



Optimizing Global Trade in the 21st Century: Efficiency, Cost-effectiveness, and the Value-added SaaS Advantage

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Introduction:

Challenges for the Global Supply Chain in the 21st Century

The need for a highly efficient and cost-effective global supply chain has never been greater. However, the growing complexity of global trade has made cost-effectiveness and efficiency more difficult to achieve than ever before.

One of the greatest challenges comes from providing sufficient visibility for the different stakeholders that trade or support trade across a global supply chain. These myriad stakeholders – importers, exporters, logistics service providers, customs agents, warehouses, distributors, as well as banks and insurers – need to exchange an enormous quantity and variety of data in order to have the visibility necessary to ensure that shipments arrive on time, in sufficient quantity, at the correct destination, and at a predictable price and quality.

Adding to the complexity of this equation is the real-time nature of global business. While the actual flow of goods and services is often limited by the speed by which a boat, train, or plane can deliver a product, the up-to-the-minute visibility required by trading partners and other stakeholders means that information must flow in as much a real-time manner as possible. This visibility must span time zones, languages, and cultural barriers, and take into account the requirements of conflicting legal and regulatory regimes.

This sets up the final challenge for optimizing global trade, regardless of the product or industry: Behind this need for real-time global visibility is a veritable Tower of Babel of technologies and business processes that must be normalized and consolidated for hundreds if not thousands of stakeholders in order to achieve the operational efficiency that real-time global trade requires.

The Value-added SaaS Solution

Until recently, meeting these challenges in a cost-effective manner was largely impossible, even for the largest trading company or logistics provider. A new technological framework has emerged, however, based on the on-demand or software-as-a-service (SaaS) model, that is able to unleash the latent visibility and efficiency in the global supply chain as never before. This model promises to provide the functionality needed for all stakeholders in the global economy to maximize their trading opportunities in their respective supply chains, regardless of their size or the scope of their IT investments.

This new reality is not, however, based on the SaaS model that most of us are familiar with. That model, exemplified by companies like Salesforce.com, is based on a business case that promotes internal IT efficiency, with relatively little impact on overall new business efficiency. These first generation SaaS providers take existing on-premise functionality and processing and, using the economies of scale of SaaS, provide a lower cost method to do in the “cloud” what would otherwise be done in on-premise.

The value-added SaaS model, on the other hand, is based on enhancing long-standing business processes – particularly those deployed by a network of companies acting in pursuit of a common goal – by enabling new functions and new capabilities that, in most cases, were simply impossible to deploy using on-premise software. These functions and capabilities are distinguished by the fact that they typically automate processes between a community of companies operating in a single industry sector, and are based on an integration function that allows for the exchange of a common set of business objects that define the parameters of commerce in a given industry. Importantly, these new functions are supported by the same cost-efficiencies that earlier SaaS models provided, offering that ideal combination of efficiency and cost-effectiveness that is a prerequisite in today’s business climate.

Unlike the original SaaS model, value-added SaaS is built for this purpose from the ground up, ensuring that support for inter-company processes is an inherent goal of these systems, instead of an afterthought. This starting point means that value-added SaaS networks can deliver improved functionality to virtually all its participants, wherever they exist in the value chain, and by doing so distribute the benefits across a newly-empowered business network. Furthermore, these networks grow in value as they are used by more and stakeholders, becoming assets that are both self-improving and self-appreciating. This had been largely impossible to achieve in the pre-SaaS, on-premise world of enterprise software.

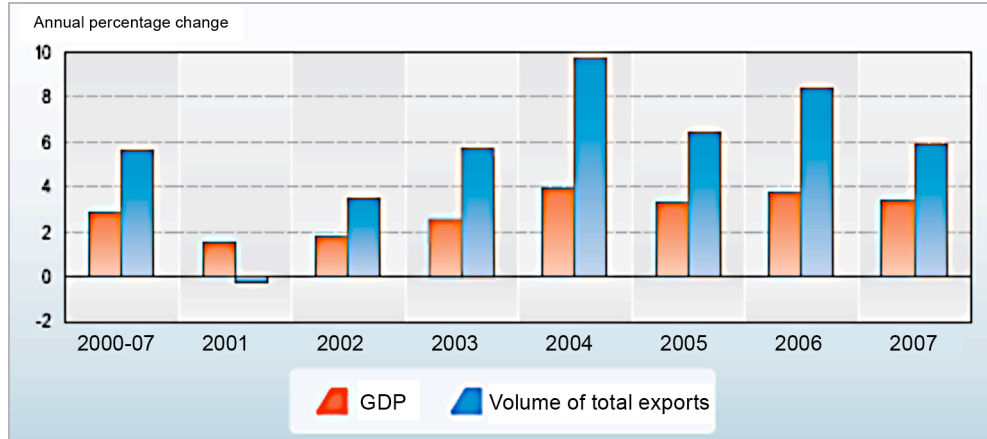
The purpose of this report is to describe the opportunity presented by applying value-added SaaS concepts and technology to the world of global trade, which, with its complex supply chain, industry-specific data and processes, multiple overlapping partnerships, and extreme requirements for visibility and efficiency, is ripe for this kind of opportunity.

