

# Preparing Your Logistics Strategy for Today's Advanced Manufacturing Practices



**Purolator**  
International

# Introduction

A December 2016 segment on the [CBS News](#) program *60 Minutes* examined the economic growth taking place in a region of Mississippi known as “the Golden Triangle,” with a specific emphasis on the role one man, economic developer Joe Max Higgins, has played in luring new manufacturers to the community. As the segment made clear, several of those companies were returning manufacturing to the United States after originally locating in Asia.

“For some companies, offshore wasn’t as great as they thought it was or as it was portrayed to be,” Higgins said in the segment. “Many of the companies said, ‘Hey if it’s gonna be consumed in the U.S., we can produce it in the U.S. cheaper and more efficiently than we can elsewhere and bring it in.’”

Mr. Higgins’s remarks reflect a nationwide trend, as a growing number of U.S. businesses recognize the viability of either keeping production in the United States in the first place or bringing it back from Asia or other overseas locations. Research by [Deloitte](#) on behalf of The Manufacturing Institute found nearly half of U.S. manufacturing companies surveyed would consider reshoring at least part of their operations by 2020. Top reasons for returning operations to the United States include:

- Favorable logistics and supply chains in the United States – 90 percent
- Diminishing cost structure differential – 87 percent
- Increase in domestic demand – 80 percent

This inclination toward reshoring reflects an overall upswing in U.S. manufacturing. U.S. manufacturers produced roughly \$6.2 trillion worth of goods during 2015, which amounted to about 36 percent of total U.S. gross domestic product. As [MarketWatch](#) reported, that output is nearly double the level of any other leading sector, including professional and business services, government, and real estate.

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And, at a time when the Trump Administration has vowed to improve the regulatory and business climate in the United States, many businesses have signaled their plans to expand U.S. operations.

Important to note, the look and feel of today's manufacturing facilities are vastly different from the labor-intensive, assembly line-based plants that once dominated. Today's facilities are increasingly driven by "advanced manufacturing techniques," including highly sophisticated technology platforms, automated systems, artificial intelligence, and robotics.

This means the needs of today's manufacturing facilities are vastly different. For one thing, greater automation means not as many workers are needed and those who are required must be highly skilled in fields including computer science, engineering, and technology. The [Deloitte](#) research found nearly 80 percent of manufacturers report a serious shortage of qualified applicants for skilled and highly skilled production positions. "Over the next decade," the report summarized, "nearly three and a half million manufacturing jobs likely need to be filled and the skills gap is expected to result in two million of those jobs going unfilled."

Beyond a skilled workforce, today's manufacturers also rely on world-class infrastructure networks so that suppliers' deliveries can be timed to the minute and finished products easily entered into a distribution network. Manufacturers are increasingly locating their facilities close to vital highway and rail networks, airports, and ports.

This highlights the need for strong logistics support. Today's manufacturers rely on their logistics provider to enable the fast and highly efficient pickup and delivery capabilities vital to success. And logistics providers are rising to the challenge with innovative, technology-based solutions that ensure seamless service and unprecedented capabilities. From reduced ground transit times to expedited services to international customs expertise, many manufacturers are quick to credit their logistics providers as integral to their success.

The following discussion will focus on the growing trend among manufacturers to locate operations in the United States. Specifically, the discussion will identify key logistics and transportation issues that can help ensure success as well as the importance of having the right logistics provider on your team.

## Asia – Not the Bargain It Once Was

When U.S. manufacturers began outsourcing production to China, management could depend on production costs that were generally [25 to 30 percent lower](#) than in the United States. Companies were attracted by lower labor costs, favorable tax structures, and generous government incentives.

Consider the experience of Apple in outsourcing manufacture of its iPods and iPhones to its Taiwan-based manufacturing partner, Foxconn. When Foxconn needed to build a new manufacturing facility, reporting by [the New York Times](#) found, cities across China lined up to offer company executives troves of incentives, including tax benefits, infrastructure improvements, and employee housing. Municipal leaders in Zhengzhou, which ultimately won the bidding process, reportedly “doled out more than \$1.5 billion to Foxconn to build large sections of the factory and nearby employee housing. It paved roads and built power plants. It helps cover continuing energy and transportation costs for the operation. It recruits workers for the assembly line. It pays bonuses to the factory for meeting export targets,” the Times reported.



