The Future of Portals

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Tomorrow's Digital Natives Will Demand a Different Set of Portal Capabilities

The MyPortal will go from a consumer phenomenon to an enterprise necessity!

Portals will play an important role in the introduction of Web 2.0 technologies to the enterprise!

Portal vendors will decompose their portal products along service-oriented lines!

Portals will serve as the primary entry point for enterprise mashups!

Gartner defines a portal as "access to and interaction with relevant information assets (information/content, applications and business processes), knowledge assets and human assets, by select targeted audiences, delivered in a highly personalized manner." Enterprise portals may face different audiences, including employees (business-to-employee [B2E] customers), business-to-consumer (B2C) users, or trading partners (business-to-business [B2B] users). Unfortunately, confusion still exists over the term "portal." To many organizations, a simple Web site aimed at their employees is a portal.

The Oxford English Dictionary defines "portal" as: 1) "a doorway, gate or gateway, especially a large and imposing one;" and 2) "an Internet site providing a directory of links to other sites." Most enterprises focus on the second definition, but a mature enterprise portal contains more aspects of the first definition.

Most enterprises use a portal product as the basic framework for building and deploying enterprise portals. Portal products have long supported service-oriented architecture (SOA) concepts and served as the integration point for the various functional capabilities associated with the high-performance workplace. As portal products have matured, they have "pushed the envelope" in the adoption of Web services.

Various vendors have embraced SOA at different paces. However, all leading vendors of portal products are pursuing SOA in their portal infrastructure, and several are delivering service-oriented applications to run on top of that infrastructure.
During the late 1990s and the first half of this decade, Gartner referred to "portal" as the most misunderstood term in IT. The term was used to refer to large consumer Web sites (destination portals such as Yahoo); a style of user interface (for example, a Sales Force automation application sporting a particular look and feel); and a type of software package sold by enterprise software vendors (pioneering portal vendors such as Plumtree and Epicentric and, in the first half of this decade, large infrastructure and packaged application vendors). Today, there is a stronger consensus among vendors, customers, IT professionals and the press as to what constitutes a portal, although the temptation to refer to any Web site as a portal still leads to confusion in many organizations. This level of consensus is not as strong for the term "Web 2.0."

A multitude of technology startups describe themselves as "Web 2.0" vendors, but established enterprise software vendors are also incorporating Web 2.0 technologies and principles into their products, especially their horizontal portal frameworks. The driving principle of Web 2.0, where the focus moves to the individual as a content contributor, also plays a crucial role in the development of the portal fabric, the "follow-me" portal and portal ubiquity.
An average user accesses a wide variety of portals: work, banking, travel, government and "mega portals." Each is stovepiped from the others, and interoperability between them is usually nonexistent. With the portal fabric, the user becomes the center of his or her own portal universe. In the same way that traditional portals provide content aggregation, the portal fabric enables portal aggregation. All the portals that the user cares about are aggregated into a single portal shell. With the portal fabric in place, access to any portal is provided by an aggregation feature. Portlets, sections of portal pages, portal pages or entire portals can be aggregated. The portal fabric will require two major changes to technology and standards. First, universal, federated identity management capturing portal-centric user information will be required. Second, Web Services for Remote Portlets (WSRP) provides basic portlet-level interoperability, but other interoperability standards must also be in place for the portal fabric to become reality. The emergence of the portal fabric will enable portal ubiquity, in which access extends beyond the Web browser to any network device.

The portal fabric will begin to emerge in 2008 (0.7 probability). In the world of the portal fabric, users are the center of their portal universe. Rather than maintaining multiple user accounts, multiple personalization entries and multiple customization entries, users will keep these in one place, and all the portals in their portal fabric will use that information. Many challenges must be overcome for the portal fabric to become a reality. Not least is getting the industry to agree on a single set of standards for the capture and sharing of portal-centric user information. Also, the management of consumer portal-based information versus enterprise portal-based information will introduce some interesting challenges concerning security and privacy.
Strategic Planning Assumption: The "follow-me" portal will emerge by 2009 (0.6 probability).

