

# SOA goes global

Multi-enterprise SOA is changing the way companies do business. Rodney Gorham explains how

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The idea of a service-oriented architecture was originally a profound change for both business and technology but the practice, known commonly as SOA, is now overdue for an update.

It is time for the SOA focus to shift away from enterprise architectures and applications towards larger, fundamentally different problems that need to be solved in the space between enterprises to address the issue of multi-enterprise SOA.

Multi-enterprise SOA extends the SOA concept into the realm of managing the flow of business processes and data across departmental, organisational and geo-political boundaries. It is an enabler that allows organisations to rapidly adapt to changing business, technology and legislative environments. It facilitates IT-driven growth in a way that enterprise-internal projects generally cannot.

The concept of multi-enterprise SOA is built upon a number of fundamentals that traditional SOA practitioners may find difficult to embrace.

## Outside the IT box

SOA current practice is strongly based on the principles and habits of in-house IT departments. It is often viewed as just another application development and integration toolset, most frequently used to integrate existing in-house applications. And it is a great

choice for internal integration projects, yet it can demand so many resources (including time, budget and management attention) that its ability to achieve meaningful innovation is reduced, especially when compared with what could be achieved outside the enterprise.

Many of today's global market problems and opportunities require a solution that can only exist outside a company's four walls. Companies must always be ready for change, capable of responding to changes in their supply chain or demand chain, or even in ownership. Extended supply chains need management. International business brings the headache of multiple tax and regulatory regimes. Multiple subsidiaries and partners must be co-ordinated. These are all issues for the multi-enterprise environment.

Some of these are also opportunities that offer a substantial return on investment (ROI) if properly managed. For example, a 2005 AMR Research<sup>1</sup> study analysed companies implementing demand-sensing solutions and noted benefits including:

- 15 per cent reduction in inventory
- 17 per cent improvement in perfect order performance
- 10 per cent higher revenue and

- 5-7 per cent higher margins than competitors.

Such results are only achievable with an external focus. Internal systems integration projects cannot compete with business results or with an ROI of this magnitude.

A recent Gartner report points to the multi-enterprise future, stating: "... by 2011, midsize-to-large companies will at least double the number of multi-enterprise and interoperability projects they're managing and will spend at least 50% more on business-to-business (B2B) projects compared with 2006". Gartner also stated, "Global 2000 companies will double the number of automated multi-enterprise transactions, documents and process-execution events between 2006 and 2011."<sup>2</sup> SOA concepts and technologies have a crucial role to play in ensuring the success of these multi-enterprise projects.

## SOA: more than web services

The multi-enterprise domain also brings into conflict the traditional SOA choice of enabling technologies. For many practitioners, SOA is interchangeable with 'web services'.

Selecting a single implementation technology such as web services makes sense when you are focused on what's inside the enterprise. It offers the tantalising – if unlikely – prospect of a consistent enterprise architecture; a laudable goal

for many practical reasons and one that should not be discouraged.

However, when the focus is broadened to include what goes on outside the enterprise, a single-service access method becomes completely unachievable. The reason is simple: while a large company may have between 300 and 1000 internal systems requiring integration and could be conformed to use a web services interoperability approach, that same company could have 20,000 suppliers or 20,000 B2B customers, each with multiple process and data integration touch points. It would be completely impractical to implement a single technology across this number of trading partners. Customers will have their own ideas about the right enabling technology. Even if each customer does agree to adapt to your requirements, such changes will increase their costs, which will in turn increase the price you have to pay them. Consider the logistical problems of ensuring that all parties are operating from the same version of the same standard at the same time!

Web services are an important option, but the multi-enterprise environment demands more – AS2, AS3, AS4, ebXML, SOAP over JMS, FTP, RosettaNet, SWIFT, and so on. In the end, you may find the more tightly defined standards such as AS2 are easier to govern and manage. Whatever your preferred channel, being able to support a multi-channel approach is key for the multi-enterprise SOA.

## Reduced complexity?

It may seem a heresy, but in the multi-enterprise environment, SOA technologies need to be managed in much the same way as other legacy technologies.

The reason is the different dynamic of technology adoption inside and outside the enterprise. Inside, careful IT management creates the motivation to limit the number of technologies and versions in use, and the rate of change from one technology era to the next. Outside the enterprise you can't achieve that degree of control. New technologies and new versions of technologies arise in such a way that you can't avoid adopting them.

There are many multi-enterprise wire protocols, process protocols and data standards, each of

which changes on its own schedule as determined by third parties. For instance, a typical global manufacturer might need to support 20 or more separate standards including ANSI X12, EDIFACT, TRADACOMS, CII, RosettaNet, HIPAA, SWIFT, ACH, and OFTP. Across that manufacturer's range of suppliers and customers there will be many different versions and combinations of these technologies and standards.

As soon as you venture outside the single enterprise, you'll be presented with technologies that range from the latest and greatest, to legacy. Technologies you think of as outdated will be required by some trading partners for years to come, while those you consider leading edge may have already been retired by others.

The objectives of multi-enterprise SOA include acknowledging and dealing with these unavoidable complexities (rather than just reducing complexity) and becoming easy to do business with (rather than just reducing IT costs).

These days, the cost of *not* being easy to do business with is simply too great. If a partner doesn't integrate with you electronically, they will instead submit purchase orders, invoices and other transactions by fax, mail or phone, resulting in manual handling costs five times greater. Multiply that expense by the number of transactions your company undertakes every year and the motivation to accommodate a wide range of potentially legacy technologies (both inbound and outbound) becomes very clear.

The need to support a large number of past, present and future technologies at once means that thinking about – and managing – SOA technologies is comparable to the management of other (sometimes legacy) technologies. It's a very different mindset to that required by an in-house focus.

## Inside your organisation

The same tools and technologies used to solve multi-enterprise SOA requirements are in many cases the best for solving inside-the-enterprise SOA requirements.

Most large companies function like a collection of smaller distinct companies rather than one, large,

uniform one. Whether the divisions are business units, departments or subsidiaries, technology choices are usually independently determined by each division. This is particularly true of companies that have grown through acquisition. Enterprise SOA solutions are not well suited for interoperating within this wide range of protocols and standards, but multi-enterprise SOA solutions are.

The same is true for companies that use business process outsourcing (BPO) providers. These may function like a department or division, but bring a different set of technologies. Decisions to add or change BPO providers or to bring a BPO function in-house causes technology churn similar to changing external trading partners.

As enterprises become more virtual and make greater use of the sourcing options available, the line defining the 'enterprise' boundary can move very quickly and the multi-enterprise SOA approach becomes the only viable way to manage this change and complexity.

Finally, most companies that have SOA infrastructures already have multiple SOA technologies and vendors. These disparate infrastructures also need to be integrated. In many cases the various enterprise SOA technologies will still be able to interoperate, however, with a large enough technology gap or design difference, a multi-enterprise-style SOA solution may be a better choice.

## Conclusion

Globalisation, trading partner complexities, demands for flexibility and the need for responsiveness and speed both in-house and across enterprises are among the driving forces creating a distinctly different multi-enterprise approach to SOA.

There will always be a demand for in-house SOA solutions, but it is time for organisations to start to broaden their focus and consider the potentially greater rewards of multi-enterprise SOA.

1. AMR Research, Lori Cecere, "The Handbook for Becoming Demand Driven", July 19, 2005
2. *The Emergence of the Multienterprise Business Process Platform*, Andrew White, Debbie Wilson & Benoit Lheroux, November 27, 2007 