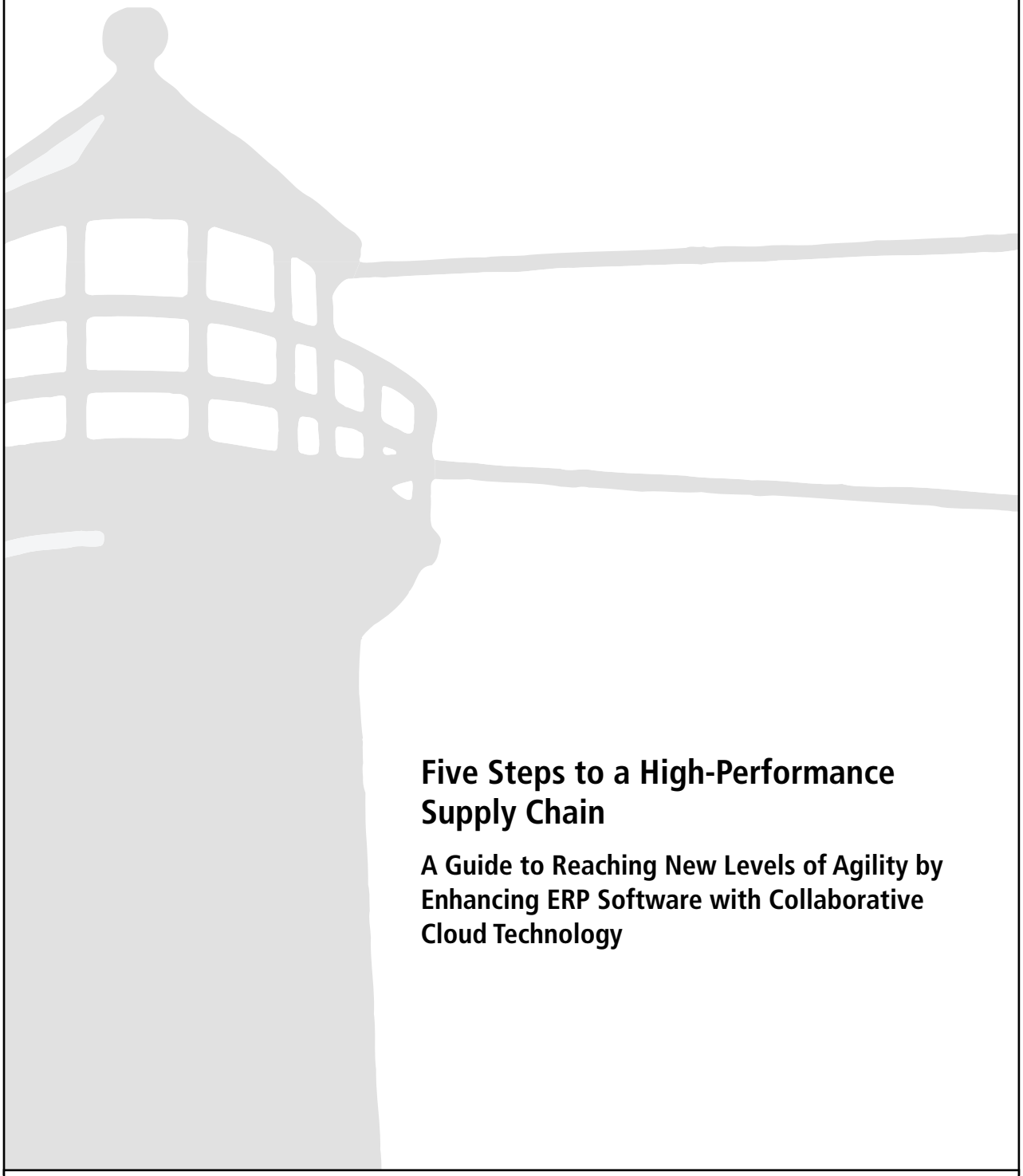


Five Steps to a High-Performance Supply Chain

A Guide to Reaching New Levels of Agility by Enhancing ERP Software with Collaborative Cloud Technology

