
The Need For Self-Service Value Chain Applications

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Executive Summary

Value chain management offers a potent strategic weapon to organizations in the networked economy. Automating supply-side and market-facing business relationships creates leaner, more responsive, more profitable organizations. But teasing the benefit out of each partner, supplier, and customer connection is not a one-off task. Optimizing the value chain requires on-going assessment of business goals, customer requirements, supplier capabilities, and competitor strategies. The one constant in this process is the need for accurate, actionable, real-time information.

Accessing business information is never as simple as it seems it should be. Any single browser-screen of data in a customer self-service application, private trading exchange, or a collaborative business application represents elements of information from a vast array of back-office data sources. Each element of data is carefully integrated with each other element in order to provide a unified and meaningful view of the business process.

The integration of information for value chain applications is proving to be one of the biggest single impediments to eBusiness.

Existing integration technologies are proving inadequate for value chain computing. Focused on the application-to-application connectivity needs of enterprise Information Technology (IT), these solutions are overly cumbersome and resistant to change. The business requirement for dynamic, real-time information, that can be shared inside and outside the corporate firewall, requires a new approach to integrating business data.

Open Internet standards provide the building blocks for value chain information integration. The Extensible Markup Language (XML) provides a common language for sharing data, allowing business partners anywhere on the network to easily interpret data no matter where it came from. The simplicity and self-describing nature of XML make it the perfect vehicle for sharing data, and it has already gained wide acceptance among business users. Recent work on the XML query language adds an easy to use syntax for combining data from a variety of different structures, without worrying about compatibility. These, and other, Internet standards provide the building blocks for truly open, integrated communication between partners, suppliers, and customers in the value chain.

The Enosys Information Integration Infrastructure uses the building blocks of open Internet standards to solve the value chain integration problem. Unifying legacy, eBusiness, and XML data sources, in real-time, Enosys allows rapid deployment of intra- and inter-enterprise value-chain applications. An end-to-end XML infrastructure, the Enosys query and mediation technology, reconciles different application information models, giving a unified, real-time view of multi-source business data.

Integrating at the data layer the Enosys Infrastructure eliminates costly, time-consuming and complex application coding associated with older integration technologies. Enterprise IT and business users gain faster time-to-market for new customer self-service and supply-side collaborative applications. As the amount of custom integration code to be maintained drops, IT benefit from a significantly lower total cost of ownership.

Self-Service Value Chains

The networked economy is radically changing the way organizations do business. Ubiquitous Internet connectivity is allowing companies to build robust, highly productive value chains, creating tighter relationships between customers, suppliers and internal departments.

Value chains represent a complete model of how the organization adds value to the customer, covering all aspects of the business from production and planning through sales and support. Real-time, external collaboration is at the heart of value chain management, and the ability to share information quickly with value chain constituents affects every area of the organization. For example:

- Product planning and development become a cross-functional joint collaboration as partners, suppliers, customers and in-house teams get together to perform product designs;
- Just-in-time inventory arrangements with collaborating suppliers reduce cycle times, and make manufacturing operations leaner and more responsive;
- Private trading exchanges enable purchasers to focus suppliers on multi-dimensional buying parameters including, lead-time, quantity, and price;
- Interactive self-service sales tools reduce the sales cycle and increase customer loyalty.

Staying Competitive with Value Chain Integration

The collaboration made possible by value chain management contributes directly to corporate revenue growth and profitability. The swift flow of information between partners, enables a dynamic response to problems and opportunities, leading to compressed cycle times, leaner, more responsive operations and increased customer loyalty. Ultimately value chain emphasis makes the business more competitive.

As greater and greater benefits are squeezed out of the value chain, external collaboration with partners, customers and suppliers will inevitably determine business success. Examining specific case scenarios illustrates how value chain management can make a difference.

Case Study One – Customer Self-Service Application

Self-service applications offer immediate value chain returns by providing customers with browser-based query and response software that answers questions otherwise asked of a sales support representative. Automating the sales call provides productivity benefits and increases the volume of customer queries that can be processed.

In this scenario, the customer of a computer equipment manufacturer needs to know what type of network interface card (NIC) is compatible with the computer server configuration that they currently own.

The old approach would require the customer to call the technical support desk, or a sales representative, to get the needed information. The representative would then query several different databases to determine: which NIC card would be the best fit; confirm the customers current configuration and the level of customer support; obtain technical specifications for the NIC card; determine hardware-software prerequisites; and obtain the latest revisions of the software to operate the NIC card. This information would typically be held in many different applications, some using databases to store the information, others text files and web pages. Only when all of this information had been accessed, correlated and understood, would the representative be able to tell the customer what options they had for choosing a NIC card.