*Apple's relationship with Taiwan-based manufacturing partner Foxconn has been called a “roaring success.”*

The government also spent more than \$10 billion to expand its airport and created a “bonded zone,” which is essentially an area considered to be foreign soil where finished products benefit from facilitated import and export rules.

As the Times's report notes, while many American officials decry this level of government support, calling the subsidies and other aid “an unfair competitive advantage in a global marketplace,” there is no denying the arrangement has been a success. Analysis by [Industry Week](#) noted, “both the products and the process have been roaring successes, making Apple the most valuable company in the world.”

Recently though, economic and political changes in China may be causing some U.S. manufacturers to think twice about entering into similar arrangements. As Industry Week reported:

- Wages in China are rising.
- Increased automation of manufacturing processes is expected to decrease labor production costs, as fewer workers are needed. This could further diminish China's appeal as a source of low-cost labor.
- China's growing tendency to be an “unpredictable partner” makes U.S. businesses feel unsettled by China's recent actions to block Apple's iBooks and iTunes movies online stores, and by the removal of the New York Times app from the Apple store.

Beyond these trends, the *New York Times* cited developments that may be causing U.S. manufacturers to reconsider investing in Chinese operations:

- The government has announced an initiative to build its own technology industry and is pressuring local governments to cut the generous subsidies that have encouraged U.S. investment.
- This rising demand in China for domestic production may cause Chinese suppliers to shift their focus away from the needs of U.S. exporters.
- U.S. exporters, “courted and protected for decades by Beijing,” have come under increased scrutiny.

These developments are in addition to less than favorable experiences U.S. manufacturers encountered when production was moved out of the United States:

- **Untenable shipping times.** As eCommerce has fueled consumer expectations for increasingly short delivery windows, manufacturers are realizing the impracticality of Asia-sourced inventory. In an interview with [PBS](#), the president of an Alabama-based fan blade manufacturer noted the role delivery times had in his company's decision to return manufacturing back to the U.S.: “By shipping products from China, ‘you’re adding weeks, and it’s hard to time. The variability of a container can take three weeks or it can take six months.’” In another example, General Microcircuits Inc. (GMI) experienced “regular” transit times

of [35 to 45 days](#) for shipments between its Asian partners and the U.S. The company was able to reduce average transit time to seven days, or four hours by air, by moving production nearer to home in Costa Rica.

- **Social Issues.** Poor working conditions in some Asian factories have caused a backlash against low cost goods manufactured in “sweatshop conditions.”
- **Time Zones.** Severe time zone discrepancies stymied communication between U.S.-based manufacturers and their Asian production facilities.
- **Quality Control.** Many manufacturers reported difficulty in monitoring quality and protecting company intellectual property and assets. As reported by [MHI](#), one U.S.-based manager went to visit an Asian plant where his company had outsourced manufacturing and found two identical production lines operating — “one for his company’s product and one for the manufacturing partner to sell on its own.”

### Positive U.S. Developments Foster Domestic Investment

At the same time, a number of positive developments in the U.S. are facilitating the decision by many businesses in favor of domestic production:

- **Lower energy costs.** As reported in [Fortune](#), research by the Boston Consulting Group found American competitiveness has been profoundly impacted by lower energy costs, specifically by fracking, which has



*Lower energy costs, due in large part to hydraulic fracking, have helped driven down U.S. manufacturing production costs.*

“dramatically driven down the price of oil and gas that’s being used in energy-intensive industries such as steel, aluminum, paper, and petrochemicals.” Energy prices have fallen so dramatically that the consulting firm estimates China now holds just a 5 percent advantage in manufacturing costs. BCG projects that by 2018, it will be 2 to 3 percent less expensive to manufacture goods in the United States.

“A 5 percent discrepancy in manufacturing between China and the U.S. doesn’t amount to much,” BCG analyst David Gee said, “when you consider that U.S. manufacturers face the risks of delay when shipping from China, the threat of port strikes, and the local investments and partnerships that Beijing often requires of foreign companies doing business there.”