GT NEXUS™

A GT Nexus White Paper

Executive Summary

Manufacturers are competing in a more complex supply chain environment than ever. Before the advent of cloud-based, collaborative technology and the emergence of intricate global supply chains, enterprise resource planning (ERP) software was established as the go-to supply chain system of record for large companies. This worked well when the majority of supply chain data was housed within a single enterprise; now, as manufacturers become more concerned with the information that lies outside of their four walls, the need for technology capable of working across a network of trading partners becomes undeniable.

The performance of traditional ERP software can be enhanced, allowing it to adapt to new pressures in manufacturing. By plugging legacy systems into cloud-based, collaborative supply chain networks, companies can make astute decisions on how to choose production locations, manage inventory, and serve customers. Those that embrace this opportunity can remain competitive amidst volatile demand, fluctuating costs, and a torrent of new technologies promising to transform the industry in the coming years.

Extending the abilities of ERP accomplishes five major goals:

- It solves a problem that exists with EDI VANs wherein all trading partners are hardwired to each other through varied EDI standards and any changes to the connections are tedious, time-consuming, and expensive.
- It brings all of the supply chain data into a single location, normalizes it, and updates it instantly across a network of stakeholders.
- It pools resources and encourages collaboration among trading partners, leveraging the 80% of supply chain data that resides outside the four walls of a company and breaking them free of a silo mentality.
- It sheds light into the execution stage of the supply chain, where most manufacturers cannot see their in-transit activity and often lose crucial information on ETAs, order quantities, and inventory availability as a result.
- It promotes continuous innovation by allowing a trading community to crowdsource for best practices and share ideas for increasing efficiency.

Integrating cloud technology with an existing ERP system is faster and more economical than are previous solutions. In doing so, manufacturers can create a space for its trading partners to communicate over a cloud-based platform and reach new levels of agility in the supply chain.

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The New Manufacturing Playing Field is Vast, Complex, and Global

Manufacturers today are operating under a new set of rules. They are managing supply chains that are far more complicated and dealing with data sets derived from many trading partners and locations. These companies are being forced to reconsider their supply chain strategies as global conditions fluctuate and new technology becomes available.

Game-Changing Forces in Manufacturing

- Rising production costs
- Growth of emerging markets
- Complicated shipping routes
- Foreign regulation
- Continuous innovation

When companies began to move production offshore en masse in the early 2000's, it was a straightforward reaction to the considerably lower cost of producing goods in newly attractive — most often Asian — regions. Tax regulations, subsidies, and cheap labor contributed to the establishment of these countries as the new hot-spots for affordable manufacturing.

Today, the basis for most global manufacturing decisions is more diluted. China's production costs are rising, and many companies are choosing to relocate to ostensibly cheaper areas. At the same time, supply chains are growing in complexity and the future of the global economy is unclear. Companies must factor in more than labor rates and raw materials; they must run intricate analyses to choose the most cost-effective manufacturing footprint, balancing the need for cost reduction with supply chain efficiency and customer service.

Production decisions are only half of the story. Emerging markets now present an ample opportunity to the agile manufacturer — growth in developing countries is creating a bulk of demand for products that were once reserved for first-world markets. While selling in these regions presents its own set of challenges (e.g., restrictive import taxes, sloppy distribution networks, and political instability), their growing middle classes and young populations present a huge opening in the competitive playing field for companies that can conquer supply chain challenges. Customers in these developing regions expect a quick time to market at an affordable price; manufacturers must reconsider sourcing locations and segmentation in order to shorten cycles and give customers reasonable delivery time and product availability.

