



MDA Journal

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Model Driven Architecture:
Applying MDA to Enterprise
Computing

This month I turn the podium over to Steve Winkler, a colleague of mine at SAP. Steve is intimately involved in ongoing work on standards for data sharing via RFID and related technologies, which are beginning to have a profound impact on supply chain economics by elevating the importance of collaborative business models. He is in an excellent position to reflect on the changes in business culture that have to take place for the new technology to achieve its potential to streamline supply chains. Future MDA Journal articles will spotlight upcoming enhancements to BPMN's ability to model collaborative processes.

Safeguard the Future of Your Business: Unvault Your Data

By Steve Winkler

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A confluence of factors ranging from macro-economic and business trends to technology shifts have created an environment that enables collaborative business processes with new value that goes straight to the bottom line. However, taking advantage of this opportunity will require that decision makers abandon some traditional reservations and make the mental shift necessary to share their data with other companies.

Cross-Company Business Processes

Technical business landscapes are poised to change dramatically in the near future. A new, more efficient, standards-based business-to-business (B2B) information exchange infrastructure will emerge, which, in turn, will enable efficiencies in cross-company business processes that have never before been possible. Economic trends make cross-company business processes a key to success in the emerging competitive landscape, and preparing your business for this shift will help your bottom line both in the short term as well as the long.

The Issue of Trust

There is one major hurdle that still needs to be overcome in order for this new infrastructure to succeed, and it is 100% mental: Trust. Trust is of paramount importance in relationships, especially when it comes to your partner. There is perhaps no more important trust than that between life partners, but trust in your business partners can be equally rewarding, though in financial instead of emotional terms. As with any relationship, a lack of trust, or even worse,

distrust, can spell trouble. At a minimum, such conditions prevent a relationship from achieving its full potential. Given the current economic state, all business decision makers need to have a laser-like focus on cutting costs while increasing customer satisfaction. They are therefore opening their minds to new ways of accomplishing these goals and avoiding business relationship issues, which previously wouldn't have been considered.

Don't worry, you haven't accidentally stumbled into a Dear Abbey column, the Oprah show, or even Dr. Phil, but please bear with me as I attempt to provide you some business relationship advice, so that you too, can get overcome the mental obstacles that have historically been present so that you can remain competitive both now and in the future.

'It is mutual trust, even more than mutual interest that holds human associations together. '

- H.L. Menken

Is B2B the Answer?

The primary goal of any business should be to serve the customer. A recent school of thought indicates that it is best to focus on what you do best (your core competence), and outsource the rest (so-called context). Be it human resources or producing a particular sub-component that you assemble into your product, there are often other companies that perform that specific function as their core competence, and do so better than you. By replacing your less efficient methods with their more efficient methods, cost can be saved and more profit is to be had.

This, in essence, creates an environment of ever-increasing outsourcing, which means that companies are increasingly creating new partnerships. All of these partner companies, when taken together, form a business network: a network of companies work together with the ultimate goal of serving the end customer by delivering a particular product or service to the best of all of their abilities. In fact, AMR Research has indicated that over 40% of companies already outsource a large portion of their fulfillment process. As the number of companies increases, however, so too does the complexity of coordinating all of their efforts.

Currently there are two main ways that businesses use technology to exchange information and coordinate with one another. There are less structured collaborative exchanges, and more structured transactional exchanges.

Unstructured exchanges are the most common way of doing business today. People pick up the phone and call in an order, for example. Some of these exchanges have been replaced by email and spreadsheets, but the concept is fundamentally the same, and it is largely people-based. One person at one company tells another person at another company what they want, and they use some form of communication to do so. The people at both companies come to an agreement, and enter the necessary information into their respective enterprise information systems (EIS).

Structured transactional exchanges are a natural extension of unstructured exchanges. After repeatedly entering the same types of data, it often becomes cost effective to set up what is traditionally referred to as a B2B connection. One company uses its EIS to send a purchase order document, in a predefined and agreed upon data format, to another company, which receives the document via some transmission protocol (often referred to as a transport mechanism), and can then import that document directly into its EIS. Tremendous cost savings can be achieved in the form of increased speed and accuracy.

