Building Business-To-Business Supply Chain Networks

How Do I Choose a Solution? Who Are the Players?

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By Lora Cecere

Founder and CEO
Supply Chain Insights LLC

Supply Chain Insights™

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Research

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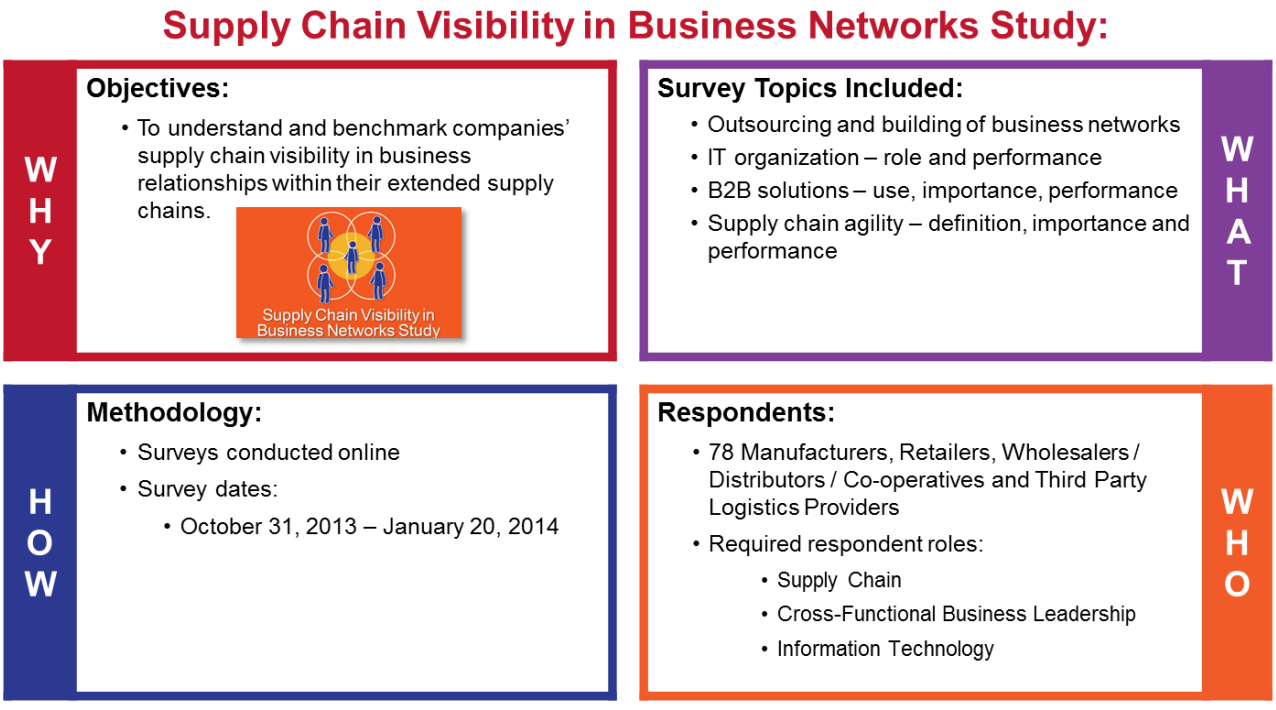
Disclosure

Your trust is important to us. As such, we are open and transparent about our financial relationships and our research processes.

Research Methodology and Overview

This report builds on a study completed by Supply Chain Insights in January 2014. Here, we use some of the research from the quantitative research project outlined in this Overview graphic:



Source: Supply Chain Insights LLC, Supply Chain Visibility Study (Oct 2013- Jan 2014)

This report enriches these findings and outlines options for B2B network connectivity based on interviews with B2B network solution providers. To be included in this report the solution needed to have an integration layer, a set of applications, an associated community, and to be actively used in the improvement of supply chain processes.

Executive Overview

Today, supply chains are networked. They are not linear. Instead, there are interdependencies with outsourced contract manufacturing companies, third-party logistics providers (3PLs), freight forwarders, and transportation providers. While our relationships are outsourced, our information technology systems are not. Companies have automated the enterprise; but the automation of the extended value chain remains an opportunity.

It is now possible. B2B network solutions are now in their second decade of maturity. Yet, only 7% of flows move through B2B networks[i]. They are maturing and should be considered as a part of a supply chain IT architecture.

Today, most of the networks depend on ad hoc, manual processes. Despite a decade of technology evolution on B2B connectivity, the majority of the flows in the extended network move through spreadsheets, email, and Electronic Data Interchange (EDI). As a result, as things change in the network, it is hard for trading partners to keep the information synchronized. It may be integrated, but it is not synchronized. Why? There is no network system of record. The flows are point-to-point. Data latency is high. As a result, when the data is received, it is often out-of-sync and out-of-date. The links are fragile. As a result, multi-party process automation is not possible.

Most companies know the problem, but they are confused on where to start to solve it. They lack clarity on three basic questions:

1. Why a B2B Supply Chain Business Network Solution versus EDI?
2. Why a B2B Supply Chain Business Network Solution versus ERP?
3. Which B2B Supply Chain Business Network Solution to use?

Answering these questions is the goal of this report.

A Look at History

Over the last decade, connectivity, the internet, and new applications coalesced to drive ecommerce. It was transformative. Selling online to either consumers or to businesses grew at a rapid pace. Ecommerce spawned a new industry and new business models.

The world of B2B network automation is not so rosy. The landscape of business-to-business connectivity is a different story. The automation of business-to-business workflows, data sharing, and shared processes has stumbled despite six decades of evolution. Here is an overview:

1960's: Electronic Data Interchange, the workhorse of the extended supply chain, was defined by the railroad industry in the 1960s. This integration was point-to-point. Each company managed their own file transfer and transformation. There was little standardization.

1990's: Emergence of Value-added Networks (VANs). These solutions used internet-based protocols (HTTPS, AS2, EDIINT, and RNIF) and adopted industry standard XML business transactions (CIDX, Rosettanet, PIDX, VDSA) to streamline and improve B2B connectivity. The services of transport and transformation were outsourced to a service, but they remained point-to-point. Each industry developed unique standards. These were a barrier to the development of collaborative applications.

2000's. At the dawn of this decade, we saw the rise of the first generation of B2B marketplaces. Over 300 marketplaces emerged. Ninety-percent of the offerings disappeared. There were many issues. The solutions were overhyped beyond the capabilities of the technologies. Aspirations were high and capabilities were low. As a result, three things happened:

1) Value-Added Networks (VANs) Outsourced Services Emerged: To enable B2B connectivity in the face of Enterprise Resource Planning (ERP) expansions, many VANs started to offer EDI outsourcing programs. This was very attractive to companies moving through merger & acquisition (M&A) activity or doing major system upgrades.

2) VANs Consolidated: The VAN market consolidated. IBM purchased Sterling, and GXS purchased Inovis. In parallel, more affordable options like Datalliance, Descartes Systems Group, and SPS Commerce entered the market offering industry-specific, lower-cost EDI alternative services.

3) B2B Networks Limped Along on Life Support. A few first generation B2B networks survived. Making it through this decade as a B2B network for supply chain was a major feat. Many of the solutions that made it through the transition look very different today than they did in the beginning of their life cycle.

2010. In this decade, the B2B Supply Chain Business Network Solutions were redefined. This included interface reusability, canonical data models at the integration layer, multi-party applications, industry-specific multi-tier analytics, and community onboarding services. In these new B2B networks, supply chain visibility was expanded from transactional to process-flow visibility. In parallel, new technologies—cloud and non-relational databases—enabled greater speed and capabilities.

