

zapthink  
white paper

COMPOSING SERVICES INTO ENTERPRISE  
MASHUPS

*EMPOWERING BUSINESS USERS WITH  
ENTERPRISE WEB 2.0*





# COMPOSING SERVICES INTO ENTERPRISE MASHUPS

## *EMPOWERING BUSINESS USERS WITH ENTERPRISE WEB 2.0*

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### Abstract

The largely separate worlds of Service-Oriented Architecture (SOA) and the collection of collaborative Web applications known as Web 2.0 are beginning to converge. Now that SOA is maturing, organizations that have been implementing it are increasingly focusing on how to empower users by giving them greater control over the flexible composite applications that SOA enables.

Rich Internet Application technologies like Ajax, along with the collaborative nature of other Web 2.0 technologies, are enabling a new form of composite application known as an *enterprise mashup*, providing direction to architects who are seeking to provide agility and user empowerment to the business users in their organizations. IT is now realizing that it is their role to provide the architecture, infrastructure, and governance framework to support business users as they create, maintain, evolve and share such enterprise mashups.

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## I. The Business Drivers of Agility and User Empowerment

As companies look to remain competitive, reduce costs, and basically build whatever they're selling better, faster, and cheaper, they face a broad range of problems. Solving those problems leads to success, while succumbing to any one of them can lead to dramatic failure. There is one business problem, however, that fundamentally covers all the rest. That one problem is *inflexibility*.

Inflexibility is the underlying problem of business today, because basically, if companies (and government organizations) were flexible enough, they could solve all of their other problems, since no problem is beyond the reach of the flexible company. If only companies were flexible enough, they could adjust their offerings to changes in customer demand, build new products and services quickly and efficiently, and leverage the talent of their people in an optimal manner to maximize productivity. And if only companies were flexible enough, their strategies would always provide the best possible direction for the future. Fundamentally, flexibility is the key to every organization's profitability, longevity, and success.

How can businesses aim to survive, even in environments of unpredictable change? The answer is business agility. We define *business agility* as the ability to respond quickly and efficiently to changes in the business environment and to leverage those changes for competitive advantage. Companies that can make effective use of a changing environment are better able to compete and thrive in any business climate.

The most important aspect of this definition is the fact that it comes in two parts: the reactive, tactical part, and the proactive, strategic part. The ability to respond to change is the reactive, tactical aspect of business agility. Clearly, the faster and more efficiently companies can respond to changes, the more agile they are. Achieving rapid, efficient response is akin to driving costs out of the business: It's always a good thing, but has diminishing returns over time as responses get about as fast and efficient as possible. Needless to say, the competition is also trying to improve their responses to changes in the market, so it's only a matter of time till they catch up with you (or you catch up with them, for that matter).

The second, proactive half of the business agility equation—leveraging change for competitive advantage—is by far the most interesting and powerful part of the story. Companies that not only respond to changes but actually see them as a way to improve their business often move ahead of the competition as they leverage change for strategic advantage. And strategic advantages—those that distinguish one company's value proposition from another's—can be far more durable than tactical advantages.

*Inflexibility is the underlying problem of business today.*

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*Service Orientation is a business approach that leverages IT resources as flexible, business-oriented Services.*

### The Rise of Service Orientation

To provide this competitive agility, enterprises and government organizations are looking to their information technology (IT) departments, more than ever before. IT, however, has struggled to rise to the challenge, due to the cost and complexity of maintaining today's IT environment. Companies need a better way of leveraging IT as a business resource, and that need has led to a new movement known as Service Orientation.

*Service Orientation* is a business approach that leverages IT resources as flexible, business-oriented Services. Services abstract the underlying complexity of the IT environment, providing greater power and flexibility to the business. Once companies realize that Service Orientation has the power to increase competitiveness in the face of today's ever-changing business environment, then there will be no question that Service Orientation is a critically important business concept.

The core enabler of Service Orientation is *Service-Oriented Architecture (SOA)*, a set of best practices for organizing and managing IT resources and people to build and support such Services. Properly implemented SOA will enable business users to compose Services together into flexible, composite applications called *Service-Oriented Business Applications (SOBAs)* that implement business processes.