However, there is often a significant cost associated with setting up a B2B connection, primarily arising from the need to agree on the data exchanged, and setting up the actual technical transport connection (i.e. the plumbing) between the two companies. All of these costs are incurred for a single connection to a single business partner, so B2B has primarily been limited to the larger companies that can lay out the capital investment with the eye on the longer term cost

savings. Currently, the business case can usually only be made to connect to other large companies with whom a significant amount of business is conducted.

Standards Make B2B Cost Effective

Competitive pressures, especially now, indicate that companies need to be efficient in every aspect of running their business. Optimizing and driving costs out of the supply network is key to competitive differentiation, be it on price, product or service. Both business and technical standards have gone a long way in reducing the costs of these connections. De Jure standards bodies like UN/CEFACT have created data models that can be used in most B2B processes, and non-profit standards development organizations like OAGi, have begun using these data models to define specific business message types that can more readily be exchanged between companies. Technical standards organizations, like OASIS and WS-I, have defined communication standards that can be used to more readily connect the plumbing between companies in a secure manner over the Internet.

In a perfect world, all companies would connect with one another using the same standard technical infrastructure and exchange the same standard messages to execute the cross-company business processes important to them. Extension points in the standards would allow for experimentation and competitive advantage to be created. We aren't there yet, but great strides are currently being made in this direction.

Standards are very important to reducing the costs of B2B connections, and therefore increasingly important as the concept of business networks take hold and the number of companies exchanging information with one another increases. But the lack of standards isn't the only impediment to the free exchange of information between businesses.

Learning to Share

There is often significant reticence among business leaders to share internal information with external entities, even if they are partners, and even if the business functions they perform were previously done in-house. Sharing information more freely, especially with these new business partners, will enable them to do their part better. Even more importantly, if they share information with you, and you are prepared to take advantage of it, you will be even better at your core competence. Why then, do business leaders keep their enterprise information locked in a vault?

Perhaps the single most obvious reason is tradition. Businesses are starting to move in the direction of the collaborative model outlined above, but the transformation won't happen overnight. While business decision makers can understand the fundamental concept, some have trouble opening up their IT systems and sharing data with their new partners, often because they have had trouble sharing information with their old partners.

If you look at the interaction between consumer products companies and retail companies, for example, they have a long tradition of working together to serve the consumer. The consumer product company provides the goods, and the retailer provides the shelf space. Together they provide a valuable service to society. The primary issue between the two types of companies arises when it comes time to determine how to share the rewards they are given for this value, which has long been viewed by both as a zero sum game – more money for one side equals less money for the other. This has moved the collaborative effort of providing value to the end customer away from the symbiotic relationship that it should in fact be, and created an adversarial relationship in its place. To a certain extent this is necessary; how the pie is cut still needs to be determined, but the intent here is to provide a recipe for a bigger pie. Information that could be shared to make the relationship more efficient, and ultimately allow both companies to create more total profit, regardless of how it is split, simply isn't shared because of the traditional cultural arrangement between these two adjacent industries.

This is beginning to change, and change it must. Certain companies are taking a leadership position, and currently the retailers seem to be leading the charge. Wal-Mart, for example, has encouraged this type of data sharing, albeit in the form of an RFID mandate to its suppliers.

RFID tags are applied to items as they move through the supply chain, which provides businesses previously unknowable operational insight into their own business processes, and as that information is shared, insight into the entire business network. Exchanging such operational data enables business partners to execute more efficiently; for example, by sensing true real time demand through RFID data, companies can become more demand-focused instead of forecast-based, which has real business benefit:

- “Becoming demand driven is a fundamental shift in how to do business and can improve revenue by 10% and profitability by 5% to 7%.” - Source: AMR Research
- “The most advanced demand-sensing companies have 15% less inventory, a 17% better perfect order performance, and a 35% shorter cash-to-cash cycle time. “ - Source: AMR Benchmark Analytics

Sharing data can therefore have significant business benefit. However, even enlightened business managers will not want to share all of their data; in the new, collaborative environment, they will have to be adept at determining when sharing data grows the pie so much that it outweighs concerns about giving up some share of the pie. More simply put, companies are better off with 40% share of a 10 million dollar pie than they would be with a 50% share of a 5 million dollar pie.