Portal Fabric Leads to Portal Ubiquity: the "Follow Me" Portal and "MyPortal"

- As a user changes context, location or device, the portal follows him or her
- Personalization and identity provided by federated identity management services
- Transforming and transcoding of presentation stream accomplished at server and/or client
- Dynamic session-based attributes and rules engine determine personalization behavior
- Offline capability will appear for occasionally connected users

Key Issue: What is the portal fabric and how will it work?

Today's users are at the center of a collection of portals: mega, banking, government, retail, travel, and a variety of enterprise portals at their workplace. Although most of these portals are accessed only by Web browsers, in the near future a wide variety of devices will provide access to portals: cell phones, PDAs, consumer electronics and automobiles.

With the proliferation of portals and devices, users will be looking for an approach that provides consistent, relevant access, no matter what portal or device they are using. This will drive vendors to deliver a "follow me" portal capability.

A follow-me portal will use personalization to modify the look, feel and behavior of portal pages and portlets. It will adapt to the form factor, capabilities and bandwidth of each device.

Key technologies for delivering a follow-me portal are WSRP v2 (for portlet federation) and Identity Management (to provide a consistent, federated set of user credentials and personalization information).

Action Item: A follow-me portal is several years away. However, if you have portals that face consumers, push your vendors to deliver this capability sooner rather than later.
Key Issue: What is the portal fabric and how will it work?

Today's portals aggregate content and integration applications. The portal of the future will include portal aggregation; that is, the ability to assemble a portal based on parts of other portals, or entire portals.

This feature is critical for the realization of the portal fabric. Today's portals are stovepipes to each other. Portal aggregation will enable a single view into the relevant parts of multiple portals. These components (portlets, clusters of portlets, pages and potentially other data components such as Vista gadgets) will be assembled and delivered through a single portal view. The components will communicate via interportlet communications (WSRP) and portlet cluster or page-level intercommunication methods not yet defined.

At first, portal aggregation will be targeted toward consumers. This will be delivered as a hosted service. Next, portal aggregation will appear in traditional portal products, running on the server side. Finally, portal aggregation will make its way to the client side. Wherever the point of aggregation occurs, there must be an intelligent device with a local data store.

Action Item: Track the progress of portal aggregation on the consumer side and build your enterprise portal architectures with this future attribute in mind.
The Future of Portals

Strategic Imperative: Plan appropriately around initiatives to enable portal interoperability and portal integration. Recognize that ugly tactical solutions are required to link together four of the five touch points where multiple portals must be integrated.

What Does it Take to Weave a Portal Fabric?

Today's Standards and More!

Complete Portal Interoperability Across Five Touch Points

- Portlets
- User Profiles
- Directory
- Security
- Metadata

Federated Identity Management

- Federated across public and private networks
- Trusted, even for highly secure transactions

Key Issue: What is the portal fabric and how will it work?

In the late 1990s, portals were deployed for a single department or business unit. These evolved to broad-scope enterprise-level deployments from 2000 to 2003. The portal became a strong central force in the IT landscape; it possessed substantial mass relative to what the portal aggregated and integrated — namely information resources more diffuse and more passive (that is, data rather than logic), which lacked the autonomy of first-class services. In such a landscape of relatively flat, nonautonomous constituent elements, the enterprise portal stood alone. With the advent of multiportal deployments from 2003 to 2006, the center of gravity shifted and dispersed as new structures of substantial mass (peer portals) loomed in the IT landscape. Multiportal deployments include hierarchical, homogeneous (from the same software vendor) configurations, peer-to-peer federated portals from different vendors and semi-hierarchical "uber-portal" configurations. Increasingly, enterprise portals will connect to services on the broad expanse of the public Internet in richer, more sophisticated and more pervasive ways than the simple external content services that portals have always tapped into.

For the portal fabric to be realized, portal interoperability standards must emerge beyond WSRP to encompass five "touch points" of portal interoperability. Also, true federated identity management must be deployed, not just in enterprises but for consumers as well.

Action Item: Encourage IT staff to participate in standards bodies and help drive initiatives for portal interoperability and federated identity management.
Key Issue: How will consumer use and Web 2.0 affect enterprise strategies?

Strategic Planning Assumption: By 2010, the current generation of people in their late teens and early twenties will demand that enterprises adopt consumer Internet capabilities, such as social networks and folksonomies (0.7 probability).