This vision of Service Orientation leads to the second business driver: *user empowerment*. The point of IT isn't to empower a small group of technical people. On the contrary, the goal of IT is to put increasingly powerful tools into the hands of all individuals within the business, so that they can leverage those tools to do their work and meet the needs of the business. User empowerment, however is a two-edged sword: empowerment without adequate control can lead to anarchy. Providing both for agility and user empowerment balanced with the corporate need for control and management is the central theme of the changes facing IT organizations around the world today.

## II. Enterprise Web 2.0: A Convergence of Capabilities

The forty-year history of IT has followed a pendulum, swinging from centralized computing (mainframe timesharing), to decentralized (client/server), and back to centralized (Web/n-tier architectures with thin browser clients). Now the pendulum is swinging back to decentralized IT, with the emergence of advanced, collaborative, and richly interactive Web applications under the Web 2.0 banner, making possible an array of new opportunities. The swing back to decentralization, however, does not sit well with the enterprise IT team. Just as the PC revolution and the rise of client/server led to enormous support headaches and a siloed organizational structure, the thought of distributing the powerful collaborative capabilities today's technology enables strikes fear in the heart of many an IT admin and executive alike.

Because of the legacy the previous swings of the pendulum have left behind, the IT organization prefers to invest in building only the applications that the company cares most about, allocating their precious dollars and resources squeezed into the so-called discretionary part of the IT budget to the development of new applications for the largest number of people. However, this reality leaves the hard fact that many business departments simply can't get their IT needs met, because the IT organization is too busy building the IT applications that most of the organization requires to spend the time and money to deal with the niche interests of just a few users in the business. But today, the combination of SOA and Web 2.0—the combination that some people are calling

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*Enterprise Web 2.0*, promises to fundamentally change these economic realities of IT.

### **The SOA Tipping Point**

Up to this point in time, however, most people have not associated SOA with user empowerment. Instead, much of the SOA efforts in today's organization focuses on architectural and infrastructural issues—issues of integration, security, system management, and the like. Clearly, all such nuts-and-bolts issues must be taken care of before an organization can roll out business Services.

Services, however, are a great example of a distributed technology, and distributed technologies exhibit the network effect. The *network effect* states that the adoption rate of the network increases in proportion to its utility. In other words, as more resources are connected to the network, there is an increasing desire to connect additional systems to consume those resources, providing an increased motivation to add additional resources to the network.

In the beginning, the growth of any network is small, because only visionary parts of the organization are willing to utilize such new technology. But at some point, the growth of the network reaches a tipping point where the deployment and use of the technology explodes, to be abated only by the saturation of the technology on the network. Prior to the tipping point, any networked technology struggles to establish its value proposition, but after that tipping point, it becomes ubiquitous, and consumers of the technology rise in importance as purveyors of the technology compete for their business.

So, when does this tipping point take place? In order for a company to experience rapid adoption and growth of the Services in their network, there must first be enough of the right Services available. At that point, individuals who might not necessarily be the leading technology implementers will see reason to utilize those Services and expose Services of their own, perpetuating the chain reaction of growth, leading to a critical mass of available Services.

In fact, it is quite possible for companies to have hundreds of Services on their network, even though they have internally developed only a small fraction of that number. The ease of new Service creation, and the fact that newly purchased software will expose Service interfaces as their primary means of interaction will result in hundreds or thousands of available Services. Users don't care whether or not their own IT departments created a Service, they just want useful Services that meet their requirements. Therefore, a key indication that a company has passed their Web Services tipping point is that the demand for Services as well as the supply also explodes.

The fact that an increased supply of Services leads to an increased demand that perpetuates the network effect will be the essential indicator that the critical mass for SOA has arrived, and that we've passed the tipping point. At that point, the focus of attention will shift from producing Web Services to consuming them. Today, we're seeing that shift in attention, with the explosion of interest in software that consumes Web Services, including desktop apps, next-generation portals, and a range of business process tools that both consume and provide Web Services to people who are looking to build agile SOBAs. In fact, many of these new Service consumers are the collaborative, Web-based tools that fall under the Web 2.0 banner.