A New Platform for Sharing

The natural extension of sharing RFID data is a concept known as the *Internet of Things*. Essentially, this moves the B2B sharing paradigm away from point to point communication between two companies and enables companies to instead share data on a network with trusted business partners farther up or down the supply chain. The Internet of Things is standards-based and promotes the free flow of information among all supply chain participants. However, the Internet of Things is somewhat of a misnomer. When some people hear the term, they automatically assume they should be able to type ‘where are my car keys?’ into Google and immediately find out that they are lost in the couch. Instead the current focus should be on uniquely identifiable physical or digital objects, in a business context.

Information about purchase orders or business contacts could be exchanged on such an infrastructure in just the same manner that the location of a bottle of Coca-Cola could be. Sharing such information indicates that the “Internet of Things” in the colloquial sense will be superseded by a “Business Internet,” a network of EIS systems that enables businesses to more efficiently serve their end customer through the efficient exchange of uniquely identifiable information with their trusted business partners.

The value of such a platform should be obvious, but the path to success (i.e. widespread adoption among enterprises) is less so. This shift in technology, both in standards support by solution providers, as well as the information exchange platform itself, not to mention the newly available RFID data, will enable participants to create new business processes that were never before possible, resulting in new value that contributes directly to the bottom line. Balancing supply and demand across the network will help increase throughput and profitability while reducing capital lock-up by maximizing utilization, reducing working capital and minimizing inventory. Improved visibility, planning and optimization across the business network will result in reduced material (e.g. waste and obsolescence), manufacturing, transportation and handling costs, all of which leads to increased profit margins and available cash. Given the recent instability of the financial markets and credit crunch, the increased availability of cash could mean the difference between weathering the storm and shutting down the business for good.

Conclusion

A commitment to open standards and a willingness to share information with trusted business partners will position companies best to weather the storm of the current economic crisis. Business leaders should open their minds to a transition from old school thinking or risk putting the future of their business on the line. As these leaders prove out the higher ROI of data

sharing, some of the most critical data to share will be the ROI data itself. These proof points will spur other business leaders to action, and lead to widespread adoption of the platform. As more businesses participate in the network, the value of participating in the network will increase dramatically, until critical mass is reached. With such a platform in place, decision makers will have to think strategically to weigh the trade-offs between sharing and hiding data. In an increasing number of situations, decision makers will find there is more value in sharing enterprise information with trusted business partners than there is in keeping such data locked in the vault. Now if I could just use Google to help you find your keys to that vault...

Steve Winkler is a standards architect in SAP's Standards Management and Strategy group. He works on standards strategy for supply chain and product life-cycle management, and for industry-specific standards covering consumer products, life sciences, wholesale, and retail. His current focus is RFID and related business processes for which he helped develop the Electronic Product Code Information Services (EPCIS) standard in the EPCglobal community. Prior to his focus on business standards, Steve represented SAP in the development of technology standards that support Web services. Previous endeavors at SAP include architecting and developing a messaging system for SAP NetWeaver's Process Integration (PI) product.

David Frankel is Lead Standards Architect for Model-Driven Systems in SAP's Standards Strategy and Management group. He has 30 years of experience as a programmer, architect, and technical strategist. He is the author of the book, "Model-Driven Architecture®: Applying MDA® to Enterprise Computing." He also is lead editor of the book "The MDA Journal." He served several terms as a member of the Architecture Board of the Object Management Group (OMG), the body that manages the MDA standards, and he has co-authored a number of industry standards. Recently he has been publishing and speaking about the role of semantic interoperability in business network transformation, and has been promoting the Business Process Expert community at www.sap.bpx.com.