By deploying a web-based self-service application, the customer is presented with a personalized sales support page. A single, integrated view of all relevant information from

the customer database, product information database, hardware-software compatibility database and product support database lets the customer see, at a glance, everything needed to identify the correct NIC card.

Providing a fully integrated self-service approach results in a faster response to the customers query, increasing customer satisfaction and customer retention. The automated application reduces the demand on sales and technical support organizations and results in consistently accurate information being provided to each customer.

Case Study Two - Supply-Side Collaboration

Automating the supply-chain is one of the biggest productivity investments an organization can make. This relatively new phenomenon is now seen as critical in order for businesses to remain competitive.

In this scenario, a manufacturer, facing stiff competition, decides that it can tune the inventory process, hoping to free up cash flow. The savings from reducing the amount of raw material and finished product sitting in the warehouse can be better used elsewhere within the organization.

In the old approach, purchasers for the manufacturer track the level of inventory for finished goods and raw materials on a daily basis. New raw materials are ordered when stocks dip below a certain threshold, and then, only if finished goods are also below a certain threshold. The purchasers then need to quickly find suppliers who can replenish the stock before the manufacturing department uses up the remaining materials. Sales forecasts information is also tracked through a separate system, to gain insight into anticipated large orders that can quickly deplete inventory, potentially bringing production to a halt.

Supply-side automation enables the manufacturer to publish real-time views of raw material stock counts and future sales orders, sharing these with suppliers using open Internet standards. The suppliers agree, through Service Level commitments, to replenish raw materials when stocks drop below prearranged volumes, with guaranteed delivery times. Viewing advanced sales orders alerts the suppliers to future demand for products.

Providing suppliers with up-to-the-minute stock counts and advanced information about large sales order allows faster replenishment of depleted stock. Both the manufacturer and supplier benefit from a closer collaboration in the delivery of raw materials. The manufacturer is able to trim his stock and inventory levels, freeing cash for investment elsewhere. The supplier is able to forecast demand for his products better, ensuring more efficient operations.

Case Study Three - Private Trading Exchange

New product design is a lengthy process involving tedious searches through manufacturers catalogs for parts that match specifications. Responding quickly to customer demand is a trademark of the networked economy, and those companies that can improve the development cycle gain enormous competitive advantage.

In this scenario, an engineer designing an assembly line is looking for a motor to power a conveyor belt system. He also needs to find other parts that will be compatible with the motor, once he has identified the correct item.

The old approach would have the engineer determine the torque requirements, and other features, of the desired motor, before ploughing through supplier product catalogs, manufacturers web sites and talking to equipment distributors to determine which motors

are available to him. After manually compiling all of the information, the engineer would then submit a request for quote (RFQ) to several manufacturers that he thinks have the motor he needs, in order to obtain pricing and availability information.

Once the motor has been selected, the engineer must go through the same process for the gearing mechanism for the conveyor system.

Deploying an online trading exchange, the motor manufacturer links multiple back-end database sources to publish catalog, pricing and availability information online. In-house experts, knowledgeable in the customer's design process, craft easy-to-use drill-down forms allowing customers to quickly locate motors with the required features. Having located the desired motor, the engineer can quickly begin another search for compatible gearboxes.

Speeding up the product selection process for his customer, the manufacturer shortens the sales cycle, improves the customer buying experience, and reduces demand on sales support staff. The engineer, designing new products, benefits by faster access to information, and a shorter design cycle. The close ties forged between the engineer and the manufacturer, tighten the value chain relationship, ensuring further collaborative success in the future.

The Limits of Existing Integration Technologies

The intricate connections of the value chain place a premium on up-to-the-minute access to business data. Delivering integrated business information requires a networked eBusiness infrastructure capable of unifying access to disparate data sources and delivering integrated views of working information to business users and trading partners, in real-time.

Existing integration technologies have attempted to provide unified access to corporate information assets but have failed to meet the demands of the value chain. Developed primarily as a response to IT needs for connections between ERP applications and legacy systems, Enterprise Application Integration (EAI) does not cater to business user demands for dynamic flexibility and real-time access to integrated data. EAI linkages between applications are complex, manual and time intensive and connect only a limited number of applications. EAI was created for applications that sit behind the company firewall, under the watchful eye of corporate IT, and does not respond well to the needs of open, shared Internet access to data.

Manually Intensive

Despite the growing sophistication of 3rd party EAI solutions, existing integration techniques require significant programming manpower. No two software applications look alike, and integrating the different architectures requires comprehensive technical understanding of the applications being connected, and the software used to make the connection.