### **The Rise of Rich Internet Applications**

One clear indication that we've passed the SOA tipping point is the rise of Rich Internet Application (RIA) technologies like Asynchronous JavaScript and XML

(Ajax). On the one hand, such technologies provide rich user interfaces that maximize a user's productivity, and also satisfy the desire to decentralize computing so that a user can gain access to the widest base of IT assets at the lowest possible cost. These two forces are at odds because rich client interfaces, until recently, have only been possible in certain limited scenarios in which the business logic and computing resources were combined with the interface.

However, a new class of presentation layer is now emerging. This RIA provides a user experience that is similar to client/server applications, with a rich graphical user interface, responsive performance and highly interactive functionality. Users will increasingly demand the ability to present a rich variety of data and business logic to a dispersed audience without sacrificing either the economics of the Web or the rich user experience that traditional client/server applications provide.

Users today increasingly demand more from their online experiences. Gone are the days of static Web pages and poor interaction. Today's Internet users expect their online experiences to behave more like the desktop applications they are used to, enhancing their day-to-day productivity. In place of stateless Web interactions that offer only a cheap imitation of the interactivity we've come to expect from our desktop applications, the RIA combines real-time user interaction with rich user interface capabilities, leveraging increasingly sophisticated client-side technology to enable users to interact with and compose functionality from distributed applications no matter where they are located on the network.

Generally, RIAs are capable of providing advanced capabilities for user interaction, including desktop-like GUI features and data integration. RIAs enable the composition, and thus the integration, of local and remote sources of data and business logic. RIAs can also loosely couple presentation from application logic, allowing developers to change server-side logic without breaking the usability of their applications.

#### **From the Web to the RIA**

Businesses today want the operational and cost advantages of deploying applications over the Internet, but don't want the limitations that Web browsers impose on user interfaces. Unfortunately, there has been no practical way to provide rich client capabilities without reintroducing the scalability and manageability limitations of thick clients—that is, until now.

The RIA offers more capabilities than either the thick or thin client approaches of the past ever have. As companies desire richer interaction between their Services-based applications and the users of those applications, rich client solutions will increasingly gain prominence in the enterprise.

The set of capabilities for rich clients include the ability to:

- Provide advanced capabilities for user interaction, including windowing features and data navigation controls like buttons, check boxes, radio buttons, toggles, windows, palettes, etc., as well as powerful, rich media component objects like animated sprites, multi-track sound, and movies.
- Integrate local and remote sources of data and business logic, taking advantage of standards-based, Service-oriented approaches to integrate all the content, communications, and application interfaces it can physically access.
- Loosely couple presentation from application logic, giving developers the freedom not to have to make any changes to rich client functionality to

*Rich Internet Applications enable the composition, and thus the integration, of local and remote sources of data and business logic.*

make sure that the server and client can communicate. The rich client, like the standards-based Web thin client, can be loosely coupled and thus enable independent innovation of the business logic and the user interface to that business logic.

- Provide greater intelligence and efficiency in distributed computing. Rich clients aren't tethered by specific, tightly-coupled communications protocols as are most client/server thick clients and Web-based thin clients. Rather, rich clients can communicate with a wide range of distributed computing systems using both synchronous and asynchronous communication modes as needed. As a result, rich clients can surpass the inefficient request/response paradigm of thin clients and also break free from proprietary protocols, so as to make use of the most cost-effective and productive means to communicate.
- Deploy onto multiple platforms and channels. By abstracting rich clients' underlying runtime platform, users should be able to specify their presentation layer preferences without having to decide on a particular runtime environment. Rich clients also should support a wide range of user interaction channels including telephone, email, and voice interaction.

Fundamentally, today's RIA solution offers a broader range of capabilities than either the thick or thin client approaches of the past ever have. It is important to keep in mind, however, that RIA technologies are just that—technologies. They provide powerful tools, but tools alone aren't sufficient for building solutions that provide value. In fact, many of today's RIA tools are basically solutions looking for problems. People take for granted that RIAs are good for building "cool Web pages," but clearly, the real value of RIAs runs deeper than improved interactivity at the interface.

*Many of today's RIA tools are basically solutions looking for problems.*

### Introducing the Enterprise Mashup

In fact, it is the combination of RIA technologies with the loosely coupled Services that SOA enables that deepens the value proposition of these technologies in the enterprise context. To address the core business drivers of agility and user empowerment, organizations must bring together rich interface capabilities and business Services to build, evolve, and share SOBAs in collaborative environments—in the context of Enterprise Web 2.0.