The only way to make informed decisions in the midst of these newfound global supply chain complexities is to amass and share data from outside a manufacturer's four walls — from its trading partners — and use it to reach superior levels of supply chain agility. This can be done by extending existing legacy systems with cloud-based technology.

A Peek into the Future

Robots? Artificial intelligence? 3D printing? Nanotechnology? Time will tell which of these rapidly developing technologies will have the greatest impact on manufacturing, but what lies ahead is a major shift in how and where global manufacturers thrive. Foxconn has already announced a plan to replace its Chinese laborers with one million robots; sophisticated objects can now be created without skilled factory workers. One thing is certain — manufacturers must be wired for radical change.

Source: "The End of Chinese Manufacturing and Rebirth of U.S. Industry", Vivek Wadwa, July 2012

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Step 1: Getting the Right Gear — Knowing the Limits of ERP Systems and Extending them with Cloud

Understanding the Traditional ERP Footprint

ERP software has commonly been an efficient way to manage data within a single enterprise. With ERP, data flows back and forth between the company's various locations through a hardwired connection.

If asked to sketch out their ERP solution, most corporate IT departments will evoke an image of a single, global solution. Delving deeper, however, one might find a complicated footprint marked by several software packages and many EDI standards. This is often the result of a multi-year rollout plan coupled with the inevitable acquiring and divesting of plants; changes can require many months of adjustments.

FIGURE 1: The traditional ERP footprint can be inconsistent and inflexible.



ERP Shortcomings: M&A and the ERP Catch-Up Game

A company has 47 sites around the world that operate on five different versions of its ERP system. IT plans to have all sites on one ERP system in three years, but has hit some road bumps. Recently, the company acquired 13 plants in Asia that are currently running two different ERP systems and plans to cut them over to the corporate ERP system within the next two years. The company has divested four plants in Europe, but keeps them in its network as vendor supplied inventory locations although they no longer share the ERP backbone. It also has nine joint-venture sites that will never be part of its ERP implementation but which are watched carefully by executives because those markets are where all the new revenue, margins, and profitability will be coming from. The company has no access to any of the information in those systems except through monthly and quarterly reports. As the state of the company's corporate footprint changes, it must adapt the value chain quickly so it can plan, monitor, and measure results — by integrating its existing ERP systems into the cloud.

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EDI VANs and the Missing Pieces of the Supply Chain Puzzle



Cloud takes data from each participant on the network, normalizes it, and links it to create a hyperconnected group of supply chain partners.

For nearly forty years, companies have been buying business software and electronic data interchange (EDI) enablement technology to help them connect the dots. EDI VANs enable secure and robust electronic file exchange between partners, but they have left the heavy lifting of rationalizing, linking, and creating a complete supply chain picture to each and every one of the many stakeholders in a modern commerce network.

These technologies, which began their life before the internet was born and well before business outsourcing and globalization became all-defining mega trends, have proven inadequate in giving companies visibility and control over the hundreds of vital business processes that will make or break them in the new era. Without a network in the cloud, the view of the supply chain will always be incomplete.

Step 2: Implementing Cloud Technology — the Superfuel that Yields an Agile, Competitive Supply Chain Platform

Most manufacturers need to be agile, responsive companies. They require the ability to scale up, switch partners, change sourcing and selling regions, respond to disruptions, and segment their supply chain strategies based on individual product lines.

Cloud Seamlessly Shares Data across a Trading Community

When an ERP system is coupled with cloud technology, the combined solution brings about a radical breakthrough in tackling data and visibility voids. It allows data from the ERP system to be normalized and shared across a network, inverting the traditional EDI hub equation by moving the data processing and linking logic from the spokes to the central hub itself — from this, the entire value chain community gains a single version of supply chain truth. Data is no longer lost outside of the four walls of the enterprise; it is shared, and updated, across a collaborative supply chain platform.

