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E-Guide

SOA ARCHITECTURE: WHY YOU NEED API MANAGEMENT

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FAQ: Making API strategy, development and management decisions

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ONNECTED BUSINESSES NEED APIs to share information and do business with resellers, suppliers, end users and more, but using them effectively calls for careful decision making. This expert eGuide discuses why organizations need API management, what the benefits are, and answers frequently asked questions about key API issues.

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FAQ: MAKING API STRATEGY, DEVELOPMENT AND MANAGEMENT DECISIONS

Jan Stafford

Application program interfaces (APIs) have been around for years, but their importance and usage have soared as Web, mobile, cloud and machine-to-machine technologies have matured and become widely used. Those new ways of computing and businesses' need to exploit them for commercial gain require an easy way to get applications to talk to each other. That's what an API does.

Connected businesses need APIs to share information and do business with resellers, suppliers, end users and more, but using them effectively calls for careful decision making. In this article, software industry experts answer frequently asked questions about key API issues.

WHO DOES WHAT IN PLANNING, DEVELOPING AND DEPLOYING APIS?

Enterprise architects are usually the lead managers of an API strategy, according to Forrester Research analyst John Hammond. They plan and oversee design, architecture creation and modification, development, and integration

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of APIs with back-end systems.

Other team members may include:

- Systems administrators and/or operations directors, who maintain the API infrastructure once it is deployed and starts being part of the core infrastructure.

- Business and product managers, who handle API strategy, and are liaisons between the developer ecosystem and business users and customers. For example, a product manager works with the developers to define the requirements for an API.

- Developers and engineers, testers, stakeholders, the product management group, enterprise architecture group, and maybe an administrative group, who together make up the development team.

WHAT IS THE MOST COMMON CHALLENGE IN MANAGING AND DEVELOPING AN API STRATEGY?

The main challenge, most experts say, is that APIs are used in multiple

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environments for a mix of reasons. “Understand that you are going to be solving multiple problems,” Hammond said. For example, API developers and managers could encounter mobile access roadblocks in network connectivity and security. Consider that once an API is in place, access rights for every single type of user, including third-party outsourcers, have to be specified. The connected product component presents control problems. For example, once an API is made available, it offers a developer ecosystem for other companies to innovate around your creation. The API could be applied to uses it wasn’t meant to handle, leading to customer dissatisfaction, poor performance or use of intellectual property to create competing technologies.

WHY IS API VERSION CONTROL IMPORTANT?

One problem with APIs is that they are simple to put out. “If you’re not careful, that can turn into a negative,” said Mike O’Neill, vice president of innovation at Axway, an API server vendor. “Before you know it, developers are developing against that API.” Right away, developers will send feedback and even make changes themselves. Hack attacks will show where tighter security is needed, for example. The need for changes could outstrip the provider’s ability to make them.

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Before releasing an API, plan a version roadmap; also plan a way to retire old APIs, to release security updates and to accommodate more and new uses, O'Neill said. Be sure to set up monitoring and tracking for an API to determine usage patterns, such as what time of day it's being used, which clients are using it more than others, on which platform it's used most often, and so on.

HOW ARE APIS CHANGING ENTERPRISE ARCHITECTURE AND APPLICATION INTEGRATION ECOSYSTEMS?

The API wave is upending enterprise architectures, experts say. Commonly, enterprise architectures have been three-tiered, including a Web server, app server and database layer. Now, new layers have been added, including API and data services layers.

Now, integration challenges concern more than software, hardware and internal networking. An API facilitates interaction with outside customers, suppliers, partners and organizations. "The integration problem has moved from inside the organization out to the edge," O'Neill said. So, all the companies involved need an API layer for developers to program against.

Once an API layer is in place, a data services layer is needed behind it. This could be a traditional database, but in-memory and highly distributed

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databases could come into play as well, experts say.

Today's enterprise architecture has to encompass messaging systems, transactional or nontransactional systems, and real time-processing engines, said Les Hazlewood, chief technology officer at user management API vendor Stormpath. "The architecture and the tools in our toolbox have changed," he said. "It's no longer just an app server on top of a relational database."

HOW DOES WIDESPREAD USAGE OF APIS IMPACT SOFTWARE DEVELOPMENT?

In order to leverage APIs, software should be built in a pluggable manner, making it easy, for example, to plug in service A and service B and service C, Hazlewood said. "Using messaging as a communications infrastructure for a platform to build applications on top of is a different, nontraditional way of thinking about building software," he said.

With APIs at work 24/7, failure and fault tolerance become top issues. Traditionally, most applications were in a big, fat, monolithic bundle that would just run on one computer. Developers didn't have to worry about distributed networks, architectures and data centers and customer access to systems, Hazlewood said. Now, APIs have to be online all the time, so applications have to have high availability and fault tolerance, properties that make applications

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reliable every hour of the day.