- **Reduced inventory costs.** U.S. — or North American — based production alleviates the need for manufacturers to store disproportionately large amounts of inventory to meet consumer demands for fast delivery. The trend in recent years had been for manufacturers to stock up so as to avoid unforeseen delays in moving inventory from Asia. Sourcing production closer to end customers allows manufacturers to reduce inventory carrying costs dramatically. And, as [Forbes](#) pointed out, excess inventory is both costly and risky, as stored inventory runs the risk of damage, theft, loss, and, in the case of technology or fashion, obsolescence.

- **Potentially favorable business and regulatory environment.** The Trump administration has promised to lower corporate taxes and reduce the regulatory burden that many businesses say has impeded their ability to operate in the U.S. According to the [National Association of Manufacturers \(NAM\)](#), at the end of 2016 manufacturers faced almost 300,000 regulatory restrictions, with 87 percent of manufacturers saying they would invest in hiring, increased salaries and wages, and research and development, if the regulatory burden was eased.

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*Source: National Association of Manufacturers*

- **Seamless continuity between research and manufacturing.** Many companies with overseas manufacturing quickly realized the inefficiency of having an ocean in between their engineering/development teams and their production facility. [Forbes](#) quoted one Silicon Valley executive as saying: “At any given moment in time, there is probably the equivalent of one Boeing 747 full of our engineers flying back and forth between the U.S. and China, just to facilitate the dialogue between development

and manufacturing.” [Forbes](#) also notes that many Chinese facilities suffer high worker attrition rates, meaning there is no institutional knowledge that can be passed down about a particular U.S. company’s production process. In addition, companies sometimes have to wait weeks for a factory in China to produce and deliver a prototype. As a result, companies are realizing the benefit of having their manufacturing and development functions — if not in the same zip code — at least in the same hemisphere.



# U.S. Manufacturing Today – Advanced, Automated, and Productive

Three critical points to recognize before beginning any discussion about current U.S. manufacturing trends:

1. Although larger corporations tend to garner most of the headlines, the vast majority of U.S. manufacturers are small- to medium-sized businesses. The [National Association of Manufacturers](#) reports that of the 252,000 manufacturing firms in the U.S., all but 3,750 are considered “smaller,” meaning they have fewer than 500 employees. In fact, NAM notes, “three-quarters of these firms have fewer than 20 employees.”
2. Today’s manufacturers are experiencing what [PriceWaterhouse Coopers](#) (PwC) refers to as a “technological renaissance” – that is, transforming the look, systems, and processes of the modern factory. Manufacturers have little choice but to embrace these changes, or they’ll lose ground to rivals that are making the necessary adjustments.
3. Manufacturers face increased pressure from customers for increasingly short lead times for products delivered consistently on time, undamaged, and up to specifications.

It’s not surprising then that today’s manufacturing facilities have a dramatically different look and feel from their predecessors. The PwC analysis identified four technology-based trends driving much of the change afoot in today’s manufacturing facilities.

- **Internet of Things (IoT).** Forbes [defines](#) the “Internet of Things” as “the concept of basically connecting any device with an on and off switch to the Internet (and/or to each other).” Thus the IoT can be as simple as connecting a kitchen coffee maker to a smartphone alarm clock, or as complicated as connecting jet engine components. Forbes cited research by Gartner, which estimates 26 billion connected devices by 2020. And in separate research, [PwC](#) estimated manufacturers will realize as much as \$4 trillion in value from the IoT, mainly through increased revenue and lower costs.

It’s easy to see then the role of the IoT in today’s factories where all manufacturing processes – machines, sensors, computers, and humans – can be linked and fully integrated. “These devices provide more precision and can translate collected data into insights that, for example, help determine the amount of voltage used to produce a product or to better understand how temperature, pressure, and humidity impact performance,” the PwC analysis noted.

Adding this level of sophistication will be difficult for some manufacturers, especially those with older equipment. Mechanical engineering Professor David Dornfield, of the



*Today's manufacturers increasingly rely on technology-based, highly automated processes. Source: [Montgomery County, VA Economic Development](#)*

University of California, Berkeley, told PwC, “One problem is that a lot of plants and machines are purpose built, and so linking all systems together in a way to gather data and make it useful can in some cases be trying.” Older machines need to be retrofitted, adding time and expense, Professor Dornfield noted. “But once you get the data and analyze it, you start to understand the DNA of your equipment – and assign, for example, a likely cause for a problem when you see a deviation in performance – whether it be that a tool is wearing out, or even a connection between the temperature of the plant and problems with certain processes. One can more accurately anticipate issues and can fix them before they cause a real problem,” he added.