Although Web 1.0 was revolutionary in how it enabled the masses to access content previously unavailable to them, Web 2.0 is highlighted by the participation of the masses in content creation. Whereas content creation in Web 1.0 was limited to the authors of Web site content, in Web 2.0, everybody becomes an author. Blogs, wikis, social networks and folksonomies have become common among certain classes of Internet user, including college students, "twenty-somethings" and early technology adopters.

College students face a harsh lesson when they enter the workforce and look for these capabilities inside their new companies. Other than experimentation with blogs, most enterprises have yet to adopt these new capabilities in enterprise contexts. Although enterprises might allow users to visit Wikipedia, few use wikis in their own operations. Due, in large part, to the pressure exerted by the new generation of college graduates and early technology adopters, corporate-specific blogs, wikis, social networks and folksonomies will soon enjoy enterprise adoption.

Action Item: Enterprises should embrace Web 2.0 capabilities aggressively.
The Future of Portals

Strategic Planning Assumption: Through 2008, most Global 1000 companies will adopt the technology-related aspects of the Web 2.0 phenomenon, but will fail to adopt the aspects of Web 2.0 that have a social dimension. The result will have minimal business impact (0.6 probability).

Key Issue: How will consumer use and Web 2.0 affect enterprise strategies?

The Web 2.0 phenomenon has gained tremendous visibility in the mainstream and trade press. As occurred with SOA, Web services and portals, IT vendors will try to capitalize on this trend by associating their products with Web 2.0 attributes. The challenge is that Web 2.0 is not just a set of technologies — it also has a social dimension and aspects of a new business model.

Technology aspects: Web-oriented architecture [WOA] (IFaP, REST, POX, WS*, modular, embeddable, distributable), data-driven (XML, BPEL), syndication of content (RSS/Atom), rich semantics (eRDF, RDFa, microformats, semantic Web, semantic reconciliation, metadata), mashable applications (remix and scripting, PHP, JavaScript), build by example (show source, cloning), rich client (just fast enough just in time, Ajax, offline Ajax, Flex, Microsoft), persistent Web (caching, streaming, managed client, "Web on client").


Business aspects: Ecosystem: Delivering business process as a service to be remixed (the business side of mashup), viral marketing, syndication. Process Models: Customer/community dependencies, the business of remixing, information replaces relationships as key ingredient. Value Models: Pricing models (usage, subscription, derivative/commission, revenue sharing), micropayments, advertising models (impression, intent, conversion).

Action Item: If you're going to obsess about Web 2.0, focus on its community and business aspects.
The Future of Portals

Strategic Planning Assumption: By 2009, Web 2.0-style mashups will appear in enterprises, led by portals (0.7 probability).

Mashups: Web-Centric Composite Applications

A Web site or Web application, built in a lightweight manner, combining content from more than one Web source into an integrated experience.

Maps.google.com + Fandango.com = Mashmaps.com

Salesforce.com + Maps.google.com = Smashforce

Key Issue: How will consumer use and Web 2.0 affect enterprise strategies?

A mashup is a Web site or Web application that combines content from multiple sources into a single integrated presentation. A mashup uses a variety of public interfaces, including APIs, Web service calls, JavaScripts and Web feeds (for example, RSS and Atom) to source the content. The term was inspired by a similar use of the term in pop music, where it refers to the practice of creating a new song by assembling purloined parts of existing songs. A rich community is growing on the Web, experimenting with mashups based on eBay, Amazon, Google and Yahoo APIs.

Google, Microsoft and Yahoo provide map APIs that have resulted in mashups of data and geography that, in turn, drive traffic and advertising. Amazon Web Services (AWS) provides access to its platform and product data and, by 4Q05, had reportedly more than 120,000 developers and more than 975,000 active seller accounts (of people who sold at least one item in the previous year), with many using AWS. Third-party sellers generated $490 million in the second quarter of 2005, which accounted for 28% of Amazon's unit sales (up from 24% in the second quarter of 2004).

Smashforce is Salesforce.com's "code name" for its Ajax Web services toolkit. Salesforce is one of the first application software vendors to offer toolkits to enterprise developers for this style of Web service. See http://blog.sforce.com/sforce/2005/07/ajax_toolkit.html.
Tactical Guideline: Enterprises should combine collaboration technologies to support their collaboration efforts, rather than enforce a focus on one type of technology.

