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Weak governance haunts SOAs

SPECIAL FEATURE by David Longworth

PRACTICAL experience of service-oriented design and development is driving one critical requirement to the top of the agenda: the need for strong governance over developers.

Development organizations have found they must evolve new compliance and incentive systems to ensure their SOAs are built on stable foundations. Without governance, unfettered ad-hoc development of services threatens to undermine the promised benefits of SOA, such as improved productivity through service reuse and better alignment with the business. Instead, SOA initiatives may lead organizations in a backwards direction, pouring development dollars into a black hole.

Motti Vaknin, founder and CEO of WebLayers, a Cambridge, MA-based vendor of SOA governance tools, gives the example of one telecoms company where the vendor was invited to audit the planning and execution of a B2B integration strategy. "What we found over there was the gap between top management [intentions] and the

deployment in the field was so great that it caused the company to lose millions of dollars through late delivery and development that was outside the stated requirements."

In addition, when the company needed to modify those developments, it couldn't because implementation had not been carried out as the overall architecture required it should be – resulting in, for example, missing documentation or non-standard design.

There's little use in having an enterprise strategy unless developers adhere to the policies and practices it sets out

This isn't a one-off example. A similar story would probably emerge at any Fortune 500 company or government agency today, if they took the time to investigate. Most don't – and so only become aware of the problem when they embark upon some overarching integration project or similar enterprise initiative.

>> continues on page 10

“It's going to be critical to have end-to-end support for governance. Customers can't go to one company to provide all the runtime pieces [in an SOA]”

— David Butler, Systinet, page 3

“A lot of the SOA projects we see are SOAP operas around a database”

— Mike Abbott, Composite Software, page 8

“There will be organizations who say they are building SOA and end up with spaghetti code”

— Brent Carlson, LogicLibrary, page 10

Weak governance haunts SOAs (continued)

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The move to SOA is set to hike the issue of developer governance up the agenda, according to research that BEA and *InfoWorld* carried out early this year. Of almost 700 companies surveyed, 27% were already adopting SOA, and nearly a third of these implementations ranged across different divisions. The research found that the top two resources these companies required were implementation models and reference architectures – effectively an admission that most were moving ahead without a clearly defined roadmap. In response, application server vendor BEA has put together a consulting service, based on bespoke work already carried out, designed to help organizations get started on SOA in the context of an enterprise strategy for three years down the line.

There's little use in having an enterprise strategy, though, unless developers adhere to the policies and practices it sets out. Early adopters of SOA have discovered the importance of monitoring, auditing and enforcing compliance with established policies, and are testing out a variety of mechanisms for increasing the willingness of developers to fall into line with centrally agreed SOA policies.

Projects vs enterprise

If the early experience of vendors and their users is anything to go by, it is the tension between the project and

enterprise view that will be one of the greatest faultlines exposed in the move to SOA. If an SOA is going to deliver enterprise-wide reuse and interoperability, then individual projects and business units must accommodate the needs of the enterprise architecture. This can open up a can of worms in the corporate culture, with clashes of interest flaring up.

“We have certainly matured in [the way we go about] application development,” says Motti Vaknin, founder and CEO of SOA governance tools vendor WebLayers. “But if you talk to project teams today, you see a lot of discipline at the project level, with far less at the enterprise level.”

“One of the cultural challenges is how you incentivize ... project teams to develop services for enterprise use,” says WebLayers' CEO.

Bruce Graham, VP of worldwide professional services at BEA says that the role of enterprise architects will be key: “Some [organizations] have strong architecture teams already in place. But often, they don't achieve anything and then projects just do as they please. In other cases, organizations don't have a concept of enterprise architecture. They just [feel they] need to do something and deliver it.”

The danger that individual projects may actually conflict with enterprise architecture goals leads at least one vendor to steer clear of project-level deployments. “Very often >>>

Learning from the history of OO

THE SHIFT from component-based to service oriented development has not been an entirely fruitless journey – many lessons learnt in the object-oriented (OO) world, particularly with Java deployment, are now being carried across into SOA.

Alan Himler, VP of product management at software development asset management vendor LogicLibrary, suggests a simple solution to the project/enterprise divide. “Make them aware that there aren't enough hours in the day to get their project completed and that the pace will continue to accelerate. They'll soon realize that they have to do something radically different to succeed.”

That something different – building reusable services – is a concept that LogicLibrary founder Brent Carlson picked up on when heading the much-feted San Francisco project, an IBM-led initiative in the late 1990s to develop reusable business components. Carlson spent time in Germany and

Sweden heading up teams of domain experts trying to understand what elements this ambitious project would need, before taking over as lead architect in the US.

Carlson says: “The experiences we gained in producing components were influential in the forming of LogicLibrary. We learnt a lot about what you need to make an asset configurable so you have all the metadata needed for reuse.” Carlson points out that apart from the simplest services – such as the oft-cited “get stock quote” or exchange rate services – the semantics around how you use a service need to be carefully explained in an asset library, together with the links to other assets.

Unlike San Francisco, which ultimately failed to catch on, Carlson believes there is hope for SOA. “There will be organizations who say they are building SOA and end up with spaghetti code,” says Carlson. “But many more will be successful at SOA because the supporting tools and infrastructure are starting to be put in place and because it is a mainstream leading edge concept.”

>>> project success is [harmful] to architectural achievement,” says Sam Boonin, VP of marketing at Blue Titan. “There’s been this shaky balance between IT and the business units for a decade now. We help enterprise IT groups looking to roll out an architecture.”

Sticks and carrots

One way to persuade project teams to work within the enterprise architecture is to provide a financial incentive. “It’s about how projects are funded,” explains Ian Barnes, chief technology advocate at BEA’s EMEA services division. “The architecture group sits outside the business units. But the business units have got to deliver in a certain number of months’ time and so they make compromises. You need to get buy-in and you need governance across the business units.”