Global Trade and the Barriers to Efficiency

The growth of global trade in both volume and complexity is a phenomenon that has touched virtually every business on the planet. Regardless of vertical industry, market focus, or country of origin, most companies today exist in a global market that requires the development of more personalized or customized products that must be delivered more quickly to more customers in more locations than ever before.

The rate of growth experienced by global trade has added to the urgency companies feel in mastering this new opportunity. According to the World Trade Organization, global trade has been outpacing the growth of the planet's GDPs for most of this century – even during recessionary recovery years like 2002 and 2003 (as illustrated in Figure 1.) This rapid growth rate has made global trade inherently more complex and competitive, and in the process has shrunk the time window for product development, manufacture, and delivery.

Figure 1: Volume of world merchandise exports and gross domestic product, 2000-2007



Source: World Trade Organization

These shifts have changed the nature of the customer – now global instead of uniquely local – and that has promulgated sweeping changes in both the demand and supply sides of the global supply chain. The result is that most global companies today have more complex customer requirements, more complex partnerships, and more complex logistics and regulatory requirements than they had ten, five, and even two years ago.

This increased pace has led to a significant increase in the complexity of virtually every business function that is associated with global trade. This complexity has largely meant that the single most important issue in effective supply chain management – visibility – has become increasingly difficult to deliver to the growing number of stakeholders in these complex global supply chains.

With supply chain visibility unable to keep pace with supply chain complexity, the result is that few global supply chains can function in a truly global manner. A recent survey by consulting firm BDP International and St. Joseph’s University in Philadelphia showed that 60 percent of the companies surveyed were unable to manage their global supply chains in a global manner – this despite the fact that a similar percent reported having implemented “advanced technology” in their supply chains. (See *Global Supply Chain Survey Results* below.)

THE CHALLENGES OF MANAGING A GLOBAL SUPPLY CHAIN:
GLOBAL SUPPLY CHAIN SURVEY HIGHLIGHTS

- 60% of companies can’t manage their global supply chain in a global manner, *despite* the fact that 68% had invested in ERP, SCM, WMS, and other technologies.
- #1 Issue: Global trade’s longer lead times threaten on-time delivery (64% of companies surveyed).
- #2 Issue: Global trade logistics make it hard to calculate accurate total landed and other logistics costs. (Non-chemical and non-industrial companies cited this as their #1 issue.)

Source: BDP International, St. Joseph’s University

The Limits of SCM, ERP, and On-Premise Technology

The fact that this complexity and lack of visibility continue unabated *despite* the application of “advanced technology” is surprising only to those who don’t understand the fundamental

limitation of the majority of supply chain technology today. It is by design and by functional breadth unable to manage a truly global supply chain in all its complex glory.

The functional limits are legion: most supply chain and ERP packages are quite adept at managing the data and processes needed to keep internal systems up and running, but these systems are unable to understand the complex data flows – most of which originate outside the four walls of the company – that define the global trading environment. Furthermore, they lack the processes that would allow companies to use the data to both improve supply chain visibility and manage complexity. This means that basic requirements like the ability to manage the flow of products and supplies, calculate landed costs, manage local regulatory requirements, or, most importantly – actively improve customer satisfaction and partner performance – are largely impossible to implement.

These functional limits are further proscribed by limits in the design of these solutions. As on-premise, inside-the-firewall solutions, ERP and supply chain systems lack the ability to meet the needs of a complex, global supply chain in a cost-effective, and time-effective, method. The ability of these systems to effectively integrate the global trading world is limited. Most rely on standards such as EDI that, in practice, are implemented in non-standard ways, creating massive error and data reconciliation problems. And, most are unable to readily support, in an efficient manner, the complex web of business practices, regulations, and data that make up global trade.

The result is that these on-premise systems can only attempt to keep up with the growing complexities and challenges of global trade – most of which derive from external IT environments that ERP and SCM systems are largely unfamiliar with. These systems attempt to do the impossible with the wrong functions, by focusing on processes inside the firewall. These legacy systems also tend to do the impossible with the wrong design by focusing on on-premise operations. The result is that existing on-premise systems fail to meet the needs of an increasingly complex global supply chain and its many stakeholders.

