



Can JIT and Global Sourcing Strategies Co-exist?

JIT 2:0: How to Use In-Transit Visibility to Adapt Just-in-Time to a Global Supply Chain

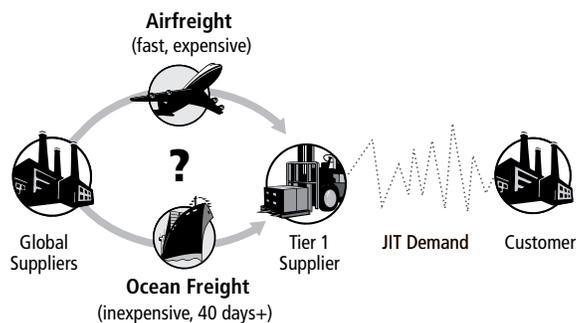
Executive Summary

There is an ugly, high-speed collision right now between the lean production, just-in-time inventory strategies companies have been working hard to perfect over the last twenty years and the overpowering imperatives of globalization.

On the one hand, maximizing efficiency requires minimizing inventory costs — by shortening supply lines, reducing order quantities, depending upon pull-based replenishment, and developing close customer-supplier relationships capable of responding quickly to demand changes. On the other hand, the overwhelming labor and material cost advantages of overseas sourcing come at the price of slow bulk shipments, push-based orders, and an inflexible, committed in-transit inventory pipeline. How can companies reconcile these critical, but apparently mutually exclusive, initiatives?

The environment in which JIT evolved has been fundamentally altered by the impact of globalization. Automotive suppliers, like many other manufacturing companies, have increasingly turned to global sourcing of materials and components in order to cut costs. However, extending the supply chain from across the country to across the world introduces an order of magnitude increase in complexity and risk.

This increased complexity frequently leads to two bad outcomes: First, expected cost savings can be eroded — or even reversed — by increased logistics costs. Second, the increase in transportation time can make responding efficiently to volatile demand signals almost impossible. With the cost of failure very high (from fines for shutting down a production line to outright loss of a customer), companies default to “just-in-case” airfreight whenever there is the potential of a stock-out.



The tradeoff: How best to balance fast, but expensive, airfreight with cheaper, but slow, ocean freight in the face of volatile demand?

How can companies obtain the cost savings promised by global sourcing, without losing the efficiencies promoted by just-in-time inventory strategies or having to rely upon expensive airfreight to meet customer service levels? The key lies in having full visibility into each link of the supply chain. Full and accurate in-transit visibility — into your partners' systems, as well as your own — lets you see costs in real time, as they build, not in the rearview mirror of after-the-fact financial reports.

Full visibility also extends the JIT supply line in both space and time. The key to minimizing the transportation costs of global sourcing while maintaining required customer service levels is to put as much as you can on ships, to buy down the average transportation cost, while putting just what you need to maintain service levels on airplanes. An effective in-transit visibility solution enlarges the definition of inventory on hand to include inventory near at hand — in essence, your warehouse expands to include cargo containers that will be delivered in time to meet your customers' needs. If you know that the materials you need are just a day or two from delivery, you will have much less need for just-in-case airfreight to maintain just-in-time performance. You would also have the ability to redirect shipments on the fly from where they are to where they are needed, expanding the range of possible lower-cost solutions to potential stock-out situations.

Systems that can provide these capabilities are available today. Leading companies are already using web-based on-demand platforms, built on an interconnected network of suppliers, shippers, 3PLs, trade banks, and others, with applications capable of maximizing the value of the information these partners provide. This information can be used to precisely assess the true landed costs of the products you are sourcing globally at the same time it allows increased responsiveness to volatile demand signals without necessarily resorting to expensive airfreight. With solid in-transit visibility information — and the technology infrastructure needed to provide it and make use of it — just-in-time strategies can adapt to survive in the new environment of a globally sourced world.

“Our OEM customers demand just-in-time service. Shipping airfreight for all our products from Asia is not an option. The trick is to ship most of our material by ocean freight to minimize our overall transportation cost, while shipping only the products that require a shorter lead time by air. To accommodate our changing customer requirements and control cost, part-level visibility across over a dozen global transportation providers is essential.”

Dawn Boike
Senior Manager, Logistics Operations
Yazaki North America, Inc.

Adding complexity and risk when failure is not an option

Global sourcing has become an essential tool automotive suppliers use to reduce the cost of producing and delivering their products. Yet, extending supply lines overseas brings complex new commercial and operational challenges. These challenges are particularly acute in an age of just-in-time production and lean manufacturing and highlight the need to fine-tune JIT inventory strategies to deal with the realities and potential pitfalls of extended global supply chains, including hidden costs and lack of responsiveness to volatile demand.