There’s no doubt that there’s additional overhead involved in developing enterprise-class services. A central architecture group can take charge of funding that overhead, says Brent Carlson, founder and VP of technology at LogicLibrary, a Pittsburgh, PA-based vendor of software development asset management tools: “We’ve seen the rise of the enterprise architect in terms of visibility, importance and budgeting authority. Two years ago, it was hard to find an architect with budget authority – now architects have the budget and they can initiate projects.”

Individual projects need to see the benefit of that funding, though. If they find it more economical, not to mention easier and faster, to develop in the way they have always done – including shortcuts and workarounds and perhaps skimping on the documentation that accompanies the deployment – then they are likely to continue in this vein unless a fat carrot or a big stick is applied.

Vaknin says: “I believe one of the cultural challenges is how you incentivize development teams and project teams to develop services for enterprise use. If for example you are in an enterprise integration scenario what incentive do you have to develop services? How do you quantify and qualify that?”

For many, it is increasingly coming down to financial incentives. Several large financial services companies are said to be offering developers cash rewards if they develop services which enhance the enterprise SOA in a particular way – such as providing a service with multiple reuse possibilities.

But whether you are offering incentives or providing extra funding for additional development, this is new money that has to be found – and a different kind of business case that has to be made. BEA’s Graham says

Setting the rules

A sample policy might start at the business level with regulatory compliance issues:

- Customer name and contact information may not be transmitted as clear text
- Each message must carry information to uniquely identify its source, destination, timestamp, and transaction ID for mandatory archiving requirements

Followed by specific information security policies such as:

- Messages must contain an authorization token
- Password element lengths must be at least 6 characters long and contain numbers and letters
- Every operation message must be uniquely identified and digitally signed

And further detailed to very technical policies that ensure architectural strength:

- Do not use RPC Encoded web service operations
- Do not use Solicit-response style of operations
- Do not use XML ‘anyAttribute’ wildcards

Source: WebLayers white paper “Introduction to SOA Governance”. Downloadable from www.weblayers.com

organizations take a number of approaches, ranging from a central fund to a departmental tax. “Some companies say if you incur additional expense, we’ll fund that at a corporate level. Others levy that as a tax – a certain percentage of the investment.”

The model will of course differ from one organization to the next – often depending on the clout of the central IT function. More distributed IT organizations may prefer to prove a governance model in one particular project, before extending it out to the wider enterprise. Graham adds: “At some point, you’ll have to talk about the whole piece. But there are lots of ways it can work.”

Monitoring compliance

Beyond the mere fact of encouraging service-aware development, enterprise architecture teams are having for the first time to get into the nitty-gritty of how development is being carried out and are employing new sets of tools to govern this.

The problem of wanting to enforce standards in the development environment is not new, says Vaknin. Enterprises have always attempted to encourage developers to use a particular development environment or code base. But whereas previously a developer building an application to meet a business requirement just had to

“make it work”, now companies need to ensure services that are developed meet a host of other criteria.

These range across business and technical policies and actual implementation rules and may include, for example, compliance with security policies, with publicly available standards such as WS-I or even with low-level standards such as specifying a transaction ID in the SOAP header (see box on previous page: *Setting the rules*). Companies may have books of policies, and “interface review boards” to audit compliance, but as Vaknin points out, without tools to automate the process, the only way to ensure compliance is to “eyeball” every single service.

Development to deployment

The tools to help enforce these policies in an XML and web services world are only just emerging – and there is still some disagreement about how far they should go: governance can cover any number of bases from compliance at a development stage, through control from an access perspective right down to deployment. Some early adopters of UDDI have attempted to take on this whole lifecycle, which registry vendor Systinet defines as ‘enable, discover, publish and manage’. “What’s new here is adding discovery and management, not a traditional function of the development lifecycle,” says David Butler, VP of marketing at Systinet. “It’s a merger of the design and run-time, a new lifecycle.”

Others prefer to focus on the design and development phase, leaving the runtime binding and oversight to management vendors like Systinet. “You need to ensure XML schema and web services are designed right first time,” says WebLayers’ Vaknin. “When a project exposes these as services, they become an enterprise asset and that’s a new entity that you don’t have control of anymore.”

Products such as those from WebLayers and LogicLibrary aim to help developers create compliant services. As well as a repository for policies, WebLayers provides a series of CheckPoints which enable developers

and their superiors to test their services against enterprise policies. Both WebLayers and LogicLibrary’s LogiDex have the ability to implement a series of sign-offs as part of a development process framework. These will often include business approvals alongside the technical sign-offs. “When you think about governance, there are two parallel processes going on,” says Carlson. “And you need to ensure business architecture and technical architecture is well aligned.”

In a service-oriented environment, governance has to extend across both the provider and the consumer dimensions. Service providers must ensure that published services meet policies and have supporting artefacts, such as sample code or usage guides. Service consumers – the composite application developers – need to find and perhaps modify the service, again ensuring that usage is in line with accepted practice.

In the quest to get developers ‘on message’ with SOA, some companies have gone so far as to prescribe the terminology they use to describe development – attempting to change the culture of the organization by changing the way developers talk about their projects. Telecoms giant BT who, with the help of BEA’s professional services, has embarked on an SOA transformation program, has banned developers from talking about interfaces, instead insisting on the words “consumers”, “providers” and “services”.

Changing the developers’ vocabulary may seem a radical approach to SOA governance, but BT claims its program has resulted in a 40 percent reduction in development costs in its first 12 months.

Links

- [w](#) – Blue Titan Software
- [w](#) – BEA Systems
- [w](#) – LogicLibrary
- [w](#) – Systinet
- [w](#) – WebLayers