Using messaging as a communications infrastructure for a platform to build your applications on top of is a different way of thinking about building software and presents new problems. Hazlewood gives this example: "If Twilio is not available because my network is down, and I still want to make a phone call, what do I do? How do I react to that particular failure? Do I retry? Do I send an error back to the user to let them know they should try the phone call later?" Such scenarios weren't in the picture before the cloud, mobile and Web application era, he said.

WHAT ROLE DOES SOA PLAY INAPI DEVELOPMENT AND MANAGEMENT?

Companies with a good strategy for service-oriented architecture are often at a good starting point to plug API management on top of that existing SOA strategy effort, Forrester's Hammond said. The SOA layer works well in handling API requests, and APIs can extend SOA processes beyond internal IT. Also, API management and SOA governance processes blend well, as APIs can push governance past common roadblocks like service consumption tracking and customer involvement.

The biggest challenge in blending SOA and APIs is understanding that in

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addition to supporting services using Simple Object Access Protocol, things that are function based, one also needs to start thinking about designing resources and asynchronous RESTful services as well. "As long as the companies have invested in that SOA solution and make that mind shift, they usually do pretty well," Hammond said.

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Todd Biske

WHY DO I NEED API MANAGEMENT? WHAT ARE THE BENEFITS OF IT?

The terms have changed, but the need is the same. In the heyday of SOA architecture hype, vendors spoke of products to support SOA governance. Some had repositories, some had gateways, and some had both.

Nowadays, those same vendors (and some new ones) are talking about API management. I'm not concerned with whether this is a rebranding effort, technology evolution or technology innovation. Instead, I think this is

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representative of a fundamental need that still exists in many organizations, that is, the need for consumer-focused, service-based thinking.

SOA ARCHITECTURE IN THE ENTERPRISE AND BEYOND

Let's face it, corporate IT is a very project-centric culture. Management within IT is primarily focused on two things: getting projects delivered on time and on budget via project managers, and getting people assigned to those projects via people managers.

There is little notion, if any, of product management, and the idea of service management is likely constrained to the IT operations organization. When the system goes into production, support is constrained, not to basic care and feeding but solely to keeping the lights on. Staff moves on to the next project. Applications go untouched for years. System upgrades and updated service integrations are neglected in deference to the delivery of new capabilities. A new capability with potential for revenue gain is going to trump upgrading your underlying application server every time. That's just the tip of the iceberg.

The reality is that projects are more complicated than ever. Want to make a project manager cringe? Just tell him or her there's another team that needs to be involved in the delivery of the solution. On top of that, it's very likely the

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new team doesn't have a formal engagement model for what they need to do.

Of course, that assumes you were first able to determine who the right team was. If the team is responsible for a Web service, is that service adequately described to allow the developers of the consuming system to use it properly? More often than not, the descriptions we have are from the last project, which are geared to the people building the service, not the people using the service.

Getting back to the acronym du jour, SOA architecture governance and management was focused on this problem as constrained within the enterprise. Application programming interface management extends this concept beyond the enterprise. I've even seen the term business API start to get used, although business interface is a more accurate term, as we're really not programming the business, we're interacting with it.

RISKS OF POOR API MANAGEMENT

Everything in a business has an interface; some are just better documented and better managed than others. Unmanaged interfaces will eventually lead to inconsistency and a poor experience for the people who use them.

The risk to a business with poor interface management will only get greater. I'm not aware of any company stating its projects are getting simpler and

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involve fewer systems. Instead, we're faced with projects that span multiple channels, user communities, teams and systems from within and outside the company.

Now is the time to start changing the culture and embracing the concepts of service and interface management. Amazon had the right idea -- create an API for everything and drive your interactions to those interfaces. You won't get it right the first time, so make sure your funding mechanisms allow for continued evolution of those interfaces.

One can't manage interfaces only when projects allow. Instead, strive to make everything about those interfaces as easy to use as possible. One key feature API management tooling has embraced that was not prominent in the SOA architecture heyday is that of identity token provisioning. It's one thing to have a fully documented API that allows a consuming system to be coded, but are you going to use a service that has an API for getting identity tokens that allows you to run as fast as you can go, or one that requires your team to wait four weeks for a manual process?

While a vendor once told me, "Management features don't sell products," I'm very glad to see vendors are still plugging away promoting technologies that assist in service and interface management efforts. Increasingly, companies

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that do this well are going to succeed. One only needs to look at the disruption created by Amazon's cloud computing offerings to know how quickly this change can happen.

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