- **Robotics.** Ready or not, industrial robots are on the job in production facilities around the globe, with almost 60 percent of manufacturers surveyed telling [PwC](#) they currently use some sort of robotics technology. As technology has developed, robots have taken on increasingly “human” characteristics such as, PwC notes, sensing, dexterity, memory, trainability, and object recognition. “As a result, they’re taking on more jobs – such as picking and packaging, testing or inspecting products, or assembling minute electronics.”

One big advantage of robots is their role in helping manufacturers locate production closer to their customers. This is because robots can be programmed to perform certain manufacturing-related tasks previously conducted in

overseas facilities. As an example, PwC cited a Hong Kong-based footwear maker that opened a facility in Tennessee to be closer to its end customers. The manufacturer relied on a robot to “roughen” leather before gluing it to soles – a process that could just as easily be done in Tennessee as in China. “It costs the same to buy the same robot in China or the U.S., so for U.S. companies selling to the U.S. market, customizing to consumers’ choice or preferences is a solid reason to bring manufacturing back to the U.S.,” Scott Paul, president of the Alliance for American Manufacturing, told PwC.

The research notes, however, that U.S. manufacturers are less inclined to favor “full automation” of their facilities and instead seek a hybrid approach known as “cobotics.” The cobotics approach allows human operators to “team” with a robotic machine to make complex parts faster, easier, and safer.

- **Additive Manufacturing (AM)/3-D Printing.** According to [TMR Research](#), additive manufacturing refers to “the concept of creating 3D objects that are solid, and can be of any size or shape to suit the requirement of the engineered products.” Although still in its formative years, 3D printing is widely expected to evolve into a mainstay of U.S. manufacturing. In the aerospace industry alone, 3-D printing is being used to make prototypes and parts at lower costs, and to create designs not possible via traditional manufacturing.



Ford Motor Co., as reported by [PwC](#), relies on 3D printing to produce prototypes for parts including brake rotors, rear axles, and cylinder heads.

The process allows the company to skip a few steps in the design process, saving up to two months. But General Electric proved to be a 3-D innovator in 2016 by using the technology to create the fuel nozzles – the actual parts – for its new LEAP family of engines.



GE's 3-D printed fuel nozzle. Source: [GE Reports](#)

PwC research found 66.7 percent of manufacturers are adopting 3D printing in some way:

- Experimenting to determine how we might apply – 28.9 percent
- Prototyping only – 24.6 percent
- Prototyping and production – 9.6 percent
- Building products that cannot be made from traditional methods – 2.6 percent
- Production of final products/components only – 0.9 percent

At this point in its development, 3D printing remains prohibitively costly for many companies. And as José Zayas, director of the U.S. Department of Energy's Wind Energy Technologies Office (WETO), noted in a [recent article](#), the process is not right for everyone. "3D printing is best used for highly complex components, such as those comprising several pieces, which can be 3D printed as a single item, or where extra functionality, and therefore value, can be added," he explained.

"If you have a product that can be easily made by traditional manufacture, then AM is not right. You need to find enough value to put in the components to balance the high cost," Zayas added.

But make no mistake, additive manufacturing is here to stay, especially as costs begin to decrease. Scott Paul of the Alliance for American Manufacturing believes additive manufacturing will be "key" to the future of small manufacturers. "As we see the possibilities of new materials expand and the cost of industrial printers go down, and the print speeds rise, you'll see adoption not only by larger companies, but also by the smaller companies," he told [PwC](#) researchers.

- **Augmented Reality.** [Time](#) magazine reports that augmented – and virtual – reality will soon "unlock completely unpredictable new ways of being productive with a computer." Whereas computer users have "grown up" using interfaces including keyboards, a mouse, their

finger, and more recently their voice, augmented reality is the "next big thing." As PwC explains, "Users simply follow the text, graphics, audio, and other virtual enhancements superimposed onto goggles or real assemblies as they perform complex tasks on the factory floor. These tools can simultaneously assess the accuracy and timing of these tasks, and notify the operator of quality risks."