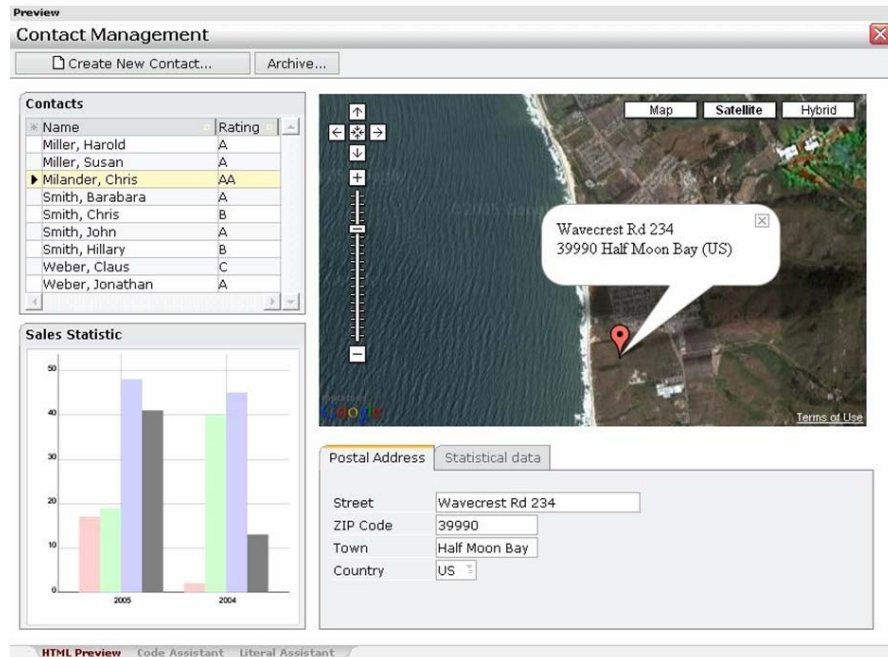
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Enterprise Web 2.0 is an umbrella term that brings together the family of collaborative, Web-enabled capabilities that fall under the Web 2.0 banner, and makes them relevant for the enterprise. Such buzzwords, of course, are still quite new and inherently flexible, and are one of the many side-effects of emerging markets. Nevertheless, evolving concepts require evolving terminology. Into this buzzword-heavy Web 2.0 world comes yet another important term—the *mashup*. According to Wikipedia, a mashup is a Web site or Web application that seamlessly combines content from more than one source into an integrated experience.

Mashups, in fact, are closely related to SOBAs, because SOBAs also combine content or functionality from more than one source into an integrated experience. What mashups have that SOBAs may lack is the rich interface. What SOBAs have that mashups may lack is the fact that SOBAs implement business processes in a governed manner. In true Web 2.0 fashion, therefore, let us create a new concept of the *enterprise mashup* by adding RIA capabilities to SOBAs, enabling flexible, composable, and collaborative business applications with rich interfaces. It is the enterprise mashup, therefore, that brings SOBAs to

the Enterprise Web 2.0 party. An example of an enterprise mashup is in the figure below:

### Example of an Enterprise Mashup



Source: Software AG

### Building the Value of Enterprise Web 2.0

In a world where IT consists of disparate silos, each requiring separate integration activities and discrete projects, the needs of the many outweigh the needs of the few. Enterprise Web 2.0, however, promises a world in which IT is responsible for creating an ecosystem that supports loosely coupled, composable, and reusable IT capabilities that scattered users can easily consume and compose into a wide array of new applications. A typical enterprise might have hundreds or thousands of such SOBAs, and there is no longer an economic requirement that large numbers of users must be able to use those applications. In other words, the economic reality of Enterprise Web 2.0 has shifted to the principle of the Long Tail.

The Long Tail refers to the economic phenomenon where products that are of interest to only small communities, and thus result in low demand and low sales volume, can collectively result in a large aggregate market. This large collection of small markets can significantly exceed the more traditional market that the most popular and high volume sales items can generate. For example, Amazon.com generates more business in aggregate from its millions of books that each only sell a few copies than they do from the top 100 best sellers that might each sell tens of thousands of units.

