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# Trading Partner Integration Centers

## The SaaS Model for EDI

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## Introduction

No one expects to hear earthshaking news about changes in business-to-business integration (B2Bi) on CNN or see feature stories about it in business journals. That's because there's been little visible movement in the nineties model since the dot.com bubble burst.

Before the bubble burst, companies performed their integration tasks by buying a B2Bi or an electronic data interchange (EDI) application, selecting a value-added network or a secure form of Internet transport, and staffing the function in-house. In later years, a number of companies reconfigured these elements into managed services solutions. Although the people and equipment moved, the basic approach to accomplishing B2Bi was fundamentally the same.

Today's marketplace has moved on. With business operations scattered around the globe, consumer packaged goods (CPG) firms now need B2Bi solutions that operate 24/7, can integrate trading and business partners regardless of location, and can meet the increasingly complex requirements of retail customers for status information from these partners. And they continue to need what they've always needed: a solution that runs reliably and can be fixed quickly and put back online fast when it breaks. Whether the B2Bi solution accomplishes this with flat files, EDI, or XML structure is unimportant.

The problem with the nineties model was that it didn't do most of these things well. And because it didn't change with the times, a new model, relatively ignored by the media, has emerged.

This new model has been given a variety of names. You may have heard it referred to as any of the following:

- Software-as-a-Service business-to-business integration (SaaS B2Bi)
- Software-as-a-Service electronic data integration (SaaS EDI)
- multi-tenant integration architecture
- trading partner integration centers (TPICs)

The forces that are driving the change from the old model are less subjective than its name. They are global and unstoppable.

- Global competition is continuing to exert downward pressure on operational costs, requiring companies to do more with less, to increase their focus on their core competencies and to outsource tasks not central to their competitiveness.
- The rush to outsource production and delivery of products is creating more business partners, domestic and foreign. These partners need to exchange order and supply chain information on behalf of suppliers with retail customers seamlessly.
- The trend of companies integrating via computers has resulted in an increased requirement by retail customers for more information from their suppliers and the suppliers' trading or business partners. They want this information faster, with greater accuracy, and more reliability.

These forces have made suppliers' task of exchanging product information with customers more complex and the cost of supporting it more of a liability — *challenges the old B2B integration models and in-house EDI software have not been able to meet*. As a result, demand for the new model is growing.

While businesses understand its importance to their business, most do not view B2Bi as a core competency. For this reason, they want their B2Bi operation to require minimal attention. Their problem is that a B2Bi operation is, by nature, resource-intensive.

So it should come as no great surprise that research has shown the new EDI model is likely to be an outsourced one.

Today's B2B integration or outsource EDI providers deliver their services in a variety of ways. Some providers reduce costs by maintaining staff in developing nations to support suppliers' in-house EDI applications. Other providers maintain each supplier's EDI equipment and staff in their own facility and perform a limited selection of tasks for their customers. A model commonly called "Managed Services" performs all conceivable EDI tasks on an outsourced basis, but like the above approaches, delivers the solution as a single-tenant application separately to each customer.

The model with the most momentum blends the benefits of multi-tenant, Software-as-a-Service (SaaS) technology *and* an outsourced staffing model to meet the new challenges faced by suppliers in today's market.

Suppliers need to assess which B2Bi model is robust enough to meet their needs now, as well as in the future. Understanding the shortcomings of the nineties model is key to understanding how the new model, implemented as trading partner integration centers (TPICs), represents a fundamental and inevitable evolution. This white paper presents this information and offers criteria for evaluating whether an EDI vendor is working within the old model or within the new one as a TPIC.

## The Problem: Software Packages and the Single-Tenant Strategy

Business-to-business integration in the computer age has never been easy. It was a complex, resource-intensive function even before globalization.

In the seventies, eighties and nineties, companies needing to implement EDI systems had few options other than installing and managing their own in-house systems. They used conventional EDI software packages like Sterling's GenTran or more modern B2B integration software packages from WebMethods or Tibco. These software packages were resource-intensive and had no efficient or cost-effective way of being shared with business partners. Moreover, they were used to produce a single solution for a single company (tenant).