The hype is gone. A new dawn is emerging. B2B Supply Chain Business Network Solutions are now maturing. Solutions are evolving and new capabilities are possible. It is the goal of this report to help the supply chain business leader understand the options and capitalize on this evolution.

B2B Networks and Supply Chain Visibility

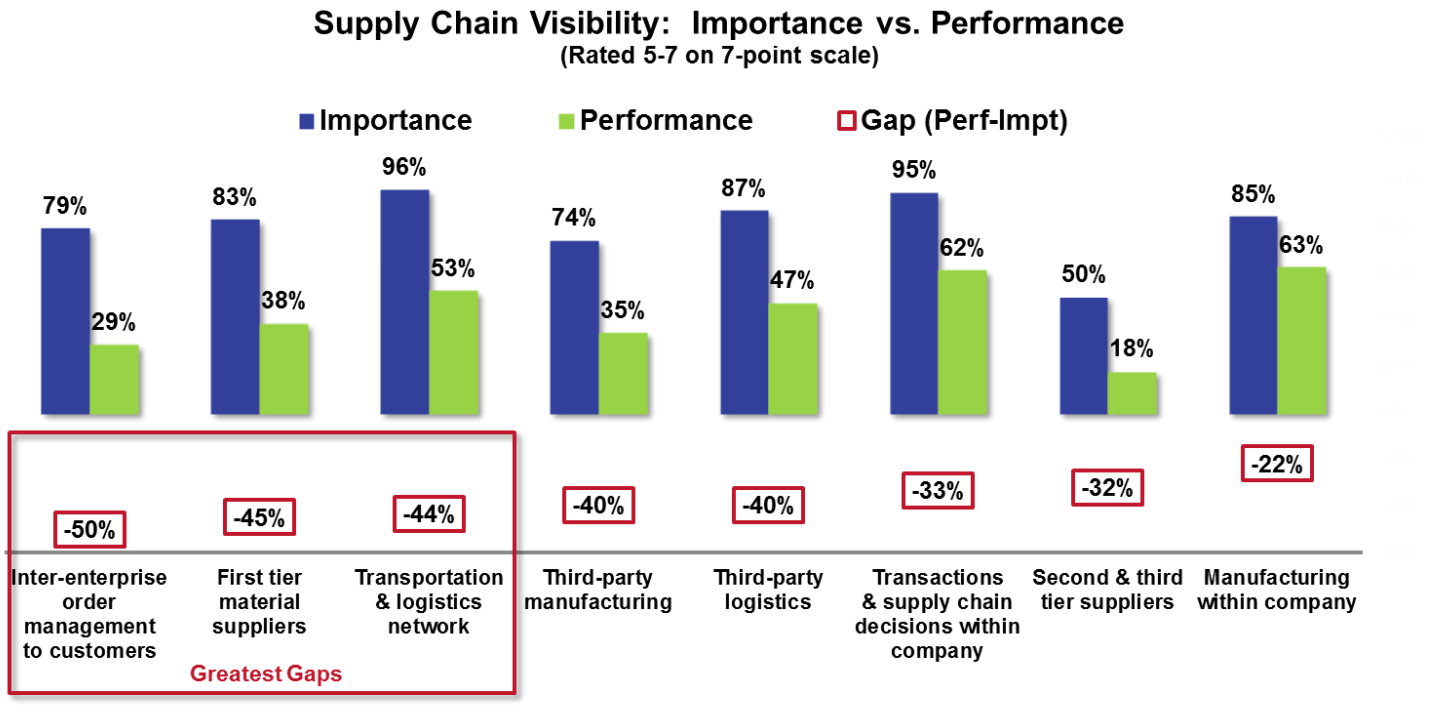
Often the quest to build supply chain visibility in the extended network will drive companies to consider B2B Supply Chain Business Network Solutions. When you say “We need supply chain visibility,” all of the heads in the room will nod yes. It is something that everyone can agree that they need; however, defining it is a different story. The term “supply chain visibility” lacks a common definition in the market with many technology providers offering some flavor of a solution.

The pure-play supply chain visibility market has been problematic. The term “supply chain visibility” goes through five year cycles. In the cycle, it was overhyped with a series of new Best-of Breed (BoB) solutions launched. Historically, the market has been boom and then bust. The companies fold due to the lack of technology to support the vision. Now, the technology is closer to delivering on the promise and dream of the supply chain leader. The many versions of “supply chain visibility” solutions cloud the market. However, it should not stop the promise of B2B business networks for supply chain.

There is a need for enterprise visibility. Today, in the market, supply chain leaders have large gaps between current levels of visibility and the requirements to support their global plans[ii].

The average company operates in a heterogeneous technology environment. They have a need for visibility across instances of ERP (the average company has four instances). There is also a need to have visibility across multiple systems to synchronize manufacturing and procurement.

Figure 1. Supply Chain Visibility in Business-To-Business Networks: Gap Analysis



Source: Supply Chain Insights LLC, Supply Chain Visibility Study (Oct 2013- Jan 2014)
Base: Manufacturers, Retailers, Wholesalers / Distributors / Co-operatives and Third Party Logistics Providers – Total (n=78)
Q15. Please think about supply chain visibility. How important is it for your company to have visibility of the supply chain in each of the following areas? SCALE: 1=Not at all important, 7=Extremely important
Q16. How well do you think your company performs on having supply chain visibility in each of these same areas? SCALE: 1=Poor, 7=Excellent

In addition, there is a need for inter-enterprise visibility or supply chain synchronization across trading partners. This need comes in many forms. It includes visibility across multiple tiers of suppliers, logistics providers and contract manufacturers. It can be one-to-many or many-to--many. As shown in Figure 1, the average company today has greater visibility within the enterprise than outside the enterprise. The gaps are high. The business pain is rising.

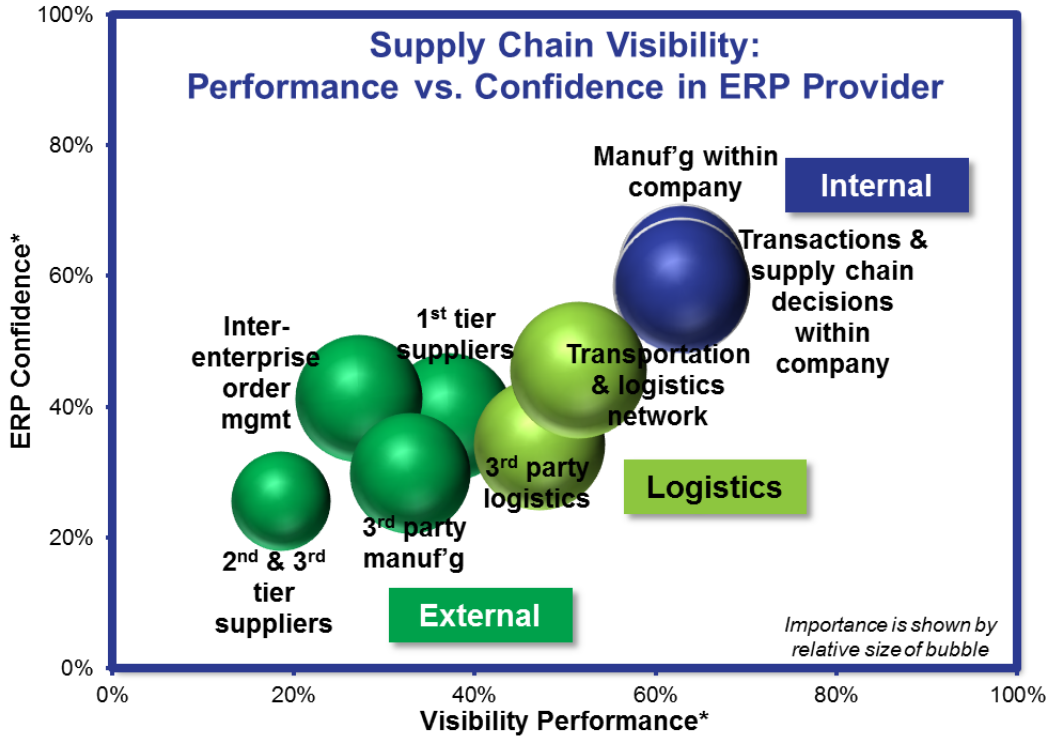
One of the gaps that companies have in selecting a system is not being clear on the definition. The first step is to identify what the company is seeking in a “supply chain visibility” solution. The term is bandied about without a clear meaning. As a result, many companies do not close the gaps as outlined in Figure 1.