The lower costs of overseas sourcing can be offset by increased transportation costs and by the many other costs hiding in the global supply chain; global logistics are exponentially more complex than domestic sourcing. Longer supply chains are inherently less responsive to unexpected changes in demand; the inflexibility caused by increased transportation times can be exacerbated by differences in language and time zone, as well as additional documentary and regulatory requirements.

	Variables	Domestic Supply Chain	Global Supply Chain
•	Cycle Time	Days	Weeks
•	3rd Party Touchpoints	1-2	5-10
•	Time Zones	1-3	8+
•	Transport Modes	1	3-5
•	Transport Costs	Low	High
•	Languages & Currencies	1	Multiple
•	Document Requirements	Low	Significant

Going global cuts first costs, but adds many complications and sources of risk.

“With so many organizations relying on contract manufacturing or low-cost country sourcing, a lot more detailed data about as-built quality and product genealogy, as is available capacity and capability needs to be crossing enterprise boundaries. This need for “supply sensing” adds to the data transparency requirements, but challenges such as disparate systems, time zones, languages, cultures, and priorities add to the complexity.”

Jane Barrett & Stephen Hochman, AMR Research
Industrial Manufacturers—How To Improve Supply Chain Agility
Tuesday, October 09, 2007

The stakes are particularly high for top-tier automotive suppliers: The catastrophic cost of a supplier-induced assembly-line shutdown dictates extensive use of expensive “just-in-case” airfreight in any case of doubt about the sufficiency of inventory levels to support just-in-time levels of service.

The last thing a supplier wants is to become an air transport company, but in the absence of accurate, complete information about the whole extent of the intercompany supply chain, enterprises can be rocked back on their heels by the collision of volatile demand signals with a supply-side informational black hole — and the chartered 747 becomes the supply chain insurance policy of last resort.

The challenges are daunting:

- How can you minimize (or at least correctly estimate) the hidden costs of global sourcing?
- How can you minimize the risks to service levels created by the collision of volatile demand with long-lead-time ocean shipping?
- How can you detect delays in your supply chain early enough to take corrective action and avoid disastrous cost or customer dissatisfaction consequences?

In short, how can you make just-in-time, lean production methods work in a world where your suppliers are 40 days and thousands of miles away, rather than across the road or even across the country?

The answer, in each case, is to have the right information at the right time at each link in the supply chain. In a global sourcing environment, this means having information from each of your partners — and having that information synchronized so that each data element has the same meaning for every participant in the supply chain. High quality data, collected from the full range of trade and logistics partners and synchronized to ensure semantic parity across the board, plays a particularly crucial role in enabling a just-in-time capable global supply chain.

Creating this partner network is difficult and much more complex than synchronizing information within the four walls of the enterprise (which is, itself, not a trivial problem). However, such cross-enterprise networks are already in operation today and the benevolent economics of network-based systems mean that costs to individual participants decrease as the network grows.

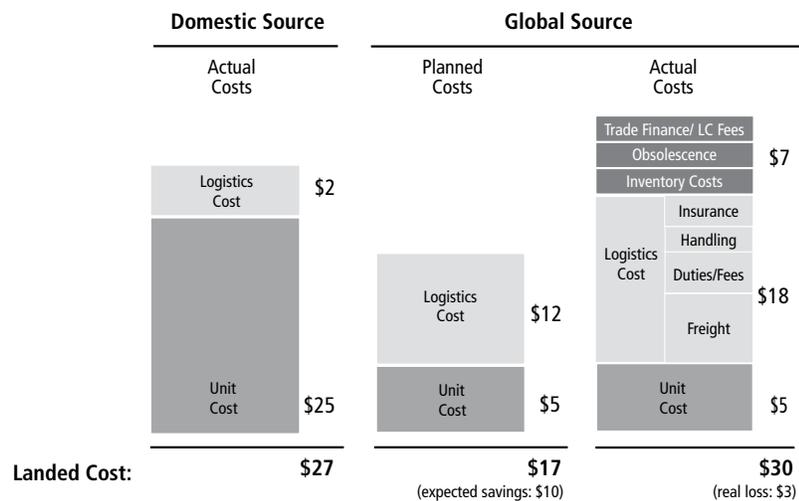
The good news is that just-in-time methods can be enhanced to work effectively in a global sourcing environment, with the right supporting data and technology infrastructure to surface hidden costs and to reduce the risks associated with the extended supply chain. The better news is that such systems are already available and can be implemented at relatively little cost and risk.