One quick way of summing up the Long Tail is by saying that there's more opportunity in catering to a mass of niche markets than a niche of mass markets. Large enterprises in particular are composed of masses of such niches, operating in different geographies and business units, catering to specific demographics with tailored solutions to meet the needs of all constituents. And yet, the centralized IT organization that serves the needs of the entire



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organization is typically woefully unprepared to serve these masses of niches: large numbers of users with widely varying IT needs. How, then, can IT support the needs shared in common with all the business groups without overextending its centralized resource to meet the specific needs of each of the individual groups?

The answer lies in the power of SOA. Indeed, one of the greatest benefits of SOA is that it fundamentally shifts the responsibility for application development away from the centralized IT organization to the diverse groups within the business. Developers within IT should no longer develop applications as discrete code that they must integrate at a later point in time. Instead, properly implemented SOA enables the composition of loosely-coupled Services described in metadata into enterprise mashups that implement business processes. It then becomes the responsibility of IT to manage such mashups in the context of a governance framework and associated infrastructure that enables continual, iterative change without disruption of the business.

### **The Role of IT and Enterprise Web 2.0**

In a traditional IT environment where the costs of application development, management, and deployment are high, IT can only afford to meet the most critical and central business needs. As the pendulum in the enterprise swings to Web 2.0, however, IT must support an environment that empowers the user to build, budget, and manage their own applications independent of a central IT body. The emphasis is no longer on the central architecture or even a central infrastructure for shared Services, but rather on the consumption side of the Service equation, where enterprise users are welcome to compose functionality from existing systems as SOBAs. Such composite applications no longer centralize business logic within core IT systems, but rather distribute it to Service consumption endpoints. The sort of enterprise mashups that businesses require combine rich interface capabilities with SOBAs that enable not only the use, but also the creation and configuration of the SOBAs themselves.

What's required to enable this sort of user empowerment is not just technology, but a change in the way that organizations go about budgeting, managing, developing, deploying, and even organizing their IT organizations and applications. In fact, the only way in which to truly enable user empowerment such that the Long Tail of IT applications is made a reality is for IT to provide an architecture, infrastructure, and governance framework that enables the Enterprise Web 2.0 vision of SOBAs—in other words, enterprise mashups. Instead of catering to a niche of masses, in which only the generalized needs of the many are met, Enterprise Web 2.0 supports the mass of niches, in which business units are empowered to meet their own application development needs. IT no longer builds applications on behalf of the business, but rather provides the infrastructure, architecture, and governance by which the business units can meet their own application creation needs.

Where the Long Tail works, minority business needs are catered to, and organizations consequently get greater value. A Long Tail model for IT may lead to improvement in a business' overall ability to meet the needs of its customers and business units, and thus the overall value of the business. However, aficionados of the Long Tail concept will point out that the mechanism that determines whether or not an organization can effectively take advantage of masses of niches is a low cost both of inventory and the distribution of goods. After all, it can only be viable to offer millions of products if the incremental cost of adding, selling, and distributing a new product is vanishingly small. Similarly, only in an environment where the cost of creation, maintenance, and deployment

of individual SOBAs is minimal can a business effectively enable the Long Tail of Enterprise Web 2.0 application development.

### III. SOBAs & Mashups: Driving Business Value

Combining terminology like SOA, SOBAs, mashups, Enterprise Web 2.0, and RIAs can be perilous. New terms can help clarify, but they can also confuse. In the case of this paper, the collision of two relatively distinct areas of discussion, namely Web 2.0 and Service Orientation, inevitably results a measure of consternation, because different people bring different contexts to the discussion.

#### The Context for Enterprise Mashups

The reason for much of the chatter about mashups and SOBAs arises from the fact that mashups, and Web 2.0 in general, are primarily social phenomena, while SOBAs, and SOA generally, are primarily business phenomena. Yes, there is money to be made in some mashups, to be sure, but business motivators aren't generally driving today's mashup development. Instead, mashups are part of the broader social context of Web 2.0, leveraging the power of the Internet to augment communication and collaboration among individuals, not between companies and their customers. In contrast, the "B" in "SOBA" clearly indicates their business context: the point of SOBAs is to deliver flexible IT resources to meet continually changing business needs.