Supply chain visibility is one of the clear value propositions of B2B Supply Chain Business Networks. It is a core and foundational element, but the solutions provide much more, including collaborative analytics and processes. Each of the solutions outlined in this report provides supply chain visibility.

The time is now to adopt B2B business networks for supply chain visibility. Why? The solutions are maturing and supply chain leaders have given up on getting supply chain visibility from Enterprise Resource Planning (ERP) providers. While this was the promise and belief a decade ago, as the

reader can see in Figure 2, these hopes have waned.

Figure 2. Supply Chain Leaders Belief That Supply Chain Visibility in the Extended Network Will Come from ERP Providers



Source: Supply Chain Insights LLC, Supply Chain Visibility Study (Oct 2013- Jan 2014)
Base: Manufacturers, Retailers, Wholesalers / Distributors / Co-operatives and Third Party Logistics Providers – Have ERP System (n=70)
*All measures based on those rating 5-7 on a 7-point scale
Q15. Please think about supply chain visibility. How important is it for your company to have visibility of the supply chain in each of the following areas?
SCALE: 1=Not at all important, 7=Extremely important
Q16. How well do you think your company performs on having supply chain visibility in each of these same areas? SCALE: 1=Poor, 7=Excellent
Q17. How confident are you that your ERP provider can give your company the supply chain visibility it needs in these same areas we asked about before?
SCALE: 1=Not at all confident, 7=Very confident

Within an organization, there is tension. Many companies are deploying multi-year ERP initiatives. The cost is large. As a result, the IT team is strapped for money and resources to help the supply chain leader move forward on B2B solutions. IT budgets are being cut, and the focus is on maintaining existing systems and finishing-up the ERP deployment. The IT team has little knowledge of B2B solutions and while they would like to help the supply chain leader, their hands are tied. As a result, the supply chain leader must make the business case to deploy the solution, often without IT support, at a time when all budgets are tightening.

The first question that the supply chain leader is asked when looking for funding for a B2B solution is "Why not get it from the ERP provider?" The awareness of alternatives at the executive level is low, and many companies feel that continued investment in ERP will be the answer in the long-term to build a business network. They are not aware of the sentiments in Figure 2.

In addition, the awareness of B2B Supply Chain Business Networks is also low in the system integrator community. These firms have made their money over the last decade on the implementation of ERP solutions. These deployments have been long and deployed many resources. Now that there are fewer ERP deployments, the market is more competitive with more and more consultants fighting for a smaller piece of the ERP deployment market. They have not shifted focus yet to understand the greater world of B2B supply chain visibility solutions. Yet, they have strategic relationships with many companies. As a result, there is a greater onus on education from the supply chain leader in the company to help executive teams understand the changing landscape.

So, what should companies do? There is much confusion. The supply chain leader needs to forge a direction. He needs to help the company understand when to source from ERP, when to use an EDI VAN and how to use B2B Supply Chain Business Network Solutions. To help, here we contrast the three options and outline seven differences between the alternatives.

One of the issues of the reliability of point-to-point integration of EDI VANs versus B2B Networks was summed up by an Ecommerce Manager in a large hospital:

"I used to use a Value-Added Network for EDI connectivity. Three years ago I switched. I will not go back. It is not about the money. It is about the stability of the connectivity. With EDI VANS, the links kept breaking. It was not deliberate, it just happened. A party would be working on an upgrade of their ERP system and, out of the blue, they broke the link. Keeping all of the links current and stable was a nightmare with an EDI VAN."

Ecommerce Manager, Large Hospital

EDI Value-Added Networks (VANs) Versus B2B Network Solutions

While EDI signals can be triggered from ERP systems (from inside the four walls to enterprise trading partners) to EDI VANs, this is very different than a B2B network in seven different ways:

Table 1. Characteristics of EDI VANs Versus B2B Networks

	Category	EDI Value-Added Networks	B2B Networks
1	**Data Management**	Point-to-point and one-to-one.	One-to-many or many-to-many based on the architecture.
2	**Flows**	One-way. Unidirectional and fixed.	Two-way and adaptive.
3	**Community Insights**	Low	High
4	**Collaborative Applications**	Low	High
5	**Community Analytics and Benchmarking**	Low	Emerging capabilities.
6	**Reliability**	Fragile links. Easily broke with ERP and software upgrades.	More durability due to the evolution of the canonical data models and business mapping.
7	**System of Record**	Point-to-point. No system of record.	While ERP serves as the enterprise system of record, there is a need to synchronize changes between trading partners and document agreements to ensure transparency and reliability.

Several ERP solutions have built B2B capabilities. The one that is the best known in the market is SAP SNC. In this solution, the messages of the enterprise are triggered from the company's ERP system and transmitted directly to the trading partner. The gaps with this approach are similar to the comparison with an EDI VAN.

While many companies have pushed information to enterprise portals, this also is insufficient. A portal is too passive and there is no system of record. As the data changes, there is no reference and context for the trading partner on the change.

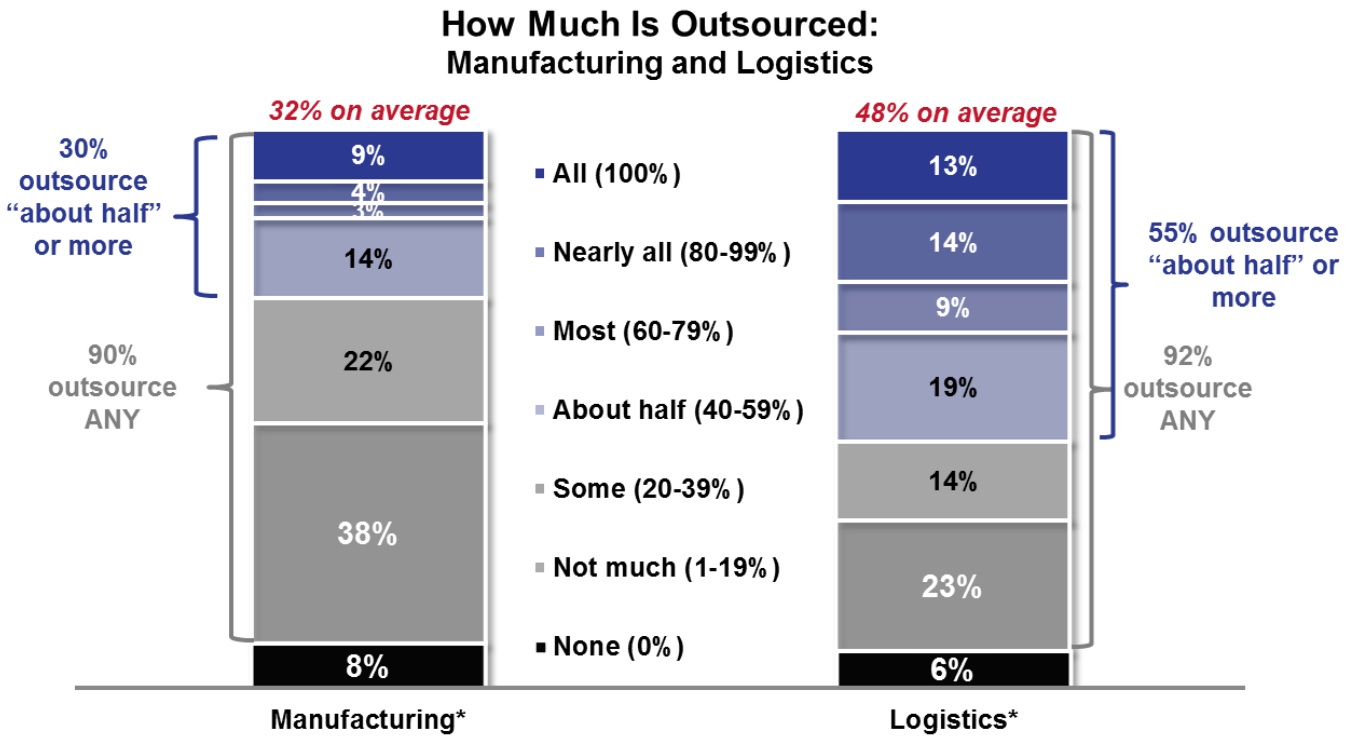
Why B2B Supply Chain Networks? Why Now?