Owning an EDI system is complicated. It requires expertise and attention to detail during both the initial setup and routine day-to-day processing. And it doesn't end there: an EDI system is in flux most of the time. Changes are often introduced when new trading partners are acquired, or when trading partners change or expand their EDI specifications. If a company chooses to operate and maintain an EDI system, it must acquire:

- computer hardware
- specialized EDI software
- communications networks, such as VANs, FTPs, and secure Internet connections
- staff to monitor and manage systems
- staff to program and maintain software components and mappings

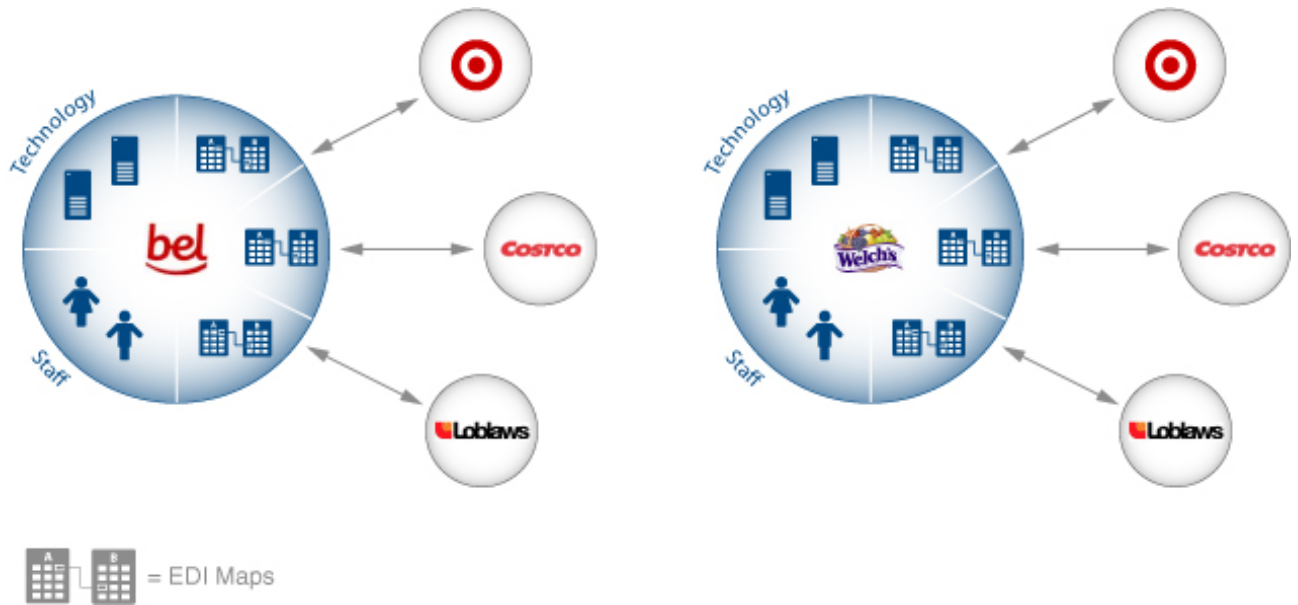
Put more simply, to operate an EDI system in-house, suppliers pay for hardware and software. They pay technicians to understand how computer systems work together and to make them work. They pay people to understand the supply chain process from the business perspective of each customer, supplier, and business partner. And when something goes wrong, the flow of information to and from their customer stops until their staff finds and fixes the problem – often jointly with their customer's IT staff.

This nineties B2Bi model has gotten the job done, but it has been inefficient in the extreme. The following example from the retail/CPG supply chain market illustrates this.

Let's say a large retailer, such as Target, is integrating with 2,000 CPG suppliers that provide many of the goods stocked on Target's shelves. Each of these CPG suppliers doing business with Target must pay staff to build and update the integration code – the mappings – that allows each supplier's computer to share information with Target's computers in conformity with Target's business rules. Each supplier's IT staff must analyze how to build the Target purchase order, the Target inventory exchange documents, the invoicing, and the shipping documents: all the transmissions that keep all parties knowing where orders, shipments, and products are at any time.