It's important to realize that what SOA offers to Web 2.0 is the loose coupling between the providers and consumers of Services. Loose coupling means that businesses can change how they consume Services without having to make changes to the implementation of those Services, and vice-versa. Most of today's mashups care little about loose coupling. After all, if Google changes the implementation or location of their Service interface, for example, then developers of the various mashups that leverage one of Google's Services would have to update their mashups. Such changes might be annoying, but they're really not a big deal in the social context of Web 2.0.

However, if the mashup is an *enterprise* mashup in that its creator intended it to solve a particular business problem, then tight coupling between provider and consumer software would be a serious concern. The last thing a business wants is to leverage mashups for a core business purpose, only to find that they fail capriciously depending upon the whims of the creators of the underlying Services.

Mashups that meet business needs, therefore, will require SOA, and the SOA infrastructure necessary to guarantee loose coupling. Without that loose coupling, mashups are little more than toys from the enterprise perspective. From the business perspective, however, mashups represent a new class of user-centric capabilities that enable a broad range of new uses for software, including the collaborative, social capabilities at the core of Web 2.0. After the SOA tipping point, enterprises will care just as much about how they use Services as they do about creating and exposing Services for consumption, after all.

The fact that mashups and SOBAs come from two different worlds with disparate contexts doesn't mean that there isn't some middle ground. For insight into how the exciting world of mashups should enhance the comparatively dull world of SOBAs, consider the various users of SOBAs and how they should be able to work within the enterprise environment. As SOBAs continue to gain prominence in the enterprise, many business users will do little more than consume the

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capabilities of the SOBA. The classic example of a high-value SOBA is in a call center, where the call center reps regularly interact with multiple systems in order to do their day-to-day activities. Through the use of SOBAs, they can now interact with one coherent user interface that composes Services into a single view that provides all the visibility and control they require, where before their life was filled with complex, error-prone “swivel chair” integration of disparate, legacy application interfaces.

Users on the level of the call center rep, however, are not where the primary value of the SOBA comes through. After all, you’re probably offshoring that rep anyway. On the contrary, it’s the hands of the knowledge worker that can wring the most value out of SOBAs. These users not only consume the functionality of the SOBA, but also have some measure of responsibility over configuring the SOBAs as well, depending upon their role within the organization.

### **Mashups, Governance and User Empowerment**

It is important to remember that configuration is how the business updates a SOBA, once the Services that feed the SOBA are in place. SOBA configuration includes any change the business user would like to make, from the simplest adjustment of parameters to the most complex reorganization of business-critical processes. The user interface this knowledge worker uses, therefore, must leverage the combination of SOA, which enables the metadata-driven declarative nature of SOBAs, and a comprehensive governance framework that guarantees that nobody will make changes to SOBAs that violate corporate policies. It will not be sufficient for the user interface to offer nothing more than the call center rep’s screens—true enterprise mashups must also include all the reconfiguration capabilities that the business requires from its applications. SOBAs with such interfaces are the true enterprise mashup: governed, yes, but nevertheless putting great power into the hands of the business.

In fact, as the focus of enterprise architects implementing SOA shifts from providing Services to consuming them, we predict the growth of a diverse set of business-centric approaches to building, evolving, governing, and maintaining enterprise mashups. One of the reasons why enterprise mashups are so compelling is because enabling business users to assemble Services, and thus create new applications, in flexible, innovative ways, within the context of a governance framework, has broad, untapped business value.

A governance framework provides an infrastructure for creating, communicating, and enforcing corporate policies across the organization. IT governance in particular is a hotbed of activity today, not only because it’s vitally important for companies to govern their IT operations, but also because the business calls upon IT to provide governance tools to the business at large. As companies implement SOA, it’s no surprise that Service-oriented approaches to IT governance increasingly receive the focus of attention.

There are two faces to SOA governance, however. On the one hand, SOA governance simply means governing a SOA implementation initiative—for example, communicating corporate policies to developers implementing Services, and giving them the tools they need to follow those policies as they assemble the various elements of the SOA implementation. On the other hand, there’s a broader, more strategic definition of SOA governance: IT governance in the context of SOA. After all, SOA isn’t a single application that you can stick in a corner somewhere; instead, it’s important to implement SOA as Enterprise Architecture, applying Service-oriented principles across the entire scope of interaction between the business and IT.