Cloud Acts As a Control Tower for Supply Chain Activities

Stakeholders in lengthy, global supply chains need a single technology to automate dozens of interlinked commercial processes like purchase-to-pay, order fulfillment and logistics, transportation planning and execution, and global inventory control. The only way to achieve this kind of command over supply chain activity is through cloud-based collaboration platforms; they not only serve as the means by which companies rapidly exchange detailed, high quality data with their external partners, they become control towers that enable rapid sense and response activities across the broader business network.

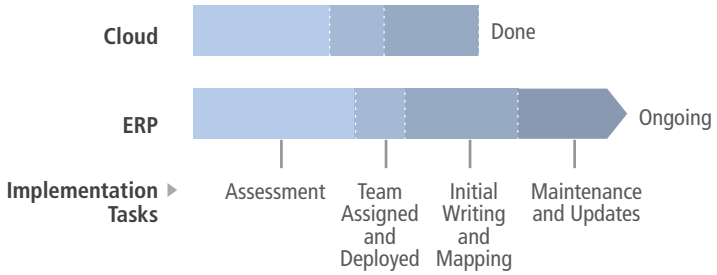
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Cloud Implementation is Cheaper and Faster

Because cloud services are pay-as-you-go — with monthly subscription fees taking place of heavy, up front investments and major capital outlays down the road for maintenance and upgrade costs — many companies are turning to this technology as a way to extend the usefulness of their ERP system. According to IDC Research, cloud spending by today's IT leaders is expected to increase over the year for 63% of the survey's respondents.[1]

Cloud technology can also be implemented more quickly. While ERP implementation can take years, followed by continuous maintenance and updates at the cost of the manufacturer, the process of connecting a company's existing software to a cloud-based solution is relatively easy. The physical rigidity of ERP systems is replaced by an easily scalable, up-to-date network that can adapt quickly to changing supply chain requirements.

FIGURE 2: ERP vs. cloud implementation timeline



Step 3: Working Together — Leveraging Data from Outside the Four Walls with an All-Star Team of Trading Partners

An estimated 80% of supply chain data today is created and housed by organizations outside of the manufacturer's four walls. A far cry from the industry of decades ago — where a company built, shipped, and sold over a simple roadmap and owned most of the equipment and labor involved — the modern enterprise operates as a network of companies and often outsources major business operations such as procurement, manufacturing, logistics, financial settlement, and IT. Fortunately, the arrival of cloud-based technology provides a way to collect and share data from these various organizations and use it to answer all of the questions a manufacturer should be able to answer regarding its supply chain.



Cloud takes the data from the ERP system and extends it into the collaborative network — along with all of the data outside the four walls.

[1] IDC Research Cloud Computing Survey, 2012

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TABLE 1: In today's supply chain, crucial data comes from many sources.

TRADING PARTNERS	DATA THEY CONTROL	QUESTIONS IT ANSWERS
Suppliers	• When inventory is assembled, shipped, and expected to deliver • Information on SKUs and product counts	• Does the incoming shipment match the PO? • Is the product coming on time?
Carriers	• Completion of milestones • Location of in-transit shipments • Passage through ports and customs	• How do the carriers perform against each other? • How often are on-time, in-full shipments delivered?
3PLs	• Time, location, and contents of their shipments	• What is the potential for collaborating on partial shipments and other logistics operations?
Consolidation centers	• Arrival of shipments to center • Quantities being packed into outgoing truckloads	• How will other inbound shipments affect delivery to a particular store?
Customs	• Taxes or fees paid at borders • Regulatory requirements • Documentation	• How will costs at customs affect total landed cost?
VMI warehouses	• Arrival of shipments to the warehouse	• How are the vendor-managed products affecting the other product lines?
Contract manufacturers	• Information affecting the total lead time of the end product	• Are component parts going to affect the manufacturing date?
N-tier suppliers	• When inventory is assembled, shipped, and expected to deliver	• How much lead time will need to be added to total manufacturing time?