Some manufacturers are using the new technology to provide hands-free training, enable faster responses to maintenance requests, track inventory, increase safety, and provide a real-time view of manufacturing operations. The implications are seemingly limitless, with some predicting elimination of fatigue-caused mistakes and the ability to use data retrieved from augmented reality devices to design better manufacturing processes.

Clearly then, innovation has taken America's manufacturing facilities by storm and enabled much of the efficiency and productivity we see today. In fact, as [MarketWatch](#) reports, today's U.S. factories produce twice as much as they did 30 years ago but with one-third fewer workers.

# Making Sure Your Supply Chain Keeps Pace

Manufacturers that have successfully transitioned to automated, highly-efficient processes certainly did not make these investments without giving careful thought to their supply chains and their ability to seamlessly move both supplies and finished goods. How, for example, would increased automation affect the speed at which supplies were needed? Would additional parts inventory be needed, and if so, at what cost? And what if a piece of machinery broke down? What would be the plan for quickly having a replacement part available to avert any production delays?

As manufacturers modernize production processes, a range of supply chain issues must be addressed. Those issues include:

- **Process Visibility/Inventory Management.**

A manufacturer that has invested in automating equipment and production processes must extend that same appreciation for technology to its supply chain. And its most important investment will be in an integrated system that connects every phase of the process – warehouse/inventory, distribution, transportation, and back office functions – as a way to gain supply chain visibility.

Supply chain visibility provides businesses with real-time – and accurate – information on all components involved in the production process, including manufacture, shipping, storage, and sales. An obvious and immediate benefit of supply chain visibility is awareness of the exact location of any raw material or finished product. In addition,

manufacturers can avoid maintaining excess inventory and the associated cost and storage issues.

- **Capturing and Maximizing Pertinent Data.**

Today's technology-driven world allows manufacturers seemingly infinite access to data points about virtually every aspect of the manufacturing process, consumer behavior, product design, marketing trends, weather patterns, and any other factor that could remotely affect sales. The trick is to zero in on those data points that are most relevant and drill down to the underlying messages the data holds.



According to [Ingram Micro Advisor](#), analytics can help a business “reduce processing flaws, improve production quality, increase efficiency, and save time and money.” Further, Tata Consultancy Services asked manufacturers to use a scale of one to five to assess big data benefits to their companies:

- Product quality and defects tracking – 3.37
- Supply planning – 3.34
- Manufacturing process defect tracking – 3.32
- Supplier, components, and parts defect tracking -- 3.11
- Supplier performance data to inform

contract negotiations -- 3.08

- Output forecasting -- 3.03
- Increasing energy efficiency -- 2.97

The sky is essentially the limit with regard to what data analysis can teach a business. The difficulty for most businesses is determining the precise metrics that will help them better understand their strengths, weaknesses, and opportunities.



- **Speed to Market.** In certain industries – electronics and semiconductors, for example – manufacturers are under constant pressure to shave days – months – from their lead times. Manufacturers unable to keep pace are getting left behind. As analysis by Accenture consulting notes, “... chip companies that can deliver on materially shorter lead times will command higher average selling prices than their potentially technically superior competitors, because early market share capture of consumer devices is exceptionally valuable.” For these industries, speed to market is not only a competitive issue but also an economic necessity, since

products in these categories generally become obsolete quickly, as “better/faster” products are routinely introduced.

As a result, a growing number of manufacturers are turning to expedited services as their preferred logistics solution. Whereas expedited service was once reserved only for extremely urgent or fragile shipments because of its higher costs, today’s manufacturers are finding the higher levels of service and customer satisfaction more than justify the cost.