...how can you make just-in-time, lean production methods work in a world where your suppliers are 40 days and thousands of miles away?

The hidden costs of global sourcing

Global sourcing can offer both tremendous opportunities and invitations to disaster. Careful management is the key to obtaining projected cost savings and to not being sideswiped by the many costs that the more complex global supply chain can conceal. Ignorance of true costs — or a failure to incorporate all of the costs required to source products globally — can lead to a serious erosion of the expected benefits of global sourcing or even, in extreme cases, outright losses.

Unexpected (or poorly characterized) costs can include handling, insurance, customs duties, inventory cost of capital, and trade finance fees. In addition, unexpected modal changes and sub-optimal freight allocation can significantly increase base transportation costs. The role these costs can play in turning planned savings into delivered losses is demonstrated graphically here:



Expected savings from global sourcing can be eroded — or even reversed — by hidden costs that don't become known until inventory is in motion.

The swing from planned savings to delivered losses is a function of lack of visibility into the extended global supply chain and all of the ancillary processes and costs needed to support it (e.g., customs brokerage, in-transit inventory and insurance costs). Therefore, avoiding surprise losses is primarily a matter of having complete and accurate information about each link in the supply chain — what each of the costs really is and what all of the costs really are. The truth may be out there, but it can be very hard to collect all of the data needed to paint the correct picture and gather it together in one place where it can actually be used.

How can you avoid being sideswiped by unexpected or poorly-estimated costs? How can you maintain just-in-time service levels with a supply chain that extends across the world, rather than across the street?

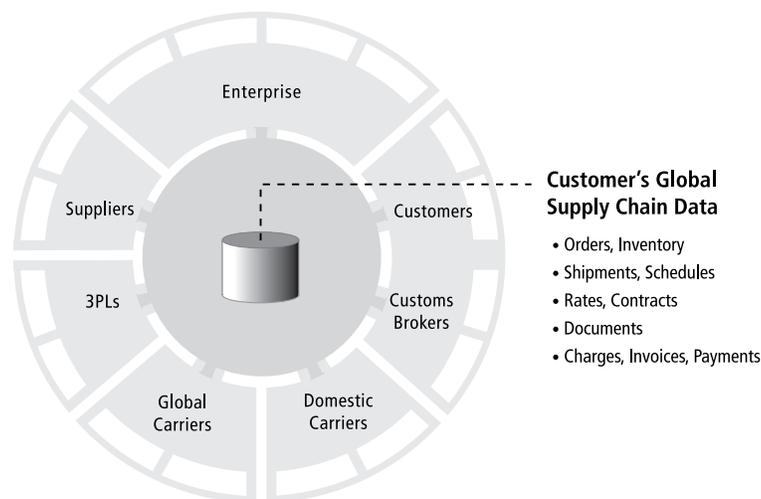
Again, information — from every participant in the extended supply chain — is the key.

Managing the unexpected

Fortunately, the same kind of web-based, cross-enterprise logistical information system needed to expose the costs hidden in the global supply chain can be used to control those costs — and also to mitigate the risks created by the longer lead-times inherent in global sourcing.

Having accurate, timely data from each link in the chain allows companies to correctly monitor costs as they build, both ensuring better management and control of the sourcing process and also providing superior data for subsequent forecasts. A network-based, cross-enterprise system that links a company with all of its suppliers and service providers and harmonizes data so that it can be exchanged easily, with full semantic content intact, allows real — and real-time — visibility into the extended supply chain. This visibility prevents after-the-fact cost surprises and provides sufficient warning to take corrective action on inventory cost level issues before it is too late¹.

The ideal configuration of such a system is a web-based on-demand network: Companies just joining will find that many of their partners are already on the network and that the costs of adding additional connections are spread over the entire network — as is the investment in the existing connections — greatly improving the economics. The network approach also allows semantic harmonization of the data feeds from all of the participants in the network. Web-based, on demand access to the information network has the additional advantage of dramatically speeding time-to-benefit and lowering financial and technical risk from what could be expected from traditional purchase and install packaged software (much less in-house development). The emerging technology model that blends a pre-wired network, data management services and software, then delivers the whole thing as a service over the web, is often referred to as a platform, or industry portal.



It takes a network: Effective management of a global supply chain requires information from many parties — and that information must be mutually comprehensible.

¹ For a more thorough discussion of this point in a retail setting, please see the GT Nexus White Paper entitled, “Global Sourcing: Elusive Profits, Expensive Mistakes.”