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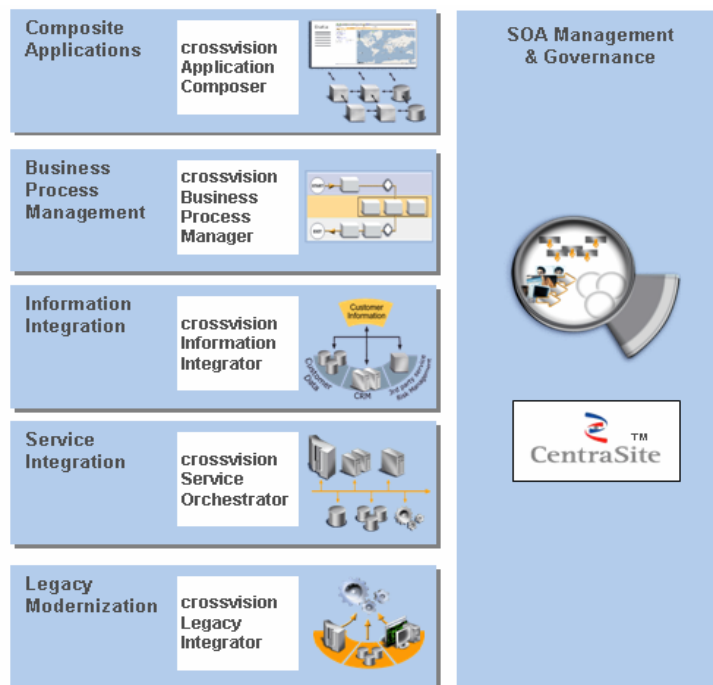
In general, the approach companies should take to prevent their employees from mucking everything up with their mashups, therefore, is to implement a governance framework . For a mashup to truly be an *enterprise* mashup requires governance. Clearly, no business would risk allowing any of its employees to assemble and reassemble business processes willy nilly, with no controls in place to ensure that the resulting mashups followed corporate policies. The problem is, today’s mashups are inherently ungoverned—that’s what makes them so appealing to techies. The bottom line is, the more governed an enterprise mashup becomes, the less like a Web 2.0-style mashup it’ll be.

#### IV. Software AG: Building Enterprise Mashups

Software AG’s *crossvision* is a SOA product suite that enables the creation, execution, management and governance of new business processes. *crossvision* also modernizes legacy systems, a core strength of Software AG. *crossvision* leverages SOA principles to adapt to customer needs, integrate flexible business processes and enable a process-driven approach to SOA.

*crossvision* is process-centered, and focuses on tools for business analysts, architects and developers. The *crossvision* suite contains six components: *crossvision* Business Process Manager, which coordinates the flow of business processes; *crossvision* Service Orchestrator, enabling the creation of new business Services; *crossvision* Information Integrator, which combines data from different systems into a single view; *crossvision* Legacy Integrator, providing for the integration of existing assets and exposure of existing systems as Services; *CentraSite*, which manages and governs the SOA environment, and *crossvision* Application Composer, which enables the rapid development of new business applications from existing systems. The *crossvision* suite is illustrated in the figure below.

Software AG’s *crossvision* Suite



Source: Software AG

*crossvision Application Composer enables the creation of enterprise mashups by composing RIA-based applications out of existing Services and components.*

*Application Composer is only a part of Software AG's enterprise mashup story.*

In conjunction with the rest of the crossvision suite, Application Composer enables the creation of enterprise mashups by composing RIA-based applications out of existing Services and components. Application Composer allows organizations to generate composite applications which utilize BPEL as well as Ajax. Application Composer takes a model-driven approach to Ajax, simplifying its implementation and maintenance.

Application Composer also facilitates new enterprise mashups with rich Web 2.0 user interfaces to enable business processes. It integrates with existing application and portal servers, and provides collaborative tools for business analysts and system architects. Application Composer also allows users to create mashups which blend legacy and new applications.

Application Composer offers the agility and user empowerment benefits that this report discusses. Due in part to its use of Ajax technology, applications and user interfaces that crossvision Application Composer can generate run without modification in browsers and Java-based clients. Application Composer decouples user interface definitions from the interface technologies, resulting in flexible applications, independent of the execution environment.