Today, the supply chain is outsourced. It is no longer a chain. The flows are not linear or point-to-point. Instead, it is a complex network of many partners. The data flows are dynamic; but the

connectivity through EDI and ERP is static. Companies want to visualize changes, have a predictive signal to thwart issues before they happen and identify new opportunities.

Outsourcing is a reality. In our research, as shown in Figure 3, we find that the average company has outsourced 32% of manufacturing and 48% of logistics. The flows between the parties are not linear. They are complex and intertwined. The signals pass through multiple parties many times a day. The average purchase order changes one to two times. One supplier of parts to an industrial manufacturing company stated that they get 1800 spreadsheets from their customer with an average of five changes a day for each part for factory demand.

Figure 3. Outsourcing of Manufacturing and Logistics

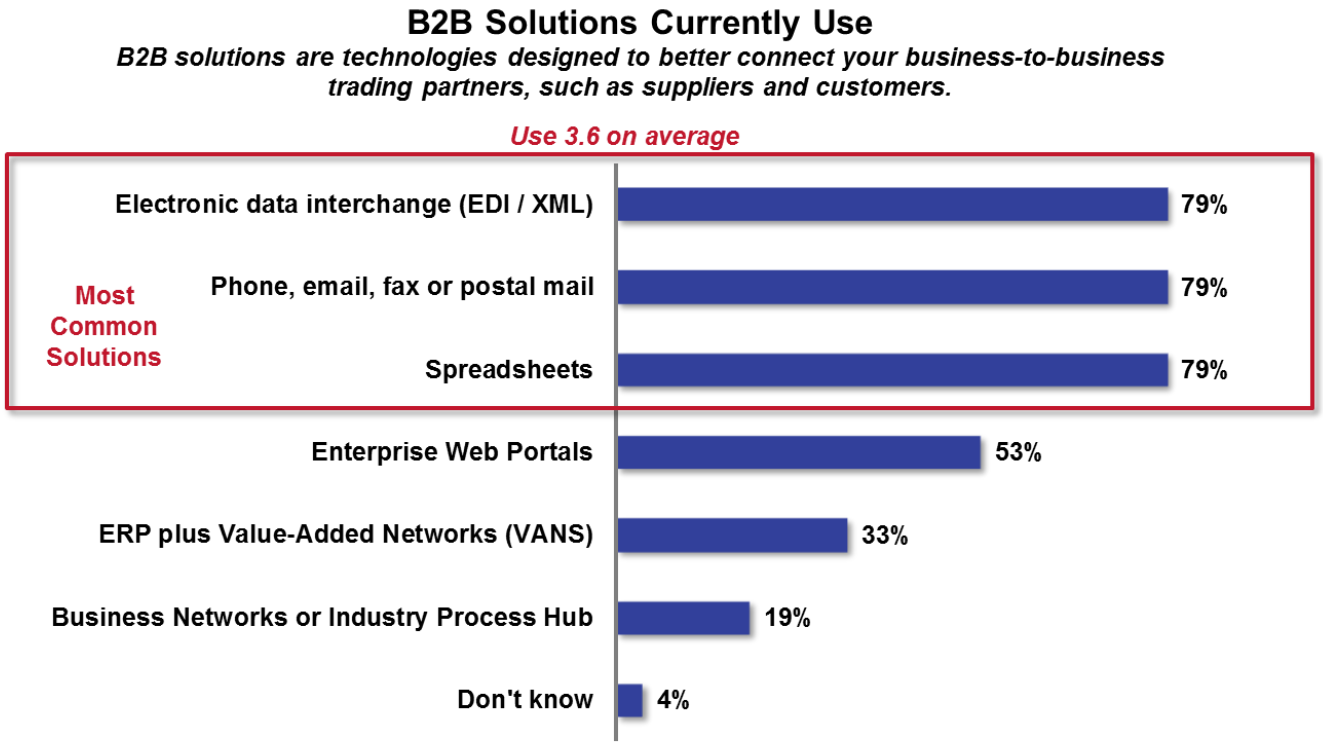


Source: Supply Chain Insights LLC, Supply Chain Visibility Study (Oct 2013- Jan 2014)
Base: Manufacturers, Retailers, Wholesalers / Distributors / Co-operatives and Third Party Logistics Providers – Total (n=78)
*Manufacturing: 3% answered "don't know" (not shown on chart); Logistics: 1% answered "don't know" (not shown on chart)
Q7. In 2013, how much of your company's manufacturing is outsourced? Your best estimate is fine.
Q9. In 2013, how much of your company's logistics is outsourced to a third-party logistics (3PL) provider? Your best estimate is fine.
For the purposes of this survey, a third-party logistics provider is a company that processes orders and ships goods on your behalf.

These relationships look different in each global region. There are few standards. The complexities are escalating.

The biggest driver for the adoption of B2B networks is the change in the clock-speed of supply chain information. While weekly information was sufficient in the 1990s, and daily data was adequate in the last decade, now there is a need for continual refreshes of daily data on an hourly basis to synchronize trading partner flows. ERP and EDI connectivity are not sufficient. Yet, as shown in Figure 4, the average network is held together by spreadsheets and EDI messages.

Figure 4. Current Level of Flows and Connectivity in a Business Network



Source: Supply Chain Insights LLC, Supply Chain Visibility Study (Oct 2013- Jan 2014)
Base: Manufacturers, Retailers, Wholesalers / Distributors / Co-operatives and Third Party Logistics Providers – Total (n=78)
Q37. Which of the following B2B solutions, if any, does your company currently use? Please select all that apply.

What Is a B2B Supply Chain Business Network?

A B2B Supply Chain Business Network technology provider is a company that provides solutions that enable a specialized set of bidirectional process and data flows to support supply chain synchronization between trading partners within a business network. There are many variants. These solutions are very process and industry-specific solutions. There is no one-size-fits-all solution.

Understanding the solutions is confusing, because they all use the same terms to describe different solutions. The industry lacks a standard set of terms and the multi-tier collaborative process evolution is also in its infancy.

A B2B supply chain network technology provider's solution has three distinctive layers:

1) Network Layer: The network layer houses the mechanics of the solution. This is the canonical data layer that enables trading partners to engage in the business network using many data and integration formats and translate them to others. Over the last decade, the solutions have become more flexible to enable multiple formats and protocols.