Once the logistics portal makes supply chain data from all relevant parties available in a quality-controlled, semantically-standardized form, the same web-based platform can be used to host the applications needed to manage the global supply chain. Platform capabilities will ideally include:

- In-transit visibility — material (part number and quantity), across all transport modes
- Dynamic ETAs — to project delivery dates based on most recent supply chain events
- Exception Management — to detect and manage supply chain delays
- Landed Cost Monitoring — to determine total supply chain cost per unit of sourced product

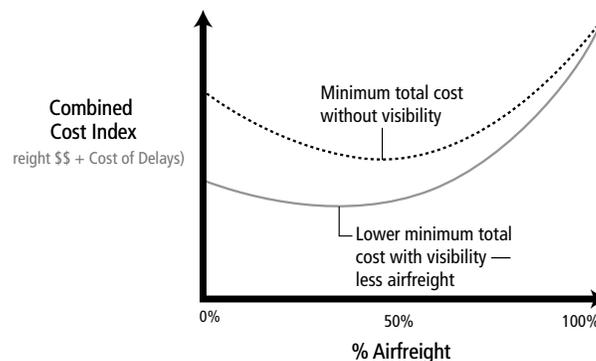
With these capabilities in hand, companies not only have insight into the true landed costs of globally-sourced products, but they also can obtain the visibility into the supply chain needed to minimize transportation costs while still maintaining responsiveness.

For example, suppose an unexpected OEM demand increase puts pressure on a supplier to provide more material than previously planned for. Without visibility into in-transit inventory, the material would be flown in, in order to maintain necessary service levels. With in-transit visibility, the supplier can find previously “invisible” material that is already inland, whether at the port of entry about to be loaded on rail, at the destination rail yard, or even already at the supplier’s own yard, awaiting unloading. In any of these cases, the material can be re-routed at little to no additional cost to the supplier, avoiding the expense of airfreight while still meeting customer needs. Material that is still on the water can be re-directed or flagged for expediting, thus maintaining service levels at a far lower cost than that of airfreighting an emergency shipment.

Improved visibility effectively increases the timeliness of slow, but cheap, ocean transport; dynamic ETA capabilities (and the ability to redirect cargoes on the fly) allow on-the-water shipments to be factored into inventory level calculations, so suppliers can avoid unneeded panic over potential shortages.

You can think of the total cost of freight as being the sum of fully laden landed costs (as described above) and the costs associated with any degradation of service levels caused by the extended supply chain. A simplified model of the total cost, depicted graphically below, trades off responsive (but expensive) airfreight against slow (but inflexible) ocean freight. This tradeoff is shown both with and without the benefit of visibility technology that captures and analyzes data from all of the supply chain partners.

Companies not only have insight into the true landed costs...but they also can...minimize transportation costs while still maintaining responsiveness.



Visibility technology lowers total costs and reduces the need for airfreight by effectively making in-transit inventory more accessible.

Note that increased visibility allows companies to achieve both a lower total cost and a lower airfreight percentage — visibility helps minimize the cost of delays that was inherent in ocean shipping in the blind, pre-visibility era, while still maintaining high service levels. In essence, visibility makes in-transit inventory “accessible” days before it would have been previously and provides the ability to make on-the-fly changes in routing should the need arise. Companies can reduce the need for expensive airfreight “insurance” by increasing the certainty of the ocean shipment leg of the supply chain through visibility technology, thus lowering the risks created by demand volatility.

Visibility makes in-transit inventory “accessible” and provides the ability to make on-the-fly changes in routing should the need arise.

You can see clearly now — the pain is gone

Global sourcing has been widely adopted because it holds the promise of dramatically lower costs. Unfortunately, inadequate visibility across the entire supply chain can conceal the real risk that the additional complications created by an intercontinental supply chain can erode or eliminate expected savings. The inherent reduction in flexibility caused by the extension of the supply chain across oceans, continents, and many time zones poses considerable risk to the high service levels required by just-in-time inventory strategies, risk that companies have insured against with extensive use of last-minute “just-in-case” airfreight.

Fortunately, new web-based, network-architected global logistics portals can provide the intelligence and control systems needed to make JIT work in a global sourcing world. In particular, a sophisticated visibility tool, supplied with high-quality data from all of the participants in the extended supply chain, can solve many of the problems caused by the collision of just-in-time demand fluctuations with the longer lead-times inherent in global sourcing.

GT Nexus, Inc.

email: information@gtnexus.com

www.gtnexus.com