Key Issue: How will consumer use and Web 2.0 affect enterprise strategies?

Blogs are conversational tools where the information provided (for example, opinion pieces) is organized from a personal perspective. Generally, blog entries can be created and displayed in flexible ways, making them suitable for presenting complex ideas. Also, the linking mechanisms among blogs (blogrolls, trackbacks, pingbacks or just static links), and between blogs and other sources of information, act as another layer on top of the main organizational mechanism: chronological order. Important ideas that may have surfaced originally as blog entries can become conversation hubs, and can be related through organic links to other similar ideas or conversations. A common use of blogs in portals today is to support marketing efforts in a public-facing portal.

Wikis are, by design, an information synthesis and organizational tool. The simplicity of wiki-style self-publishing encourages initial contributions from a personal perspective. In this respect they are very much like a blogging tool. The emphasis on continuous updating, linking and organization means wikis are appropriate not only for information sharing from a personal perspective but also as more general knowledge repositories. Examples include developing software or product documentation; developing training material; posting information about the progress of a project; documenting best practices in the context of a help desk or customer service activity; or documenting requirements, related information and feedback during product development. This generality comes at the cost of additional complexity — wikis are more complex to use than discussion forums or blogs. Wikis have been used in B2E portals to create and update policy, and to develop best practices documentation.

Support for wikis and blogs is provided in some portal products and on the road maps of many others.
An All-Too-Common Case Study: Enterprise IT and IM

What Did Users Want?
- Ability to send IMs to co-workers and external parties

What Did Users Do?
- Widespread downloads of AOL IM

What Did IT Eventually Give Them?
- Corporate IT provides a commercial IM system for internal users only
- Poor rollout: limited training

What Did Users Do Then?
- Continued use of AOL IM IT locks out AOL IM and inspires end-user rebellion!

Key Issue: How will consumer use and Web 2.0 affect enterprise strategies?

Just as dominant commercial software vendors sometimes come to be viewed as "evil empires," dominant IT departments come to be viewed the same way by end users. As commercial software vendors have adopted more open-source-like attributes, why can't IT departments do the same?

Newer users' demands for Web 2.0-style community interactions and individual content contribution will add a new strain to the traditional tug-of-war between IT organizations and business units. Historically, in the name of cost reduction, most IT departments have erred on the side of too much control — with onerous dictated standards, desktop lockdown, heavyweight enterprise architectures and systematic application development projects. These are means to an end, but should not be confused with the goal. The end result, in many cases, is that the IT department is viewed as an inhibitor to business change by senior business executives, and will be viewed by newer employees as increasingly out of touch. Ask yourself, "Could I use other means to reduce costs if desktops weren't locked down and if employees could install their own software?" Better, ask yourself "Is my goal really reduced cost, or business value?" From this perspective, ideas that seem radical (for example, encouraging user-owned PCs for work usage) don't seem as radical if the ends are achieved: user satisfaction, goals met, costs managed and risks managed.

The risk in not questioning what you are doing and why you are doing it is that insurgent movements gain strength and it ultimately costs more in time and diverted effort to fight a protracted insurgency rather than to meet somewhere in the middle of these oscillating extremes. Worse, IT is seen as an inhibitor to change for the business.
Portal technology has evolved through multiple generations since the first portals in 1997. Each generation builds on the previous one. Generation 1 was about access to content, providing personalized delivery of content, unified search and basic presentation management. Generation 2 scaled up the technology foundation with a robust extensible application framework, basic application integration and the beginnings of collaborative features. Generation 3 added process integration and basic support for Web services and multiple portals. Generation 4 is the latest generation to be adopted, and it introduces support for portal federation, composite applications and portlet standards (Java Specification Request [JSR] 168 and Web Service for Remote Portlets [WSRP]). These generations show where most portal products are at a given point in time. Not all vendors support all features, and some will lead others by as much as several years. This technology stream is independent of how a portal package is used (that is, an end-user organization can undertake a Generation 1 deployment using the latest Generation 4 technology). Portal technology is also distinct from the way in which portal products are packaged, increasingly as bundled suites — application platform suites (APSs) and smart enterprise suites (SESs). Generation 5 portal products push SOA to new levels. They will provide off-the-shelf support for service-oriented business applications (SOBAs), packaged integrating processes (PIPs) and packaged composite applications (PCAs), as well as process orchestration and syndication of services. Although no vendor offers Generation 6 functionality, the focus of value will be on providing an aggregated experience for users who interface with multiple portals.
Key Issue: How will the features and functions of future portal frameworks deliver value?