2) Application Layer: The application layer is where the magic happens. At this level of the business network, the parties are able to engage in multi-tier, multiple-party processes. Today, these processes are evolving; but the pace of development has increased in the last three years providing new and rich alternatives for the company today that did not exist a couple of years ago.

3) Community Layer: In the community layer of the B2B network, companies are able to see community analytics and benchmarking. In the future, these solutions will also offer social and relationship capabilities within this layer.

Each of the solutions available in the market varies in maturity on each of these layers.

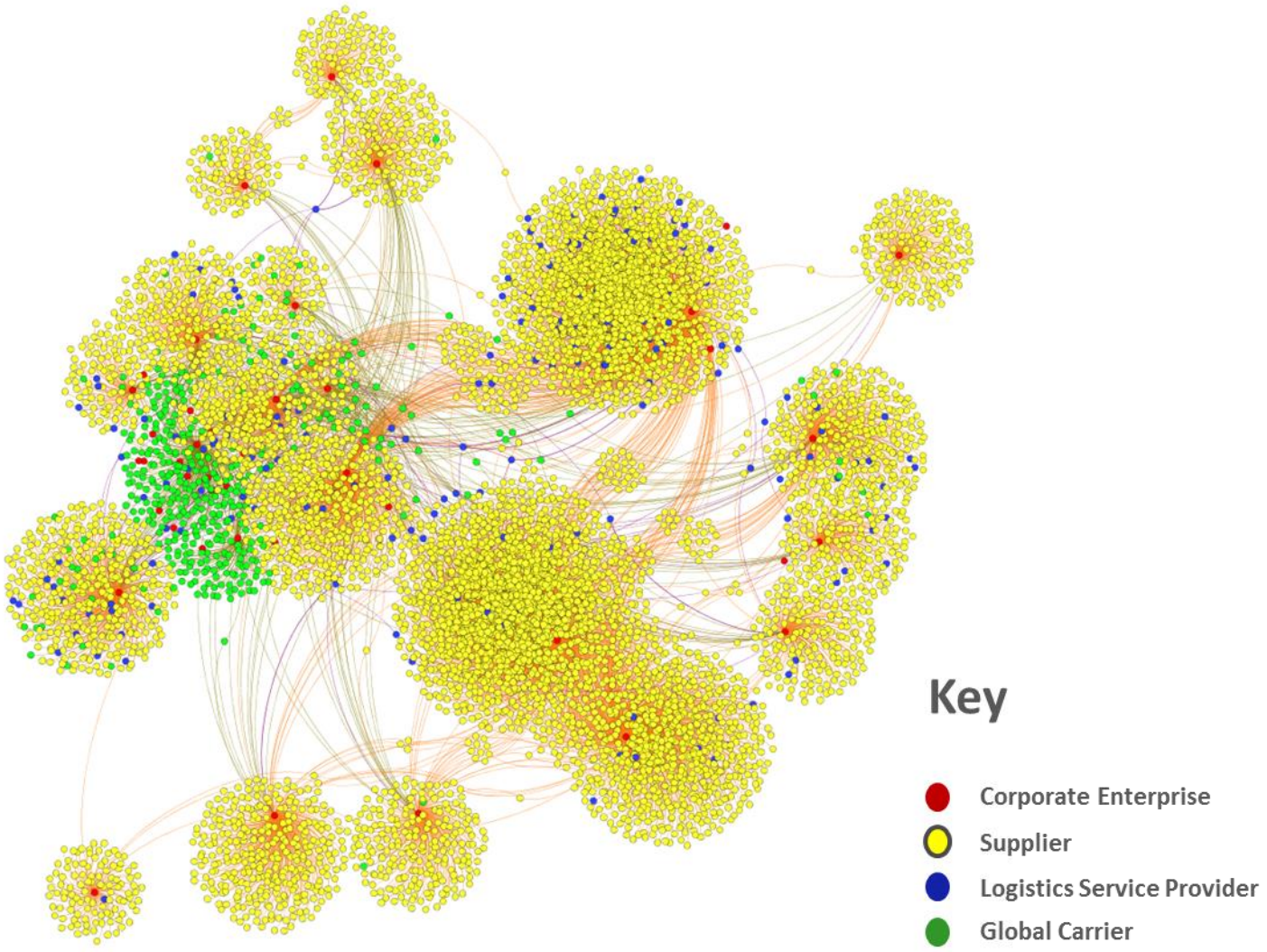
The solutions can be hosted or made available through Software as a Service (SAAS) models. The evolution of cloud computing and non-relational database architectures enables new capabilities that were not possible a decade ago.

One-to-Many: In a one-to-many model, companies are deploying private trading networks or hubs for themselves and their trading partners. These solutions center on a dominant trading partner with a focus on their interactions. The best known one-to-many trading network is Retail Link where Walmart is trading and sharing information with their suppliers.

Many-to-Many: In a many-to-many network, the solutions are intertwined and connected with many trading partners sharing information with many entities. These network solutions are more complex and offer more potential value.

What it is not: It is not an EDI VAN. It is not a private network. It is not an enterprise system. Instead, as shown in the GT Nexus representation in Figure 5, it is a series of complex flows between trading partner nodes. Most of our current supply chain deployments are enterprise systems with a one-to-one data model. Enterprise data models built on one-to-one deployments are not transferable to B2B networks. Instead, the solution needs to be built with the network and a many-to-many architecture in mind. The pictorial mapping from the GT Nexus network is shared to illustrate the complexity of the flows within the B2B Supply Chain Business Network providers.

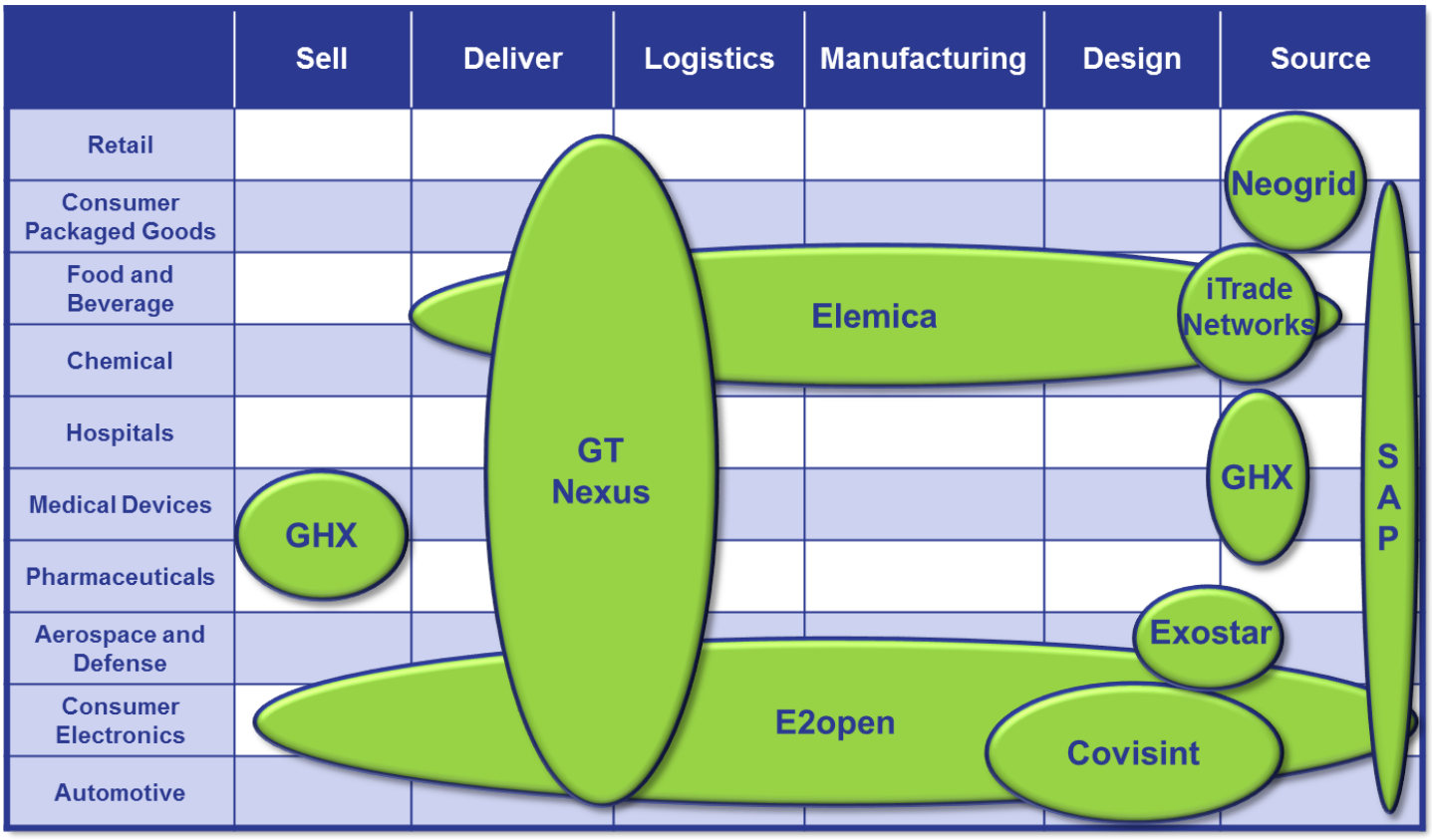
Figure 5. Network Flows within the GT Nexus Network