Once their integration with Target is up and running, the suppliers can't simply maintain what they have. When Target changes a business rule, each supplier's IT staff must respond by adjusting its software programs to accommodate the new business rule. If, theoretically, an error in a data file from Target causes problems in the supplier's data, then each supplier's IT staff must analyze and diagnose the problem, determine which system is at fault (the supplier's or Target's), and notify the customer's IT staff to modify their EDI map to reflect the new or updated business process.

At the end of all these processes, each map that each supplier's IT staff has produced to integrate with Target has been exactly the same as the maps produced by the IT staffs of other Target suppliers. Each supplier using either this old software model or an outsourcing model that builds each supplier's B2Bi application from scratch has invested in the same redundant undertaking: reinventing *the wheel for each of its retail customers*.



*CPG organizations have implemented unique B2Bi applications and mapping to comply with their retail customers' requirements, resulting in redundant EDI solutions across the industry.*

Suppliers that use managed services to perform their EDI tasks for them do not escape this redundancy. Their EDI vendors are still re-inventing, re-troubleshooting, and re-updating maps and passing on the cost to them.

This is the fundamental problem of the single-tenant approach: Whether the EDI application is located in-house or is hosted elsewhere, when an EDI operation or the associated programming and maps are constructed and maintained individually for a customer, someone is paying to reinvent the wheel.

This was not the first time business faced a problem of this kind. Companies in the eighties had a similar challenge with their payroll functions. The problem was this:

Generating paychecks in-house requires up-to-date knowledge of regulations, which are different from state to state and from country to country. This body of knowledge is specialized, detailed, and prone to change, like the knowledge of retailer business rules which their suppliers maintain today. Like EDI operations, payroll operations require hardware, software, IT expertise, and record-keeping. And like many of today's suppliers, eighties companies were duplicating each others' resources to accomplish the same thing.

A solution many companies found cost-effective was to outsource payroll to companies like ADP, which staffs the expertise on regulations and houses the IT equipment while spreading out the cost among its customers. This multi-tenant solution not only improved payroll processing, but also cost less to share the resources.

## The Solution: TPICs and the Multi-Tenant Strategy

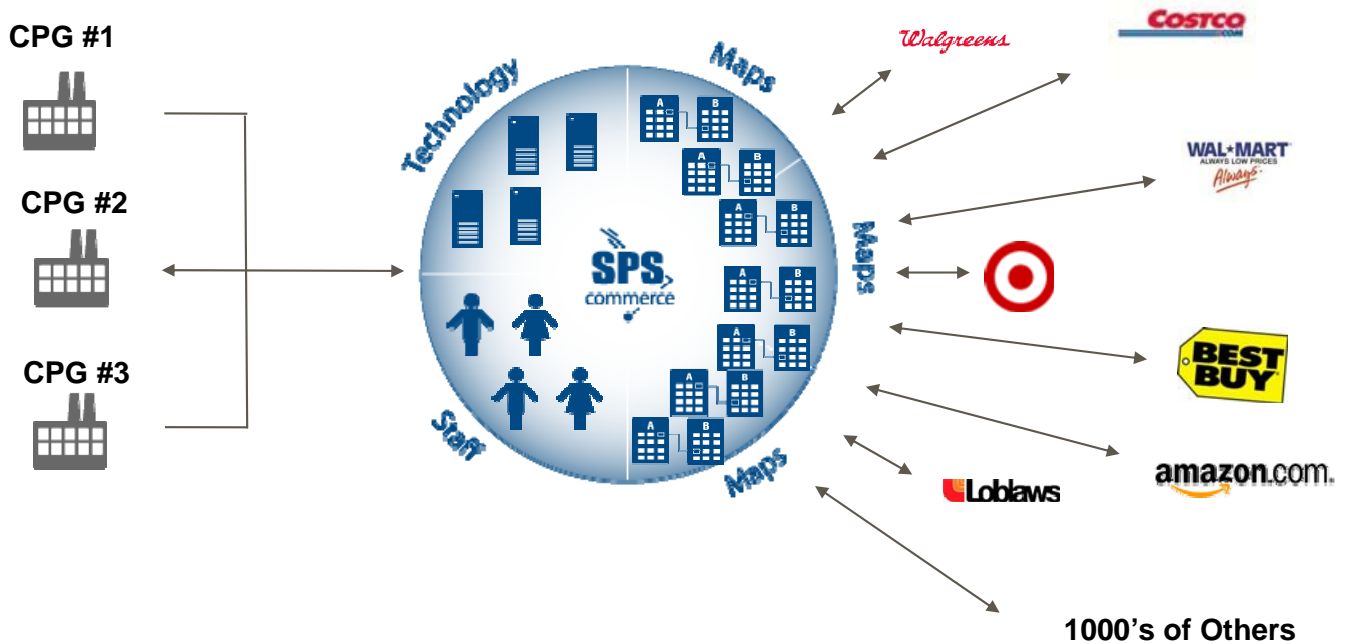
The new model for B2Bi, the trading partner integration center (TPIC), does the same thing with companies' B2Bi that ADP did with companies' payroll. Instead of building each client's B2Bi operation from scratch, a TPIC leverages the effort expended on one client's B2Bi operation into starting up and managing future clients' operations in approximately the same way. This multi-tenant strategy is what makes the new EDI model fundamentally different from the old model.