The Case for Value-added SaaS in the Global Trading Network

The growing complexity of global trade and the inability of existing on-premise supply chain and ERP systems to manage that complexity have made the development of value-added SaaS solutions that can tackle these issues increasingly attractive. This is because a value-added SaaS

This notion of technology and processes becoming self-improving and self-appreciating assets is radically different than anything the enterprise software industry has seen since its inception in the late 1960s.

model not only solves these basic problems, but it is also able to provide a rich, new set of capabilities that were largely impossible to accomplish in the on-premise world.

These new capabilities, combined with the ability of value-added SaaS to expand on existing ERP and SCM capabilities, allow companies to manage a global trading network that becomes more effective over time, as well as more valuable to all of its stakeholders. This notion of technology and processes becoming self-improving and self-appreciating assets is radically different than anything the enterprise software industry has seen since its inception in the late 1960s.

In tackling the complexities of global trade, the advantage of a SaaS model starts with the ability to solve several difficult and otherwise costly problems in a highly efficient manner.

Improved Connectivity

The first problem that a value-added SaaS system can solve is connecting multiple stakeholders that are using a variety of technologies at varying levels of complexity. This is a basic business problem for companies involved in global trade. The few standards that exist, such as EDI, are often implemented in non-standard ways, and any given trading network could have partners using every possible ERP or SCM package, as well as partners that rely on spreadsheets and other less advanced technologies.

Building the connectors to this plethora of technologies once, and then making those connectors available to the entire trading network, is an extremely cost-effective method that becomes even more cost-effective over time. Once a partner is connected, that partner can communicate with

any other company on the network. And once that partner's particular technology platform is connected, any company that wants to join the network and is using that particular technology can be on-boarded without incurring additional costs.

Keeping up with changing interfaces and business processes is perhaps an even greater advantage to this approach: As connectivity technologies change, the ability to update the platform once and propagate those changes to every network partner becomes an extremely efficient way to manage change at a low cost. Moreover, making those changes in a common, shared platform means that the new capabilities are delivered simultaneously, and with no internal installation or verification needed at the partner site.

**SELF-IMPROVING, SELF-APPRECIATING, VALUE-ADDED SAAS:
KEY ADVANTAGES FOR THE GLOBAL SUPPLY CHAIN**

- Removes connectivity challenges.
- Supports rapid change in technology and business model.
- Provides data quality and common data model.
- Enhanced visibility for all stakeholders.
- Support for inter-company business processes.
- Improves the value of internal ERP and SCM systems.
- Enhanced analytics.
- Leverages a community in support of new service and business opportunities.

Improved Data Quality

The second problem that value-added SaaS can solve derives from the first: Once connectivity has been provided in a cost-effective and efficient manner, the next step is to significantly improve overall data quality in the trading network. This is accomplished by providing data reconciliation and normalization services inside the SaaS environment. By defining a common data model – based on the data objects that are critical to a specific vertical industry or supply

chain – and then ensuring that all inbound and outbound data conform to the model, the value-added SaaS system can provide a single “version of the truth” that can be used as a common platform to support the shared processes and analytics in the trading network.

This “develop-once, deliver to many” approach provides a major advantage over traditional, on-premise enterprise application integration (EAI) solutions that must be continually updated and stress-tested as interfaces and data models in the trading network change. Whereas an EAI hub often becomes expensive for a stakeholder to maintain, the economies of scale in a value-added SaaS environment ensure that data quality can continually improve without increasing individual stakeholder costs.

Improved Visibility

Once connectivity and data quality are assured, visibility across the trading network is significantly improved beyond anything that could be developed using an on-premise model. This is particularly true as the trading network evolves both in terms of its stakeholders and the business models that define their relationships.

Visibility can improve in a number of ways. The first is that, despite the technical limitations of any individual partner, all members in the trading network can have access to critical information that is highly accurate and easy to manage in the system – from purchase orders, to bills of lading, to more advanced track and trace information for a container. The second improvement is that information is also available in real-time, and this greatly improves analysis and decision-making. The third improvement is that information can flow in a bi or multi-directional manner – in real-time – from the central hub, to individual members, and back again, maintaining data quality and integrity while enabling network-wide visibility.

Support for Inter-company Business Processes

The improvements in connectivity and data quality from value-added SaaS set the stage for the active support of the inter-company business processes that internally-facing ERP and SCM systems are unable to manage. It is here that value-added SaaS can add tremendous value to an existing global trade network by automating the day-to-day inter-company processes around global trade based on the objects – such as shipping manifests, commercial invoices, POs, and shipping instructions, for example – and business processes that already inform these business relationships.