A Look at the Players

In the appendix of this report, we give an overview of 11 industry providers of B2B networks. The details of the solutions are provided. Note that these solutions are very industry- and process-specific. As a result, it is not uncommon for many companies to need to work with one to two of the providers listed in the appendix.

Table 2. B2B Solution Overview



While there are a lot of options for high-tech and electronics and healthcare suppliers, there are few solutions for consumer packaged goods companies. The reason why lies in the history of the market. The B2B Supply Chain Business Network Solutions that were financed by consortia funding by consumer products manufacturers (most notably Transora) failed in the market. We find it ironic that the industry that speaks the most about collaboration has been the slowest to build B2B Supply Chain Business Network Solutions.

Also note that the only ERP provider that is listed in Table 2 is SAP. Last year SAP purchased Ariba. Historically, the Ariba Network was a B2B network to facilitate the purchase of indirect materials. (Indirect materials and services are those that are not associated with the bill of materials in

manufacturing while direct materials are closely linked to the bill of materials for conversion.) While SAP is building future applications on the Ariba Network, today the primary use of the Ariba Network is for indirect material purchasing. Future releases are focused on the management of direct materials. It is not expected that SAP will be a major player in B2B networks for at least five years. The reasons are many:

Focus on Indirect. The Ariba functionality is an indirect purchasing model focused on RFX buying. The functionality has not been built to encompass direct materials. While SAP will state the solution does support the purchase of direct materials, and we do not find evidence of this in their references, the use of the solution for direct procurement is a stretch. Companies have used workarounds to make the Ariba network work for direct procurement, but they are not satisfied with the current capabilities for direct material purchasing in the network.

Multiple Objectives. Multiple Balls In the Air. SAP is still absorbing Ariba. There have been multiple leadership changes and evolutions of the management team. The company is still working on the road map that encompasses SAP SNC, the rewrite of SAP APO on Hana, the Ariba network, and the evolution of the HANA architecture.

Sales Focus. The SAP salesforce is an enterprise sales model. The sale of a network solution is a different model. This is a major transition for SAP.

For similar reasons, we do not believe that other providers like JDA, Kinaxis, Logility or Oracle will enter the B2B network market. Their data models are one-to-one and their business models are very fixed on a more traditional sales model for deployment.

A wild card in the market is the potential of the GXS VAN to redefine itself in the market with the purchase by OpenText. This happened in 2013. There is an unanswered question, “Could the cash infusion by OpenText redefine the GXS VAN to have B2B network capabilities?” The rhetoric is there, but the answer is unknown.

As a result, it is our recommendation for companies to partner with the B2B Supply Chain Business Network that makes the most sense for their industry and objectives.

Recommendations

To move forward, we believe that supply chain leaders need to task themselves with five actions:

1) Clearly Define Supply Chain Visibility. Using the framework in this report (as outlined in Figures 1 and 2), define what supply chain visibility means for you and your team. Use this definition to help prioritize next steps in selecting a B2B network provider.

2) Make the Case for Supply Chain Synchronization. Clearly define the difference between synchronization and integration. While many companies talk about the need for integration, most do not understand the difference between synchronization and integration. To understand the differences, trace the intricacies of your flows, and understand:

- How many times your purchase orders change to suppliers.
- Your forecast accuracy to suppliers.
- The frequency for routing and lane updates to carriers.
- The lead times and cycles for carrier commitments and firming-up contract manufacturing schedules.
- Number of flows through multiple parties (evaluate the number of simultaneous flows through 3PLs, transportation providers and contract manufacturers.)

3) Stabilize ERP. As companies build B2B networks and become more dependent on trading partner flows, it becomes more and more important to stabilize ERP investments. ERP is necessary as a transactional system of record for finance and human resource data, but do it once and well and move on. Multiple ERP upgrades drain resources and are an opportunity cost for the organization to absorb new and promising forms of B2B networks and advancements in analytics.

4) Educate the Organization on the Use of B2B Networks. This topic is new and evolving. It requires education. Most people within the organization carry an enterprise model that is inside-out when they talk about supply chain. Thinking of the supply chain as a business network with flows outside-in is a different data model requiring education and a gradual evolution of thinking.

5) Partner with the B2B Provider That Makes the Most Sense. The B2B solutions are evolving. They are maturing, offering new capabilities, but they need to be viewed as a

partnering opportunity. The greatest value will happen when lines of business leaders invest time with the providers to define new and promising collaborative applications and forms of analytics.

Conclusion

The supply chain is outsourced. We now need to provide the IT infrastructure to support it. What was not possible a decade ago is now possible. However, to take advantage, companies need to realign their thinking.

Appendix - Overview of the Providers

There are many B2B solutions. This is not an exhaustive list, but rather a survey of eleven B2B network solutions. Our goal is to enable manufacturers and retailers to find the best solution for them to build an extended value network.

1. Activ Technologies, Inc.

Website: www.activ-tech.com

Date Founded: 2007

Background Overview: Began as supply chain integration company focused on large aerospace customers.

Ownership Model: Private

Type of Network: One-to-many

Community Served: Aerospace and automotive OEMS and their suppliers. Limited community involvement (primary customer is Caterpillar.)

Business Model: Cloud-based monthly subscription service for both OEMs and suppliers.

Solutions Overview: Their product, Harmony, is a cloud-based product aimed at integrating manufacturers and their suppliers on a many-to-many system. Enables improved demand management and supplier visibility for all parties at a granular level on production execution, manufacturing schedules, and fulfillment capabilities.

Application Layer: Primarily defined for Brand Owners and their suppliers, the network enables multi-tier participant integrated-process scenarios to drive network fulfillment, multi-tier inventory visibility and plant capacity, helps to provide risk pooling and load leveling.