In this new model, a B2Bi outsourcing provider maintains a staff that knows the business rules of, for example, Target – as well as the rules of all the other retailers requiring EDI from suppliers. This staff builds the maps that integrate their computers with those of retailers. These maps are tested and debugged initially as they would be in the single-tenant model, but once this process is complete, the working map is reused for other tenants, sparing them the pain of development. Maps quickly become battle-tested and further debugged as they are used by tens, hundreds, and in some cases, thousands of suppliers every day.

As a result, a TPIC's maps are more reliable than maps produced under the single-tenant model, which are built for and used by only one supplier.

Being able to access working maps quickly is especially attractive to CPG suppliers who use a lot of them. Many have over 100 or 200 maps. A separate and different map is needed to conduct the required transactions of each customer. Additional maps are needed for each supplier's or business partner's transactions. Carriers, 3PLs, consolidators, and global sourcing companies also require maps.

A TPIC also maintains the hardware and EDI software and the IT staff needed to run them in a dedicated facility. When B2Bi application problems arise, the TPIC performs joint problem resolution with customers and trading partners. Then it passes on the cost savings realized by economies of scale to its customers.



*A TPIC reuses maps across all CPG manufacturers for greater efficiency, increased reliability and a lower cost of ownership due to economy of scale.*

A mathematician would describe this solution as “elegant.” Why did it take so long for it to appear?

In fact, precursors to TPICs began evolving quietly in the late 90s. Later when the dot.com bubble burst, hundreds of these small firms that were providing some combination of the above services survived unnoticed while the media focused on the revenue losses to B2Bi companies selling value-added networks.

**Note:** These B2Bi companies, including those selling managed services, came under price pressure from the Internet. Before the Internet, they had sold EDI software at a low price, generating most of their profits from fees for use of value-added networks (VANs). But when their customers found they could do the same tasks on the Internet for a fraction of the cost, EDI software vendors had to slash their VAN fees.

In the shadow of a seemingly bigger B2Bi story, outsource providers who were developing the new B2Bi model, which eliminated the need

for companies to buy EDI software altogether, received almost no media attention until 2004.

Around 2004, a handful of these B2Bi vendors began to prosper by replacing companies' in-house software implementations and staffs. The ones that broke from the pack included companies such as SPS Commerce, E2Open, Redtail, EZcom, and DICentral. These companies grew because their business model produced greater value for customers than the old solutions, providing all of the same features and functions *and* new benefits that are critical to today's global supply chains:

- Connectivity with all global supply chain partners (retailers, suppliers, 3PLs, etc.)
- superior reliability
- an outsourced solution that moved all the complexity of the function away from the supplier, eliminating the need for internal EDI expertise
- a lower total cost of ownership

For companies trying to keep pace with dynamic market forces pushing them to outsource many of their operating functions, the ability to manage a supply chain that was quickly growing more complex was essential. As companies' chain of supply went global, factories, sourcing companies, expeditors, and 3PLs all needed to receive orders and report fulfillment tasks from different locations and different computer platforms, sometimes using only an Internet browser. As managing communication with these parties became more complex, a solution in step with the times was vital.