The phases of the Hype Cycle are described below:

**Technology Trigger** — A breakthrough public event that generates significant press and industry interest.

**Peak of Inflated Expectations** — During this phase of overenthusiasm and unrealistic projections, a flurry of well-publicized activity by technology leaders results in some successes, but more failures.

**Trough of Disillusionment** — Because the technology does not live up to its inflated expectations, it rapidly becomes unfashionable, and the media abandon the topic.

**Slope of Enlightenment** — Focused experimentation and solid, hard work by a diverse range of enterprises lead to a true understanding of the technology's applicability, risks and benefits. Commercial, off-the-shelf methodology and tools become available to ease the development process.

**Plateau of Productivity** — The real-world benefits of the technology are demonstrated and accepted. Tools and methodologies are increasingly stable as they enter their second and third generations.

**Action Item:** Beware of immature technologies on the Portal Ecosystem Hype Cycle. *Type A* enterprises (leading-edge technology adopters) should explore new technologies, but mitigate risks appropriately. *Type B* enterprises (mainstream technology adopters) and *Type C* enterprises (conservative technology adopters) should enable portal ecosystem technologies to mature.
The Future of Portals

Tactical Guideline: Portals should play a critical role in exposing workplace technology services to end users.

Key Issue: How will the features and functions of future portal frameworks deliver value?

Gartner defines a high-performance workplace as a physical or virtual environment designed to make workers as effective as possible in supporting business goals and providing value. A high-performance workplace results from continually balancing investment in people, process, physical environment and technology, to measurably enhance the ability of workers to learn, discover, innovate, team and lead, and to achieve efficiency and financial benefit. A high-performance workplace combines technologies, processes and management so that workers can find new ways to create value for their companies.

Many technology elements support the high-performance workplace. Document management, enterprise content management systems, office suites, e-mail systems, collaboration tools, portals and business applications are a few of the more-common architectural elements. Historically, each of these technologies has focused on a narrow set of interaction patterns and provided their own interfaces. Increasingly, some of the vendors in some of these categories are moving toward models where they will go beyond merely integrating their applications with portals, but are in some cases planning on using a specific vendor's portal interface as their default future interface. Although it's too early to say that all technology elements of the high-performance workplace are fully embracing service-oriented concepts, many are building on their experiences of exposing functionality to portals. Business applications are increasingly of interest to knowledge workers as they seek a unified experience that gives them insight into all aspects of the processes with which they interact. The portal's role as an aggregator of content and applications makes it the best environment in which to provide access to all the technology elements of the high-performance workplace.

Action Item: Users should consider the portal as the unifying mechanism for workplace technology services.
Key Issue: How will the features and functions of future portal frameworks deliver value?

Traditional portal products have been self-sufficient code modules that do not provide access to external systems and their individual components. They deliver a wide variety of portal-centric services (search, personalization, multichannel interaction), but do so through a structured and monolithic approach. In other words, a portal is accessed as a collection of portlets delivered as a set of portal pages via a Web browser. Individual services can't be accessed outside that context.

The portal product of the future will be built along SOA boundaries. It will feature a set of portal services that will be directly accessible, and these are likely to be delivered as Web services. This will enable other applications — including, but not limited to, other portals — to directly consume these services. Applications delivered through methods other than portals, such as Web sites, client/server applications and rich clients, will leverage search, personalization and other portal services. An unknown impact of this is the licensing of portal products. If users access a portal service through a non-portal user interface, are they considered portal users, and must they therefore pay for that privilege?

Action Item: Press your portal product vendor to deliver a service-oriented version, and look for opportunities to leverage portal services in other applications.

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The Future of Portals

Strategic Imperative: Enterprises should plan for the role of the portal in relation to SOBAs, and evaluate the migration away from the vertical portal interfaces of business applications that lack support for SOBA development.