Strengths: Management team is small and focused on delivering community solutions. Well established in the aerospace and automotive space. Today's the solutions are focused on the translation and synchronization of demand and supply data. It is less about procurement and parts availability and more about manufacturing requirements in a multi-tier discrete environment. Solutions are evolving.

Considerations: Lacks the maturity of E2Open, but has a better price/point ratio. Company is small and has all of the considerations of a small company: nimble but an uncertain future.

2. Ariba - An SAP Company

Website: www.ariba.com

Date Founded: 1996 (purchased by SAP in 2012)

Background Overview: Founded with rise of the internet to move wasteful procurement practices into an online, collaborative environment.

Ownership Model: Subsidiary of SAP AG (NYSE: SAP)

Community Served: All industries with a focus on indirect procurement. Current community has 1.2 million members.

Type of Network: Many-to-many

Business Model: Subscription to core capabilities with option to add additional tools.

Solutions Overview: The established player in the indirect procurement market with some customers pulling them into the direct material network model. Ariba Business Network is on improving the efficiency of focused on source-to-pay and order-to-cash processes.

Strengths: Seen as a strategic asset by SAP and part of larger SAP ecosystem and emerging solution set. Ariba has the largest open network community of any other company in this report.

Considerations: SAP has a lot of piece parts to put together. The Ariba model is stronger on indirect than direct procurement and the SAP APO, SAP SNC, and Direct Procurement capabilities within SAP do not fit a network model well. Since the acquisition, there have been a number of reorganizations with several stops and starts. We believe that the company is four to five years away from building a network that serves the market in the traditional supply chain functions of sell, deliver, make or source (direct materials). At this time we believe that Ariba Network will be integrated with SAP SCM products.

Ariba will also enable supply chain collaboration with the integration of SAP Supplier InfoNet with the Ariba Business Network, which will increase visibility into shared risk; and new Network functionality for collaborative processes integrated with SAP SCM and Transportation Management modules (e.g., inventory and forecast sharing). It is estimated that this will be available in 2018. These more traditional SCM offerings will be made available via a cloud solution to allow many new customers to quickly take advantage of the strong portfolio of capabilities and expand their use.

3. Covisint

Website: www.covisint.com

Date Founded: 2000

Background Overview: Founded in 2000 by several global automotive manufacturers to create an industry exchange. The product evolved into a multi-tier cloud platform for multiple industries. It consists of messaging, and identity services. The company had an IPO in 2013.

Ownership Model: Public (NASDAQ: COVS)

Community Served: Predominantly Automotive, Healthcare, Energy, and Oil & Gas.

Business Model: Multiple pricing options including pricing based upon number of messages sent. Pricing available for both hub owner and endpoint connections. The community layer is subscription-based pricing based on the number of users.

Solutions Overview: Covisint offers a cloud services platform encompassing messaging, portal and identity management components. It is a cloud-based Service-Oriented Architecture (SOA) with an any-to-any orientation.

Strengths: The evolution of the Covisint platform was a bumpy road with many twists and turns. The company survived to become public. Along the way the business model has become more flexible and encompassing of other industries. The company now offers cloud-based solutions to industry providers needing to “privatize” user data. This work has evolved from the automotive “On Star” support model. Covisint is also doing business development in healthcare value chains to help companies gain an understanding of medical records.

Considerations: Covisint has evolved now to be more like a B2B service provider than a B2B network provider offering services to evolve private networks. They are included in this report because of their legacy and contribution to the automotive industry.

4. E2Open

Website: www.e2open.com

Date Founded: 2000

Background Overview: Founded as a private trading exchange for companies operating in the high-tech industry. Founders were IBM, Seagate, and Hitachi. The company was a pioneer in the evolution of Supply Chain Business Networks and is the only public, standalone company in this report. The architecture for Exostar is powered by E2Open.

Ownership Model: Public (NASDAQ: EOPN)

Community Served: The focus is primarily in high-tech & telecommunications, but the company is expanding into aerospace & defense, chemical, consumer goods & industrial manufacturing. The community has 122,739 unique registered users and 37,931 individual trading partners as of December 2013.

Business Model: Subscription **Type of Model**: Traditionally E2Open has operated as a one-to-many model servicing the high-tech and electronics industry. At one time, E2Open serviced 30 different communities. The current focus is moving to a many-to-many model. The company offers both private and public network options.

Solutions Overview: E2 Cloud Connectivity enables integration with partners of varying system and process capabilities in a cloud based network environment. E2 Process Management supports multi-tier processes throughout the supply chain including distribution, supply, outsourced manufacturing and demand on a canonical structure. E2 Planning and Response is focused on optimization. E2 Analytics is a new set of capabilities to enable cross-network performance management and reporting.

Strengths: E2Open is one of the most mature providers. With a strong client base in discrete industrial manufacturing, especially high-tech and electronics, the processes are well-honed for multi-tier material sourcing and commitment to build plans. The company offers unique capabilities in price masking, multi-tier direct material procurement, and manufacturing visibility. Functionality in distribution is more focused on inventory management and product visibility than routing and tendering and commerce.

Considerations: E2Open offers many alternatives in a confused market. The solution set proliferated, and is now being pulled back to drive a more standardized product offering in a many-to-many community. The company purchased SCM-ICON in 2013 and is adding planning capabilities to the product suite. The plan is to release an integrated suite in the fall of 2014.

5. Elementum

Website: www.elementum.com

Date Founded: 2012 (spun-off from Flextronics International Ltd.)

Background Overview: Incubated within Flextronics International Ltd. and spun into an independent company in February 2014.

Ownership Model: Private

Community Served: Currently expanding from Flextronics customer base.

Business Model: Pure software-as-a-service model priced per node.

Solutions Overview: Supply chain graph provided through a variety of mobile apps to track specific portions of the supply chain.

Strengths: Designed for mobile utilization and supply chain visualization, the company is actively working with 20 companies to develop solution for the high-tech and electronics industry. Future plans focus on automotive, healthcare and industrial value networks. There are currently four mobile applications—perspective, transport, exposure, and fulfillment—under development. The supply chain visibility solution is the most mature.

Considerations: This is a new solution into the market and should be considered as a co-development opportunity for companies using contract manufacturers.

6. Elemica

Website: www.elemica.com

Date Founded: 2000

Background Overview: Founded by 22 chemical companies including BASF, BP, Dow Chemical, E. I. du Pont and Shell Chemical.

Ownership Model: Private

Community Served: Process industries specifically chemical, tire & rubber, energy.

Business Model: One to three year contract.

Solutions Overview: Supply Chain Operating Network (SCON) is composed of three platforms: QuickLink, SmartLink, B2B Partner Discovery. QuickLink is the foundational network where SmartLink enables applications to use the shared data. Work is ongoing to develop predictive analytics tools within QuickLink.

Strengths: The Company has a strong focus on the process industry with strength of solution development for the chemical, rubber and plastics manufacturers. In 2013, the product was rewritten. The integration layer was redesigned to improve connectivity and onboarding and has strong backing on input on process development from their user advisory board.

Considerations: The new model has a robust canonical infrastructure with strong references. However, the rewriting of the application has slowed application development. The solution is stronger for transportation processes than those in sourcing or manufacturing.

7. Exostar

Website: www.exostar.com

Date Founded: 2000

Background Overview: Founded by five aerospace and defense companies.

Ownership Model: Private

Community Served: Primarily aerospace & defense but moving into life sciences and pharmaceutical

Business Model: Exostar focuses on one to-many deployments using the E2open platform

Solutions Overview: Supply Chain Platform focused on basic order management and the sharing of design documents.