The TPIC, a next-generation model with global supply chain capacity, offers such a solution.

## How to Recognize a Trading Partner Integration Center (TPIC)

Selecting a vendor can be a complicated and lengthy process for organizations ready to outsource their EDI operations. A wide range of EDI outsource solutions are available. If the organization seeks to perform its B2Bi tasks for less while folding in the new complexities of the global marketplace, then the list of possible vendors is shorter. Only a new model solution – a TPIC – delivers this.

How do you distinguish a TPIC from other companies selling EDI services based on the old model? Such as the low-wage staff in developing nations solution, or the old software model as an in-house application or outsourced in the form of a managed service, or any mixture of outsourced staffing and systems hosting. How do you separate the TPICs from all these others?

The seven criteria that follow are a litmus test for distinguishing vendors doing business within the new EDI model – the TPICs – from vendors still operating within some variation of the old model.

## **Rule 1 – A TPIC Supports All Transactions, Data Formats, and Workflow**

Any outsource provider should be able to perform all of the tasks of the targeted operation to maximize the efficiency of the solution for its customers. This should include all of the tasks required today as well as those the business will need as it grows. A fully developed TPIC supports the full spectrum of transaction types, workflow scenarios, and data formats required by suppliers' customers, as well as those needed to communicate with other trading and business partners.

A TPICs supported transactions should include:

- purchase orders
- advanced shipping notices (ASNs)
- invoices and more

Its workflow offerings should encompass scenarios such as:

- shipment to distribution centers
- vendor managed inventory (VMI)
- private labels, etc.

As different customers use different networks, the TPIC should provide all the necessary data transmission modes:

- FTP
- VAN
- AS2

Because customers may require file formats in the form of XML and flat files in addition to traditional EDI formats, a TPIC should provide each of these as well.

## Rule 2 - A TPIC Provides a Comprehensive Outsourced Solution

To perform B2Bi tasks most efficiently, a TPIC must do all the work associated with B2Bi technology, expertise and staffing, and operations.

In the area of technology, four building blocks that work best as an integrated system are required for EDI. They are:

- Translator Infrastructure: the hardware and software for converting data into and out of EDI in a secure, reliable platform
- Mapping: software for reconciling data, business rules and workflow unique to each customer and trading partner
- Connectivity: the software/network for transporting data between suppliers and trading partners
- Application Integration: software for importing and exporting data into and out of suppliers' accounting and ERP systems

### Rule Books, Maps and Labels



### Bus & Tech. Staff & Expertise



### Infrastructure



*A TPIC must provide, manage and maintain all of the infrastructure, staff business and IT experts, and create and maintain the mappings to 1000s of retailers.*

An outsourced solution that includes all of these building blocks will be more efficient and less vulnerable to disruption.

Any EDI system requires IT staff to administer it 24/7. Hardware must be replaced, software upgraded, data monitored, bridges and maps maintained, and more. TPICs maintain this staff, as would be expected. And because integration maps are the heart of their business, as explained later, they staff mapping experts. These experts specialize in knowing retailers' business rules, and in building and repairing the maps that implement them. It's important to have a sure hand guiding this function because maps that don't work cause systems to crash. When a new map is needed, a TPIC has an expert, not a generalist, building and testing it, which speeds implementation. When business rules change, these specialists can adjust maps without a lengthy trial-and-error process.

In the best of operations, system crashes do occasionally happen. A TPIC will have backup systems to continue service delivery while staff analyzes what caused the crash. If the problem originates with the customer (for example, a bad data file), a situation potentially awkward for the supplier – convincing the customer that their people dropped the ball – is handled by the TPIC staff instead. The TPIC resolves the error with the retail customer on the supplier's behalf.

A comprehensive EDI outsourced solution saves time and minimizes disruption. It fully realizes the promise of an outsourced solution, allowing suppliers to focus on the complexities of their business instead of on EDI.