Step 4: Finishing the Last Lap — Visibility through the Execution Stage

The last stretch of a product's journey is often shrouded in darkness. An enterprise's planning strategy will cover a large portion of the route, driven by a complicated formula based on expected demand; however, if the formula proves to be inaccurate, little can be done on the execution side to meet unexpected requirements.

After a company's ERP system loses visibility — and before the shipment reaches the buyer's loading dock — several data points are missing. A carrier may arrive at several ports with no indication as to whether it passed customs with the correct documentation and without paying excess fees. Goods may be damaged or lost. Inventory counts elsewhere may not include the in-transit items only days away from arrival.

Cloud bridges this information gap by providing real-time data on in-transit milestones and updating it instantly across the trading network. Partners are kept in the loop on all disruptions or changes in supply chain activity, allowing them to adjust their strategies accordingly.

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Execution data is especially meaningful when dealing in emerging markets. Planning cycles for foreign investment are often as short as one to three years, and complex scenario planning can only account for so much of the demand in a new region. As manufacturers react to changes in the competitive environment by entering new or developing regions, they must launch products with little or no information on past sales. When sales and operations planning becomes unsuitable for a company that is running solely on an ERP, it can plug into the cloud to gain a better understanding of the uncharted territory.



Cloud extends the ERP system's planning abilities into the execution stage, where quick judgment calls based on real-time visibility data can save millions in revenue.

Cloud Saves the Day in Emerging Markets

A company currently manufactures tablets in Chongqing, China and believes there is a viable consumer market for the product in Brazil at a retail price of $300. They calculate demand based on per capita GDP growth, median income, internet connectivity, and availability of comparable products. They put in a blanket order of 500,000 tablets at a cost of $200 a piece to serve the new market for the year. However, three months in, they realize that the high theft rate in the region discourages people from carrying tablets; instead, consumers opt for a larger home computer or smaller mobile phone.

Now, 125,000 tablets for Q2 have just shipped for Rio de Janeiro while 115,000 still sit untouched on the shelves, unlikely to move anytime soon. Does the company use dynamic, real-time data to reroute them to another market and sell them at a profit of $12.5 million? Or, do the tablets arrive in Brazil and gather dust until they become obsolete, costing the company $37.5 million in lost revenue?

It all depends on whether the company has extended its ERP system into the cloud.

Step 5: Continuously Innovating to Remain Competitive

On a cloud-based trading network, participants can share best practices, normalize data, and come up with new supply chain efficiencies that are instantly shared across the platform. This is the "network effect" — that is, the exponential positive effect a process improvement can have on the efficiency of the entire network.

By extending their ERP data into the cloud, manufacturers have the opportunity to benefit from process improvements made by their partners and help to establish better community standards. Some examples of innovation may include the following:

- Setting milestones at which partners must mark shipping events (e.g., leaving a port, passing through customs, arriving at a warehouse)
- Creating standards of excellence to weed out the best- and worst-performing suppliers
- Collaborating horizontally to optimize shipping costs
- Collecting data that enables the segmenting customers by their varying need for quick delivery, consistency, affordability, and quality (and choosing suppliers and manufacturing locations accordingly)

In order to become leaders in their industries, manufacturers must maintain a strategy of constant improvement and innovation — these efforts will only be supported by collaboration in the cloud.

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A Winning Combination

ERP software is essential in managing internal business processes. Cloud platforms are indispensable in managing a global network of external trading partners. They were born of a different era and built on different assumptions; however, when bound together, they create a centralized supply chain nervous system that can process huge amounts of data and bring to the forefront a clear picture of global logistics activity.

Manufacturers must embrace the evolution of cloud technology if they want to make the ample improvements necessary to compete in this dynamic, increasingly complex industry. Cloud-based supply chain networks provide a way to take the functions of legacy ERP systems and extend them in a way that facilitates collaboration across an entire community of trading partners; paving a way to prosperity in the elaborate, highly technical future of global manufacturing.

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