An expedited solution will address the need for improved speed to market in several ways:

- Streamlined solution in which all supply chain services are performed – or managed – by the same logistics provider
- Personalized attention to detail through which logistics personnel will develop a customized solution to achieve specific manufacturing and distribution needs. Those same individuals will then manage the project, ensure all deadlines are met, and keep all key players informed
- High degree of flexibility to adapt to changing market conditions and unanticipated challenges
- Integration of technology and automation to improve visibility, thereby reducing risk of disruption
- Full suite of transportation options ranging from “next flight out” to charter services to expedited ground solutions
- **Globalization/Customs Issues.** U.S. manufacturers are engaged with international partners and buyers, and they must have seamless, efficient processes both for receiving imported supplies and for shipping finished goods to

international markets. To illustrate this point, [the New York Times](#) referred to Apple's iPhone as "a collection of intricate parts that are made around the world and assembled in China." The same can be said about a multitude of products manufactured in the United States. Production of a Ford F-150 pickup truck, for example, relies on Mexico for 15 percent of its parts, while Chevrolet's Silverado relies on foreign suppliers for more than half of its parts, including, as [CNN](#) reports, a Mexican-built engine.

Manufacturers must have full confidence that imported parts will arrive on time, with no unexpected border delays, and that exported shipments will arrive as promised, regardless of their international destination.

Navigating the complexities of international shipping is another capability increasingly entrusted to an expedited logistics provider. A qualified provider will ensure that a shipment arrives at a customs checkpoint with all paperwork ready to go and, where possible, already pre-filed. All taxes/duties/fees will be paid in advance, and the shipment will be in compliance with all security and "other government department" mandates.

- **Supplier Management.** The Boeing 737 is [assembled](#) just outside of Seattle, Washington, where hundreds of suppliers provide the 367,000 parts necessary to make each aircraft. Not surprisingly, the manufacturer places enormous pressure on its suppliers for precision-like deliveries to reduce costs and for continuous product innovation. With that many parts

to manage, Boeing ensures production efficiency by relying on preassembled "kits" to guide workers through their day. According to [NBC News](#), "Instead of spending an hour or two assembling the equipment they need for the day, Boeing factory workers now arrive at work to find a kit containing all the screws, hammers, and other instruments they will need to get their specific jobs done."

But ensuring that every kit has the necessary components can require herculean efforts. If one supplier misses a delivery and a stock out occurs, the impact can reverberate throughout the entire assembly line. For example, the [Financial Times](#) reported that United Technologies, owner of aircraft engine manufacturer Pratt & Whitney, has stated that roughly 44 percent of its suppliers do not deliver on time.

Manufacturers are increasingly taking themselves out of the business of receiving deliveries, opening cartons, identifying contents, and funneling those parts to the right place by delegating the process to their logistics partner. An experienced partner will take delivery of a manufacturer's shipments and assemble "parts kits" prior to the start of each shift. The logistics provider receives and processes the inventory at a facility located near the manufacturing facility, disposes of all packaging, and ensures that each worker has the precise tools – presented in the exact order in which they will be needed – to perform that day's work.

- **eCommerce/OmniChannel Capability.** Many manufacturers have heeded customer expectations and



added eCommerce and omni-channel capabilities. The "[2016 Manufacturing & Distribution Sales and Technology Survey](#)," sponsored by Handshake technology provider, found 44 percent of manufacturers and distributors surveyed already have an eCommerce platform in place to allow online ordering. Of those, 63 percent also allow orders from a mobile device, and 21 percent say more than a quarter of their B2B revenue is generated via online channels.

Of those companies that have yet to implement eCommerce capability, 50 percent are in the planning stage and expect to offer eCommerce functionality within the next 12 months.

Important to note, today's B2B transactions increasingly resemble B2C purchases, with business buyers expecting the same "all of the above" choices for purchasing and delivery options, inventory availability, and convenience when making personal purchases.

Successful manufacturers have taken the time to carefully research their customers' eCommerce expectations and have built platforms that provide high-quality transactions. This, of course, involves consideration of inventory, fulfillment, technology, distribution, returns management, and transportation issues beyond the manufacturers' existing scope of activity.

Most manufacturers turn to their logistics partner for the expertise necessary to offer a seamless online experience. Specifically, a single-source provider will have the capability

to manage all aspects of a manufacturer's omni-channel supply chain, including order management, inventory management, warehousing, kitting, picking, labeling/shipment preparation, transportation, delivery, and all backend functions such as recordkeeping and compliance. A comprehensive provider will also implement a reverse logistics strategy to process the roughly 8 percent of sales that will be returned.