## Rule 3 - A TPIC Uses a Multi-Tenant Application Architecture

The most unique and important feature of a TPIC is its strategy of reusing maps. This is a core element of its multi-tenant, Software-as-a-Service approach. The resulting architecture is key to a TPIC's ability to provide superior reliability at a lower cost than in-house approaches.

Here's how it works:

In the world of EDI, maps are like hearts. Unusable data moves into them, and data useful to the system moves out of them. When the map stops working, the data flow stops. If you have an unreliable map, you have a big problem.

This is why new maps are routinely tested and debugged before they are used. Even after implementation, new maps sometimes crash the system, often because of something unforeseeable in the customer's system, and must be repaired. With each successive repair, a map becomes more robust and less likely to fail again.

Now, isn't it likely that a map that 2,000 other suppliers have been using for years will function more reliably than a map that someone built yesterday? *This is the virtue of the multi-tenant approach.*

A provider with a multi-tenant approach builds and maintains only one map for all of a retailer's suppliers. Because TPICs reuse their maps, suppliers don't all have to suffer and evolve through the same problems: those using a TPIC can benefit from the robust character of the map the TPIC already has, and bypass most associated problems. The more seasoned maps a TPIC has, the more reliable its service can be.

With so much trial and error eliminated from the system and many tenants sharing the cost of the EDI operation, TPICs do more for less. The cost of using a TPIC is less than an onsite EDI operation or an outsourced nineties model. Moreover, because TPICs offer virtually a plug-and-play solution, customers can skip the often lengthy and troublesome transition phase of single-tenant solutions and move directly into productivity.

Doing B2Bi is complex, but the case for outsourcing it to a TPIC is simple. There is power in numbers – in reliability, total cost of ownership and speed of implementation.

## **Rule 4 - A TPIC's Services Are Easy to Access and Integrate**

To be efficient, a TPIC's services must integrate easily into client's existing workflow. One way a TPIC can do this is by offering access through the Internet. This allows clients to perform tasks regardless of where they are in the company's facility, a business partner's facility, or in a foreign country. With access to an Internet browser, a user ID, and password, suppliers can access or enter data into their companies' systems regardless of where they are.

Often, however, suppliers want data to flow in and out of their systems in an automated fashion. Setting this up with an EDI vendor requires that the supplier provide bridge code to interface their accounting or operational systems with the vendor's application programming interface (API). Producing this bridge code can be resource-intensive and delay the solution. Intuitively, it seems counterproductive to outsource a solution if the vendor gives the client a Herculean programming task to do first.

To make the integration process easy for the client, a TPIC should construct its API with a layer of abstraction that hides all the complexities associated with understanding the retail customer's rule books, EDI, or XML, or transaction sets. This allows suppliers to focus on what they know best: getting data imported, validated and exported in and out of their operational systems.

In addition, the TPIC provider should supply clear documentation of how to construct the bridge and in some cases, even provide standardized bridge code for importing, validating, and exporting data in and out of specific applications.

## Rule 5 - A TPIC Offers Role-Based, Secure User Accounts

Today most suppliers outsource many if not all of their fulfillment tasks. These tasks include:

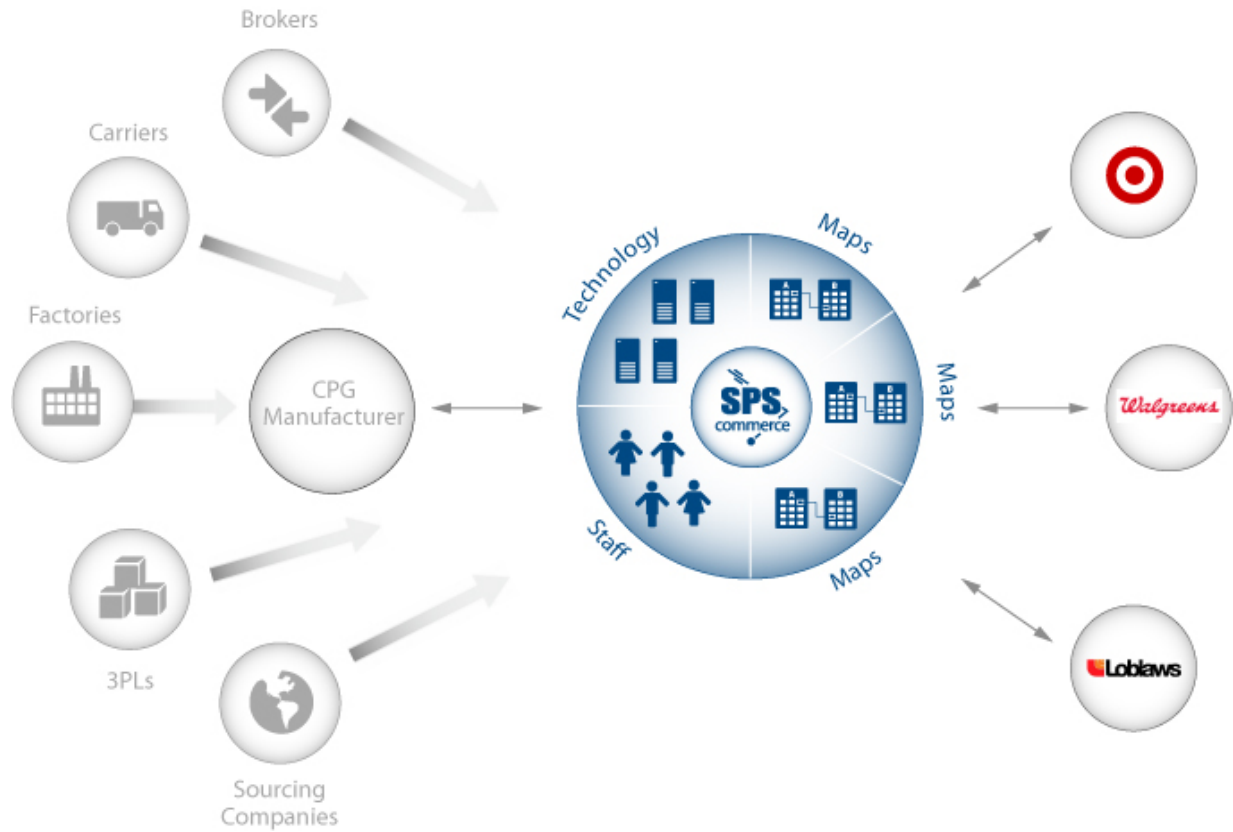
- Selecting factories and managing assembly line development and product operations to a sourcing company, often done in Asia
- Manufacturing the product in a factory in a developing nation, often done in Asia
- Storing inventory, packing orders, and ground transport to domestic and international 3PLs.
- Shipping by consolidators/expeditors/freight forwarders

Retailers want data that informs them where their product is in the chain of supply. It falls upon the supplier to send the customer a compliant electronic transmission with this information. A TPIC allows suppliers to create sub-accounts from their master accounts and distribute use of them to third-party partners. With a sub-account, the business partner can send the customer status updates that appear to have originated at the CPG firm.

For example, a supplier can give its factory in China a sub-account, and when the factory ships the product, it sends an advance ship notice (ASN) to the customer that appears to have come from the supplier of record. Suppliers can leverage this user account capability to distribute functionality to their business partners doing outsourced tasks.

Providing business partners with system access can be a double-edged sword. It is critical to control the use of a trading partner integration system to ensure data remains secure. To this end, individuals should be able to see the information they need and no more. A TPIC should empower suppliers to distribute limited functionality to each partner playing a role in their supply chain through *controlled* user accounts. For example, the finance user may have access to all data, but the shipping group may have access only to ASN information. Or the 3PLs may have access to ASNs and labels, whereas the factories in China can access only forecasts. A sub-account also allows business partners to receive, send and even produce the receiving labels using the supplier's systems.

Given the many fulfillment tasks third parties do today, it makes sense to provide them with easy, secure, controlled access. This way, they can perform not only the task on the suppliers' behalf, but the associated EDI transaction as well.