Improve the Value of Internal ERP and SCM Systems

The ability of value-added SaaS to augment existing internal ERP and SCM systems is an important aspect of their overall effectiveness. Supporting the externally-facing processes in the global supply chain in no way requires the replacement of internal ERP and SCM systems. On the contrary, these internal systems provide important data and processes that can work synergistically with a value-added SaaS trading system. The result is a more leveraged internal ERP and SCM system that supports a more efficient and automated external supply chain.

Support New Analyses

The enhanced visibility possible in a value-add SaaS trading network sets the stage for a new level of analysis that was largely impossible in the old, on-premise world. That new level of analysis – fueled by the ability of the trading network to deliver data and analytics in real time – allows formerly complex processes like trace and track to be done with a degree of accuracy that is simply impossible without access to network-wide data in a real-time trading hub. Other analyses, like landed cost, can be performed in a “what-if” manner, using the data in the trading hub to look at the impact of changing carrier or port of entry, or splitting a shipment and sending it to multiple destinations while it is en route.

Leverage a Community in Support of New Processes and Services

A value-added SaaS platform for global trade can provide a means to improve the functionality and capabilities of the entire community, as well as individual members of that community. This rising tide effect is particularly obvious in the ability of value-added SaaS to deliver new inter-company processes and services that were too costly or too complex to deliver efficiently in the old, internally-focused, on-premise model. This capability is based on the notion that as the quantity of data and partners in the network grows, the ability to support new processes and deliver them to every member of the supply chain becomes extremely valuable to the entire community.

One major benefit in this regard is in defining and promulgating new best practices across industries. Some of these best practices are based on existing requirements that can now be improved using the value-added network. Shipper performance, for example, can be measured much more accurately in such a value-added network, and therefore this metric is used to both set service levels on the part of the shipper, as well as allow the customers to accurately monitor

shippers and ensure their own supply chain services levels aren't impeded by poor shipping performance.

Another benefit comes from using the data in the network to more accurately predict costs. As the predictions become more granular and more accurate, they can be used much earlier in the design of a new product, for example, allowing landed cost to become an important design criterion. Similarly, as carbon footprint analysis becomes more and more important to support green/sustainability efforts, predicting the transportation-related carbon footprint of a new product could be extremely valuable to a company functioning under cap and trade regulations.

A final benefit comes from taking the predictive modeling capabilities inherent in a global trading hub and using them to assist companies in trade-related activities such as financing and insurance. These risk-based activities can be greatly improved by the addition of comprehensive data about the trading network, opening up the door for lower insurance and credit costs based on the ability to prove that a trading network with the advanced visibility inherent in a SaaS-based system can be more efficient and less risky. This would allow companies to secure better insurance and credit terms than they would if they were not participants in such a network.

Conclusion: SaaS, Hybrids, Customer Satisfaction, and Preparing for the Rebound

Improving the operational efficiency of global trading operations is a notion that is timeless in its applicability. While the pace of global trade may wax and wane with the economy, the sheer quantity of trade continues to be a major force in all our economic lives. This in turn requires companies in virtually all industries to be more efficient with respect to global trade without becoming a victim of its costs and complexity. And that means that there is a need to be able to actively support and automate the key inter-company processes that define global trade and that have been largely neglected by their internally-facing ERP and SCM systems.

The constantly shifting nature of global trade – driven by the interplay of the many dynamic local and regional markets across the world – ensures that new business challenges, like the emerging green/sustainability initiatives now taking route across the globe, will continue to add complexity to the equation. Consolidating the effort of managing all this dynamic change inside a single

technical architecture – the value-added SaaS hub – ensures that the cost of managing change is kept to a minimum and that the new opportunities that derive from this change are made available to all.

It's important to bear in mind that a value-added SaaS model will not replace the myriad ERP, SCM, and other back-office systems now inside the enterprise. While those systems do relatively little to support global trade, their value in managing the internal operations of an enterprise is indisputable. This means that a global trading hub, built on a value-added SaaS model, will support a hybrid on-premise/SaaS environment, where the best practices outside the firewall are synchronized with the best practices inside the firewall, to the mutual benefit of the entire trading network.

As these hybrid global trade systems become more extensive and therefore more valuable to their stakeholders, the direct benefits to two other key constituencies will become more and more evident. An efficient global trading hub will, by dint of improving the demand side of the supply chain, actively improve customer satisfaction in highly measurable ways. And as increased customer satisfaction has a measurable impact on revenues and market share, the shareholders of companies doing business in these global trading networks will see the value of their holdings increase as well.

The final benefit of these new global trading networks will be seen as the economy turns from recession to growth. The rapidity of the downturn was due in part to the relative efficiency of the existing global supply chain. The increased efficiency from this new value-added SaaS model will make the speed of recovery even more breathtaking. Those companies that are part of the new paradigm will be in the position to seize the opportunities that present themselves in the coming months. Everyone else will wish they had done so when the time was ripe.