions, “this, coupled with our workflow, automation, analytics, and integration capabilities produces the killer app to augment existing supply chain investments for the world’s leading brands.”

In business for more than 10 years, PINC pioneered RTLS in the cloud using passive RFID, GPS, and cellular technology, and was the first to deliver a cloud-based YMS solution.

PINC’s Advanced YMS and Enterprise Visibility Suite solutions aggregate operational sensor data from multiple locations to provide KPI-based management of multiple yards and over-the-road. PINC has recently extended its RTLS capabilities into the sky with the world’s first RTLS supply chain drone—PINC Air.

For more information about PINC’s Advanced YMS, Enterprise Visibility Suite and PINC Air visit www.pincsolutions.com



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