- **Transportation Optimization.** When athletic footwear manufacturer Adidas announced plans to open its first U.S. production facility in metro Atlanta, GA, the company [cited](#) the region's strong transportation infrastructure as one of the determining factors. As that city's regional economic development commission [points out](#), businesses located in the Atlanta area benefit from proximity to Hartsfield Jackson International Airport, three major interstate highway systems, an extensive rail system, and proximity to the Port of Savannah.

Proximity to first-rate transportation venues is certainly a critical priority for manufacturers but so is the ability to develop innovative solutions based on those assets. A growing number of manufacturers are relying on innovative transportation-based solutions that include:

- **Route Optimization.** Among the many positive contributions technology has made to the freight/logistics industry, the concept of route optimization has been among the most beneficial. Route optimization software



*Route optimization ensures that shipments take the most direct route available.*



helps companies better manage their distribution networks through the use of advanced algorithms. The process calculates the most efficient service option, maps out direct routes, and matches available trucks and drivers to make the delivery. In doing so, delivery routes become much more streamlined, meaning reduced mileage and lower fuel costs.

Consider the [benefits](#) achieved by Coca-Cola Enterprises when it employed route optimization software to help manage delivery of more than 1.5 billion cases of Coca-Cola beverage products throughout North America and parts of Europe. By developing advanced algorithms that took into account everything from local traffic patterns, driver working hours, infrastructure, and fleet availability, the company was able to achieve \$45 million in annual cost savings.

While most businesses do not operate on the same scale as Coca-Cola, the concept of technology-driven route optimization applies to businesses of all sizes.

- **Distribution Center Bypass (DC Bypass).**

Until recently a 2- to 3-day stopover was “baked in” to a standard distribution plan, regardless of whether or not it was needed. According to Supply Chain Digest, in some cases, a shipment was [required](#) to travel thousands of miles out of the way to make a distribution center stopover, only to make a return trip back to the vicinity of its starting point.

In recent years, businesses and logistics providers have

realized the enormous waste in this arrangement.

Instead, companies have opted to open regional distribution centers to accommodate local needs or have streamlined routes so that shipments can travel directly to their end destination.

DC bypass can eliminate 7-14 days from the supply chain, which represents a significant amount of inventory that can be taken out of the system. The shortened distribution cycle is a lifeline for businesses trying to rush products to market and for those simply trying to control costs and better manage transportation spend.

- **Consolidation.** Consolidation is a highly efficient way to control transportation costs – and costs associated with any international border clearances. By consolidating smaller shipments into one larger unit, more favorable rate terms may apply. Essentially more expensive less-than-truckload shipments are converted to full truckloads, and in the process, a company can reduce costs and provide better service to end customers.
- **Horizontal Collaboration.** [Supply Chain Management Review](#) described horizontal collaboration as companies sharing supply chain assets for mutual benefits. Businesses in the same industry, that often have the same customers and same logistics needs, are prime candidates for horizontal collaboration. A current “high-profile” [example](#) involves two competitive chocolate manufacturers, the Hershey Co. and The Ferrero Group in North America. The two companies entered into

an alliance to share warehousing, transportation, and distribution processes and assets.

Other “competitors” sharing logistics processes include Tropicana and Ocean Spray, as well as Pennsylvania-based Just Born confectioner (best known for “Peeps” marshmallow candies) and an alliance of five other candy companies. In an interview with [American Shipper](#) magazine, [Joel Sutherland](#), managing director at the University of San Diego’s Supply Chain Management Institute, explained, “Just Born increased the amount of freight shipped out of its distribution center by including other confectionery shippers to form a collaboration of ‘like’ shippers delivering product to ‘like’ customers.” The impact? Sutherland says that the collaboration will save the companies “about 25 percent of their total transportation costs per year.”

Businesses interested in integrating horizontal collaboration solutions into their supply chains should be forewarned though. It’s not for everyone, and it’s hard work. According to the ["North American Horizontal Collaboration in the Supply Chain Report,"](#) produced by supply chain research group [Eyefortransport](#), top concerns for businesses include:

- Fear of information disclosure
- Lack of clarity over who’s in charge
- Lack of widespread acceptance of ideas
- Difficulty finding appropriate partners
- Difficulty starting trusting relationships.