An essential part of realizing the enterprise mashup vision is in empowering business analysts and developers, in addition to business users. crossvision Application Composer comes with an Eclipse-based as well as a Web-based development environment for both business analysts and developers, allowing them to work together to implement a range of different interactive behaviors, generate reports and charts, define page flow and orchestration, and integrate existing Services, applications and information. In addition, Application Composer offers localization, personalization, and identity management capabilities that are key requirements in an enterprise context .

It is important to note that Application Composer is only a part of Software AG's enterprise mashup story. crossvision also offers CentraSite, which provides the governance capabilities critical for enterprise-enabling mashups. Equally important, however, is the underlying integration infrastructure that crossvision provides. Without this core infrastructure capability, organizations that might use a mashup tool might not be able to implement SOA. And without SOA, mashups will never offer broad value to the enterprise. Furthermore, all crossvision components work on top of existing SOA infrastructure. As a result, crossvision components can extend existing implementations, whether or not they leverage any Software AG technology. Software AG also offers a free community edition of CentraSite with Application Composer.

## V. The ZapThink Take

Not everybody in a company is either in IT or responsible for building, managing, or evolving business processes. Many people, in fact, find themselves participating in one or more processes yet have no control over the processes themselves. For these people, the move to Service Orientation has subtle but powerful effects. The tools they use in their daily lives to get their jobs done—such as spreadsheets, portals, business applications of one sort or another—can now participate in Service-Oriented business processes. These dedicated applications that focused solely on knowledge worker productivity can now empower the ordinary line-of-business individual to become a business process professional. As a result, these familiar tools now have new power to leverage the flexibility of enterprise mashups.

There are many moving parts to the enterprise mashup vision, however. Organizations must have RIA capabilities that provide rich interfaces to SOBAs.

*Organizations will have to undergo significant organizational and infrastructural changes to take advantage of the promise of Enterprise Web 2.0.*

Those SOBAs must leverage loosely coupled Services that rely upon SOA. And to achieve the user empowerment benefit that mashups promise, the organization must have a governance framework in place that enables IT to maintain the appropriate control as it empowers the users in the organization.

Software AG is one vendor who offers the tools necessary to put together this vision of the enterprise mashup, but there remain many vendors who do not provide such a complete offering. As a result, many organizations are still investing in enterprise software and middleware solutions that serve to only keep application costs significantly high, their application management brittle and inflexible, and the deployment of applications long, cumbersome, and expensive. Such organizations will never be able to realize the user empowerment benefits of Enterprise Web 2.0.

The radical change in IT that SOA and the Enterprise Web 2.0 vision promise is not simply the use of standards to expose system functionality, but rather in how the business conceives of and uses IT, and as a result, organizations will have to undergo significant organizational and infrastructural changes to take advantage of the promise of Enterprise Web 2.0.

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## About ZapThink, LLC

ZapThink is an IT advisory and analysis firm that provides trusted advice and critical insight into the architectural and organizational changes brought about by the movement to XML, Web Services, and Service Orientation. We provide our three target audiences of IT vendors, service providers and end-users a clear roadmap for standards-based, loosely coupled distributed computing – a vision of IT meeting the needs of the agile business.

ZapThink helps its customers in three ways: by helping companies understand IT products and services in the context of Service-Oriented Architecture (SOA) and the vision of Service Orientation, by providing guidance into emerging best practices for Web Services and SOA adoption, and by bringing together all our audiences into a network that provides business value and expertise to each member of the network.

ZapThink provides market intelligence to IT vendors and professional services firms that offer XML and Web Services-based products and services in order to help them understand their competitive landscape, plan their product roadmaps, and communicate their value proposition to their customers within the context of Service Orientation.

ZapThink provides guidance and expertise to professional services firms to help them grow and innovate their services as well as promote their capabilities to end-users and vendors looking to grow their businesses.

ZapThink also provides implementation intelligence to IT users who are seeking guidance and clarity into the best practices for planning and implementing SOA, including how to assemble the available products and services into a coherent plan.

ZapThink's senior analysts are widely regarded as the "go to analysts" for XML, Web Services, and SOA by vendors, end-users, and the press. Respected for their candid, insightful opinions, they are in great demand as speakers, and have presented at conferences and industry events around the world. They are among the most quoted industry analysts in the IT industry. ZapThink was founded in November 2000 and is headquartered in Baltimore, Maryland.

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