Strengths: This is one of the only solutions that we cover in this report that is focused on the automation of design documents along with supply chain flows. There are five primary and well-established hubs. It is a standard application for A&D spare parts deployment.

Considerations: The Company also deploys private hubs for clients. This one-to-many deployment is the preference for Exostar. The Company is focusing on industries with deep needs for security clearance and proprietary data sharing. As a result, they are serving two dissimilar industries: A&D and pharmaceutical manufacturers.

8. GHX

Website: www.ghx.com

Date Founded: 2000

Background Overview: Founded by Johnson & Johnson, GE Healthcare, Baxter International Inc, Abbott Laboratories and Medtronic

Ownership Model: Private equity firm (Thoma Bravo)

Type of Network: Many to many

Community Served: Healthcare. The GHX network connects 400,000 unique trading partner connections made up of 6500 healthcare delivery organizations and 700 suppliers in North America and Western Europe. In the US, GHX connects more than 70% of acute care hospitals in the US with the suppliers.

Business Model: One-time integration fee and annual subscriptions for both suppliers and providers..

Solutions Overview: A canonical model that enables many-to-many interactions for a variety of document types. The focus is on the automation of procure-to-pay activities within healthcare. GHX is also building an inter-enterprise systems of record where authorized parties can publish and access shared and secure views of critical data for various purposes, including contract synchronization and the management of the implantable devices supply chain. GHX provides services to improve data synchronization between buyers and sellers to increase the number of touch less orders. GHX Health Connexion® is a certified Global Data Synchronization Network(GDSN) data pool.

Strengths: GHX serves the healthcare value network and through the ups and downs of the market has stayed true to its original mission. The product evolution is driven by an active advisory board of hospitals, Group Purchasing Organizations, and healthcare suppliers. The company also offers a value assessment tool to demonstrate how supply chain automation and data synchronization takes costs out of healthcare. This tool is helpful to users of the software to sell the concepts internally within the organization. With strong references, the goal is to automate EDI through GHX for the majority of healthcare providers in North America & Europe.

Considerations: This solution is applicable only to healthcare delivery organizations, their suppliers, and group purchasing organizations. The company currently operates different networks by geography. Recent reorganization efforts are targeted at consolidating the network into a global infrastructure. The Company is currently in a time of restructuring and client references report some issues with change of personnel and customer support.

9. GT Nexus

Website: www.gtnexus.com

Date Founded: 1998

Background Overview: Launched in 1999 in California and merged with TradeCard in 2013.

Ownership Model: Private

Community Served: All (focus on larger multinational companies). The focus of GT Nexus is currently on commerce: the combination of logistics and trade.

Business Model: Annual subscription.

Solutions Overview: GT Nexus is a comprehensive solutions offering for logistics with special capabilities for integrating financial supply chain into the physical orders and inventory management of the extended supply chain. The company has proven the model and has the advantage in transportation onboarding of having a deep community already on the community.

Strengths: Offers financial services angle to supply chain and ability to weld financial process into physical supply chain. The company has a strong base in logistics for 3PL providers and has global reach around the globe.

Considerations: The solution is best deployed for distribution-intensive industries. While it has deep commerce and financial capabilities, it is not as deep in procurement functionality as E2open or Ariba. The solution is a nice compliment to other network solutions that have more extensive solutions in manufacturing and procurement.

10. iTradeNetwork

Website: www.itradenetwork.com

Date Founded: 1999

Background Overview: Subsidiary of Roper Industries. iTradeNetwork was originally formed to improve the efficiencies of trade for perishable products. Over time, the product has become more comprehensive to include GS1 data pool and catalog services.

Ownership Model: Private

Community Served: Food industry (perishable products including meats, fruits and vegetables and flowers) including grocery retailers, distributors, restaurant chains and fresh shippers. With over 8,000 companies in 24 countries focused on the purchase and sourcing of perishable products in South America, Latin America, Australia, North America and Europe.

Business Model: Pricing varies by solution area. Models are based on pricing per user, volume based on unit flow, item count and the dollar volume of the products managed. .

Solutions Overview: Order Management and Procurement Management platforms with growing capabilities in analytical analysis.

Strengths: The focus of the iTradeNetwork is to remove complexity and cost from planning, sourcing, transportation and commerce from the sourcing of fresh produce and vegetables. The solution includes 50 services including data management, forecasting, logistics/shipment notification; sourcing and commerce. iTradeNetwork is a certified Global Data Synchronization Network (GDSN) data pool using GS1 standards.

Considerations: The iTradeNetwork uses Oracle, augmented with Teradata, as a primary database toolset. The canonical data model is not as robust as E2open or Elemica, but the process capabilities for the food industry are very mature. In addition, the product has strong onboarding capabilities for the value network with a strong community presence for the solution providers.

11. NeoGrid

Website: www.neogrid.com

Date Founded: 2003

Background Overview: NeoGrid originated in Brazil in 1999 and extended its network across the world by acquiring Agentrics in 2008, which was born from the merger of World Wide Retail Exchange (WWRE) and Global Network Exchange (GNX)

Ownership Model: Private

Community Served: Neogrid serves a community of 200 retailers and 300,000 manufacturers to share and collaborate on shipments and future demand. In the United States, the company is stronger in over-the-counter cosmetics and high-tech and electronics. The company is widely used in South America for fashion and apparel.

Business Model: Pricing model based upon number of connections, not volume of transactions.

Solutions Overview: Cloud-based Supply Chain solution platform.

Strengths: Neogrid is a solution for retailers to collaborate with their manufacturing suppliers. The solutions focus on the automation of data synchronization, vendor managed inventory, collaborative planning and sourcing. The parent company has a strong presence in South America and is working on the redefinition of the assets acquired through the Agentrics acquisition.

Considerations: The evolution of WWRE and GNX in North America was a turbulent and convoluted path. The solutions did not have the adoption rates or the backing of the large North American retailers and the solutions struggled before the acquisition of the company by Neogrid. The current focus is to redefine the platform and drive collaborative enablement. The company is completing a platform for a multi-tenant cloud environment termed NeoGrid PaaS.

Other Reports in This Series

This report is a follow-up report to two prior reports that examined the flows of the extended value chain. The purpose of this report is to outline the alternative solutions for Supply Chain B2B Networks.

Supply Chain Visibility in B2B Networks, published in March 2014

EDI: Workhorse of the Supply Chain, published in February 2014

About Supply Chain Insights, LLC

Founded in February, 2012 by Lora Cecere, Supply Chain Insights LLC is focused on delivering **independent, actionable and objective advice for supply chain leaders**. If you need to know which practices and technologies make the biggest difference to corporate performance, turn to us. We are a company dedicated to this research. We help you understand supply chain trends, evolving technologies and which metrics matter.

About Lora Cecere

Lora Cecere (twitter ID @lcecere) is the Founder of Supply Chain Insights LLC and the author of popular enterprise software blog Supply Chain Shaman currently read by 5,000 supply chain professionals. She also writes as a Linkedin Influencer and is a a contributor for Forbes. Her book, ***Bricks Matter***, (co-authored with Charlie Chase) published on December 26th, 2012. She is currently working on a second book, *Metrics That Matter*, to publish in 2014.

With over nine years as a research analyst with **AMR Research, Altimeter Group, and Gartner Group** and now as a Founder of Supply Chain Insights, Lora understands supply chain. She has worked with over 600 companies on their supply chain strategy and speaks at over 50 conferences a year on the evolution of supply chain processes and technologies. Her research is designed for the early adopter seeking first mover advantage.

Endnotes

[i] EDI Workhorse of the Extended Supply Chain, Supply Chain Insights, November 2013

[ii] Supply Chain Visibility in Business Networks, March 2014