*TPICS must enable companies to securely connect with all global supply chain partners, including 3PLs, sourcing companies, and freight forwarders, who are entrusted to perform tasks on their behalf.*

## **Rule 6 - A TPIC Allows Migration without Interrupting Existing Systems**

A good solution is not as good if it can't accommodate a supplier's unique scenario. Suppliers currently using in-house software for B2Bi may think it impractical to move to a completely different approach. They may have a substantial investment in bridge code, and possibly even the translator software itself. It may seem to them that the transition pain and expense would be too costly, especially if this layer of their existing solution does a fine job of getting data in and out of their operational systems. However, the more practical TPIC solutions provide the necessary tools and are architected to make this transition as painless and seamless as possible.

For example, to minimize transition efforts, it's possible to leave in place the layer of software that imports, validates and exports data into the supplier's ERP system. In some cases, it may be sensible to leave the EDI translator in place, but use it to produce a generic file that can be run through and managed by the TPIC. The TPIC can convert it into the hundreds of unique maps that transforms the file into the data, workflow and business rules of each trading partner.

Conducted in this way, the supplier's transition can be as simple as switching where its internal application sends data to and receives it from. If the TPIC has already implemented the maps of all of the supplier's customers, the migration is reduced to a testing exercise. Upon completion, the TPIC's staff assumes responsibility for managing the application and relationships with the technical staff of their trading partners, and the supplier redeploys its technology resources to tasks more central to its business.

The process of switching can appear hazardous. But the risk can be mitigated if the TPIC employs a set of proven and repeatable best practices that assure that each switched trading relationship is smoothly transitioned without a disruption of service.

## **Rule 7 - A TPIC Offers Related Trading Partner Products**

Not all TPICs are created equal. All offer the attributes described in rules 1-6. But some recognize the value of EDI transaction data to other processes and offer services to help suppliers improve the processes that draw upon this data. These services may include the following:

- electronic cataloging
- item synchronization
- label rendering and printing
- shipping and packing applications
- online B2B ordering sites for automating orders with non-EDI customers

These tasks are not EDI functions, but they either use EDI transactions and data, or are closely integrated with them. When they can be performed as an extension of EDI operation, they proceed more smoothly and efficiently.

TPICs that offer related services in addition to EDI can save suppliers the time and distraction associated with finding a new outsource vendor when peripheral needs become apparent. At such times, it can be a more reliable or attractive solution to utilize a vendor which has already proven its value.

## Conclusion

Changing times call for new ways of doing things. Suppliers facing changes in the global marketplace have an immediate interest in understanding how a tool of the 21<sup>st</sup> century – the trading partner integration center – may help them meet contemporary challenges in a way old tools cannot.

Put simply, TPICs deliver value by offering:

- Greater reliability through reuse
- Controlled global access to accounts
- A complete outsource solution for a non-core business function
- Lower cost of ownership by spreading out costs

Because its value is solidly rooted in today's business environment, TPICs will continue to occupy a significant share of the B2Bi marketplace in years to come. Research has shown this market niche will continue growing at a brisk rate. In the coming years, for a B2Bi provider, the next best thing to being a TPIC may be looking like one.

A story in Aesop's Fables tells how a wolf put on a sheep skin and mingled with the flock to get his dinner. Similarly, B2Bi outsource providers who are stuck in the nineties model may market themselves as TPICs to get customers. The seven rules presented in this paper can help companies that are looking for a modern B2Bi solution quickly tell the difference between a true TPIC and something old-fashioned that is trying to resemble one.

## About the Author:

Jim Frome is the Chief Strategy Officer and Executive Vice President at SPS Commerce. He is responsible for setting the marketing, sales and technology strategy for SPS Commerce. Since joining SPS in 2000, Mr. Frome has expanded and secured the company's leadership position in SaaS EDI. Mr. Frome has been named a 'Pro to Know' by *Supply & Demand Chain* and is a frequent speaker at customer and industry events.

Mr. Frome has more than 22 years of experience in technology marketing and management positions. Previously, he served as a divisional vice president of marketing at Sterling Software, and director of product management at Information Advantage.

Prior to Information Advantage, Mr. Frome held several marketing and product development positions which were focused on developing business partnerships and resellers for IBM's AS400 division.