The result of this type of integration effort is a tightly bound, application-to-application, linkage that is unresponsive to change. Any modification to either end of the application connection results in the entire integration effort being manually reworked.

Restricted Scalability

Self-service value chain applications invariably require input from many different systems in order to provide a unified view of operational data. The typical global 2000 company has

a hundred, or more, separate software applications, each vital to day to day operations, and each containing information important to the value chain.

Point-to-point integration solutions are limited in their ability to connect more than two or three systems together. Tying more applications together quickly results in a complex, unwieldy mess of connections, stifling the dynamic scalability needed for eBusiness.

Time Consuming

Point-to-point integration is a time consuming process. Each integration effort requires enormous amounts of complex, manual coding, which means time spent in design, development and testing of software to ensure that systems being connected are not adversely affected. Typical projects connecting systems frequently take months to complete.

No Cross-Firewall Connectivity

Existing application integration technologies work well in connecting systems inside the glass-house of the enterprise IT managed environment. But when communication is required beyond the corporate firewall, where processes being connected are independently owned and managed, the application integration framework fails.

XML and the Unified Data View

Open, Internet standards hold the answer to the value chain integration problem. XML was developed by a working group of the World Wide Web Consortium (W3C), and formally recommended as a standard specification in 1998. Designed to provide a formal, concise, human-readable markup language that could be used by a wide variety of applications over the Internet, XML is a perfect fit for value chain information sharing.

Catering to a wide variety of application information models, XML defines a set of syntax and grammar that can be used to describe any kind of data. Using tags, similar to the familiar Hypertext Markup Language (HTML) tags, XML identifies data elements contained in a document. This self-describing facility makes XML especially useful for sharing data beyond the confines of the corporate firewall. Developers writing applications to interpret and process the XML need not have prior knowledge of the data structure, or format, of the original information, offering a significant time saving

Value Chain Applications and XML

XML is a perfect fit for enterprise value chain initiatives. Effective collaboration on a wide range of processes depends on the efficient movement of business information between partners. The Internet-ready XML, with its self-describing ease of use, has become the standard for sharing data both inside, and beyond, the corporate firewall. But data integration problems remain a significant issue.

Accessing data that spans multiple systems inevitably requires differences to be reconciled. The list of potential differences is huge and includes:

- Dissimilar data storage systems;
- Dissimilar data types;
- Dissimilar data models;

- Dissimilar units of measure.

XQuery: The XML Query Specification

Realizing the data integration dilemma, the W3C began drafting specifications for XQuery, the XML query language. XQuery is being designed to provide XML with a robust query language similar to that offered by Structured Query Language (SQL) to relational databases. XML supports a wide variety of both structured and semi-structured data sources and the XML query language will allow business users and developers to intelligently join data sources from multiple application information models, whether native XML or expressed as XML through middleware.

Commercial implementations of the XQuery specification provide the missing link in the value chain. Just as SQL provides an interface to the power of a relational database engine, the XML query language will drive powerful mediation engines responsible for accessing and transforming data from any number of sources.

Query Mediation

Query mediation is the nuts and bolts of the data integration provided by the XML query language. Solving the problem of accessing data from multiple dissimilar sources, Query mediation provides a common information model, XML, and powerful transformation logic to eliminate data differences. Query mediation provides a layer of abstraction, allowing queries to perform join operations that cross different information models. XML queries processed by the mediation engine, return consistent XML result sets to the requesting application.

Enosys offers a commercial implementation of the XML query specification powered by the Information Integration Engine, a mediation engine built entirely on open W3C standards.

Introducing the Enosys Information Integration Infrastructure

The Enosys Information Integration Infrastructure gives business partners, suppliers, customers and employees, real-time access to unified information from an infinite range of data sources. Using state-of-the-art XML query, mediation and transformation technology, the Enosys products provide integration at the data layer, eliminating the cost and complexity of traditional application integration. Enosys provides business users with a faster time to implementation for value chain applications.

Enosys puts business users in the driving seat, with a comprehensive, easy to use suite of integrated software for building self-service value chain applications. Graphical end-user tools offer point-and-click simplicity for XML view and query creation and web-based report design.

Enosys offers a pure-XML solution with connectivity to just about any information source. Using innovative sophisticated wrapper technology, Enosys XML-izes data sources, allowing a consistent, uniform input to the mediation engine.

The Benefits of Enosys Information Integration

Dynamic Value-Chain Communication

Value chains depend on communication. Timely supplier deliveries and completed customer purchases hinge on fast, flexible access to relevant business information from

anywhere on the global network. Internet standards provide the mechanism to speed communication between value chain partners.