# An Innovative Logistics Provider is Integral to Success

To meet the challenges of 21st century manufacturing, companies are turning to their logistics providers as never before to assume greater responsibility and develop increasingly out-of-the box, innovative solutions. Today more than ever, logistics partners have a seat at the table and a voice in helping businesses address their supply chain challenges.

The first step though is identifying the right provider. A fair amount of research will be necessary to ensure that a logistics partner has the required capability and experience. Key considerations to keep in mind when choosing a qualified logistics provider include:

- **Technology-Based.** Technology has changed EVERYTHING when it comes to logistics and transportation solutions. As a result, providers are able to offer solutions that were unthinkable a few years ago. Make sure any potential logistics provider has not only invested in technology – and in regular upgrades – but that it has technology-savvy staff who understand the system and can ensure maximum benefit.
- **Wide Scope of Solutions.** Are you aware that it is possible to have a ground shipment delivered to Canada faster than some transportation providers' air solutions? This is one example of how innovative logistics providers are thinking out of the box and developing innovative solutions. Today, it is possible to have a “customized-like”

solution for almost every shipment. Long gone are the days when a transportation company would offer a single “take it or leave it” approach. Choose a carrier with a menu full of options and a “sky’s the limit” approach to helping address your company’s precise needs.

- **Distribution Network.** Make sure your provider has a distribution network in place that meets your entire coverage needs. If your supply chain includes suppliers or customers in Canada, for example, make sure your provider offers coverage to the more remote regions of that vast country. Or, if your shipments would benefit from an intermodal rail/ground solution, make sure your carrier has access to the right equipment.
- **Flexibility.** You will also want a logistics partner that can be flexible and will adjust service to meet your business’s specific needs. If your business is seasonal, make sure your logistics provider will allow you to ramp up service during your peak periods and seamlessly draw down during slower months.
- **Continual Improvement.** You will want a partner that constantly monitors your account and looks for new and better service options. Too many logistics partners forget about their customers after the contract is signed, and businesses find themselves locked in to certain service levels, even if a better option becomes available. You want a partner that is invested in your success and offers ongoing recommendations for service improvements.

- **Customs Expertise.** With so many U.S. manufacturers dependent on international suppliers and customers, a company cannot afford to have a shipment held at the border because of missing documentation or due to some other mistake. Make certain your logistics partner has a proven track record managing the international customs process. A truly experienced provider will ensure shipments arrive at the border with all documentation pre-filed, the correct tariff classification assigned, all duties and taxes paid, and a determination of any free trade benefit eligibility.
- **Customer Service.** Your logistics provider must take seriously your commitment to your customers. A good logistics provider will have staff dedicated to your business, who understands your objectives, and who can advise how best to meet those goals. Equally important, a customer service representative must be easily accessible should something go awry or a last-minute change become necessary.

## Conclusion

When toolmaker Stanley Black & Decker [announced](#) plans in early 2017 to build a new \$35 million manufacturing facility in the United States, CEO James Loree said the move was consistent with the company's philosophy to "make where we sell wherever possible."

And in an apparent reference to statements from President Donald Trump in support of import taxes on products made overseas by U.S. companies, Loree added, "It's going to be advisable to have more manufacturing in the U.S."

Black&Decker is certainly not alone. Other companies that have announced plans to expand in the U.S. include Ford, Carrier, Apple, General Motors, and Walmart. In addition, non-U.S. companies including Hyundai, Kia, and Foxconn have announced plans to invest in U.S. facilities.

Whatever the reason, U.S. manufacturing – and the economy overall – are poised to benefit. This investment comes at a time when U.S. manufacturing output is strong, with more than 50 percent of existing companies [telling](#) the Institute for Supply Management they were expanding instead of shrinking.

But integral to this new investment and growth is the fact that U.S. manufacturing looks very different today than it did before technological innovation took hold. This change has reverberated throughout each manufacturer's supply chain and affected the way in which products are made, stored, sold, and transported.

U.S. manufacturers have invested heavily in technology-based, efficiency-driven facilities. It's essential then to entrust that investment to a high-quality, experienced logistics provider. Otherwise, today's precision-like manufacturing processes will be one late shipment away from a serious breakdown.

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