Portals and Service-Oriented Business Applications

Portals Support SOBAs
- Default interface for new composite SOBAs
- Platform for SOBA creation
- Composite application development tools support rapid SOBA modification
- Large vendors view portal and middleware platforms, including portals, as SOBA consumption and development environments
- Third-party SOBA ecosystems will develop around large ISV portals and business process platforms

Key Issue: How will the features and functions of future portal frameworks deliver value?

SOBAs represent the next generation of software, extending beyond traditional business application functionality. Built with Web services standards, SOBAs are designed to work in and among SOAs. Although the concept of service orientation in an application is not new, SOBAs are new because they use emerging Web service standards for Web-based messaging, application access and interfacing, business process transactions and other key SOA activities. The majority of early SOBAs are limited transformations of established applications. Portals were used by several vendors to support these initial efforts, but play a more important role in larger independent software vendor (ISV) SOBA strategies for service-enabling their business applications.

SOBAs need a platform. Vendors such as Oracle and SAP are linking their SOBA strategies to middleware platforms, including their respective portals, NetWeaver and Oracle Fusion Middleware. SOBAs build on SOA runtime concepts that use loose coupling and architectural issues, including rapid application maintenance and rapid deployment of composite applications. Portals enable both. In addition to providing the platform for their own SOBAs, vendors hope to encourage the development of partner ecosystems where third-parties will develop SOBAs specifically for their platform.
The Future of Portals

Strategic Planning Assumption: By year-end 2008, more than 75% of knowledge workers will access enterprise portals using at least two types of client (0.7 probability).

![Rich Clients vs. Rich Internet Applications vs. Ajax](image)

### Rich Clients vs. Rich Internet Applications vs. Ajax

<table>
<thead>
<tr>
<th>Web Browser-Centric</th>
<th>Microsoft OS</th>
<th>Eclipse RCP</th>
<th>Browser Plug-In</th>
</tr>
</thead>
<tbody>
<tr>
<td>TIBCO</td>
<td>Windows Vista</td>
<td>Adobe/Macromedia</td>
<td>Eclipse RCP</td>
</tr>
</tbody>
</table>

#### Rich Clients

- Resumption of Client Wars
- Pendulum Swing
- Two Major Vendors Plus Adobe/Macromedia in Between Many Small Players
- Ajax Most Popular Approach

### Client Mix Timeline

<table>
<thead>
<tr>
<th>Year</th>
<th>Client Type</th>
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<tbody>
<tr>
<td>1995</td>
<td>60% Client/Server</td>
</tr>
<tr>
<td>2005</td>
<td>80% Thin Web Client</td>
</tr>
<tr>
<td>2010</td>
<td>30% Rich Client</td>
</tr>
</tbody>
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**Key Issue: How will the features and functions of future portal frameworks deliver value?**

Enterprise portals have been grounded in the Web. Since the birth of the portal product market, the ubiquitous Web browser has been the client tool of choice. Since the early days of the Web, an ongoing concern for Web designers and developers has been the perceived limitation of HTML in providing a full and rich user experience. Some portal products use proprietary client-side technology, especially wireless clients, but more than 99% of portal clients are Web browsers.

By year-end 2008, more than 75% of knowledge workers will access enterprise portals using more than two types of client (0.7 probability). Rich clients will become an important client technology. Microsoft was first to market with its rich-client technology based on Windows XP and Office 2003. IBM was second with its announcement of a rich client based on Eclipse. Others are still working on their rich-client strategies.

Rich Internet Applications (RIAs) are types of rich client that use the Web browser. The most popular type of RIA is based on the Ajax model, which uses the established features of the browser, yet delivers a UI comparable to a Windows desktop, along with increased performance.

A side benefit of the use of rich clients to access portals is offline support, and the ability to access, index and organize local content and applications. The key is to access the portal with the appropriate client device for the context of the user interaction.
Recommendations

✓ Understand the portal fabric, follow-me portals and portal aggregation, and plan to adopt these capabilities as appropriate for your company.

✓ Monitor your vendors' support for WSRP and relevant identity management standards.

✓ Plan for the role of portal services in your organization.

✓ Consider the appropriateness of different portal consumption methods for different audiences.

✓ Prepare for the Web 2.0 wave, which introduces new approaches to platforms and processes.

✓ Mitigate the risk of deploying Web 2.0 mashups against beta sites without SLAs.