The Enosys Information Integration Infrastructure implements the universally supported Internet data sharing standard XML, to dynamically link partners, suppliers, customers and internal departments of the organization. XML seamlessly integrates into the fabric of existing network connections requiring no changes, or special purpose equipment to manage the communication. In the rapidly changing world of self-service and supply-side applications, browser-based communication through accepted standards provides instant access to relevant information.

Rapid time-to-market

Corporate success in the networked economy is increasingly dependant on rapidly implementing new business processes. Extending value chain relationships, through improved customer service and supplier liaison, confers immediate, and significant competitive advantages. Easy to use technology is the key enabler in responding quickly to new business opportunities.

The Enosys Information Integration Infrastructure offers a fully integrated suite of technologies to rapidly convert information from multiple data sources into dynamic, reusable value-chain content. Easy to use, graphical point-and-click software allows developers and end-users fast access to integrated views of data that can be rapidly assembled into customer self-service and supply-side applications.

Real-Time, Integrated, Actionable Information

The compressed cycle times, driving value chain initiatives place a heavy demand on the quality and timeliness of business data. Effective multi-tiered partner, supplier, and customer relationships require access to up-to-date, unified, working information from a wide range of live sources. Real-time unified views of multi-source information depend on dynamic query mediation.

Implementing patented query mediation technology, the Enosys Information Integration Infrastructure provides real-time integrated queries of multi-source business information. Dynamic transformation and delivery of XML results provides value chain applications with up to the minute, unified views of live data.

Business User Driven

Emphasizing value chain collaboration puts line of business users on the frontline. Each improved service and automated business process can dramatically improve corporate profitability and revenue. Allowing business users to quickly deploy technology in response to market opportunities requires flexible, componentized data delivery.

With easy to use, point-and-click software, the Enosys Information Integration Infrastructure enables developers to create XML views for later assembly into value chain applications. Line-of-business users control how partners, customers and suppliers receive and navigate reusable XML views, rapidly assembling new applications as the need arises. Support for Web Service standards, SOAP, WSDL, and UDDI allows assembly of components by business users, to quickly respond to new market opportunities.

Reduced TCO

Long-term technology costs can sap the corporate IT budget. With market success clearly linked to technology implementation, funds tied up in long term maintenance of older applications limit the organizations ability to respond to new opportunities. Integration technologies that require manual, hard-coded application intervention result in higher total cost of ownership over the lifetime of the technology.

Eliminating complex and costly application intervention, the Enosys Information Integration Infrastructure provides code-free integration at the data layer. Innovative XML wrappers convert any information source into an XML data source with minimal developer input. XML querying of data sources allows real-time morphing technology to transform results, without the need for IT programmers to hard-code application software.

Integrate eBusiness and legacy initiatives

Isolated pools of disconnected business data are the single biggest impedance to automated data flows needed for value chain integration. Redundancy and data duplication, resulting from disconnected eBusiness initiatives, casts confusion on the authority and validity of each data source. Successful value chain deployment depends on integrated access to legacy and new eBusiness data.

The Enosys Information Integration Infrastructure provides fully integrated, cross-data model, join access to any combination of information sources. Integrating legacy databases, eBusiness data and pure XML content is seamless, giving a unified window on authoritative value-chain information.

Summary

Managing the value chain is becoming a significant component of any successful business strategy. The automation of partner, customer, and supplier relationships provides an organization with greater flexibility to anticipate and respond to market changes, creating a leaner, more focused, organization.

Data integration is proving to be the weakest link in the value chain. Traditional techniques used to integrate one or two systems, in-house, are showing themselves to be inadequate when faced with the requirements of eBusiness. Successfully exploiting the value chain requires dynamic, real-time, unified access to business information, from inside and outside the corporate firewall.

The Enosys Information Integration Infrastructure gives business users and developers the technology needed to rapidly build and deploy self-service value chain applications. Built entirely on open, Internet standards the Enosys integration infrastructure provides the most effective means of sharing unified, actionable business information, both inside and beyond the enterprise firewall boundary. Business partners, customers and suppliers benefit from real-time insight into integrated legacy, eBusiness and XML content, driving dynamic value chain communications.

Enosys significantly reduces long-term total cost of ownership by cutting the volume of manually coded application-to-application connections that have to be maintained. Providing significantly better time-to-market, scalability and portability than traditional point-to-point integration, the Enosys Information Integration Infrastructure is the only solution that delivers the flexibility needed by business users to respond quickly to new network economy market opportunities.