MTA SZTAKI

Web and User interaction technology

Dr. Bakonyi Péter
c. docens

1/24/2011

Amit tudni kell a Webről

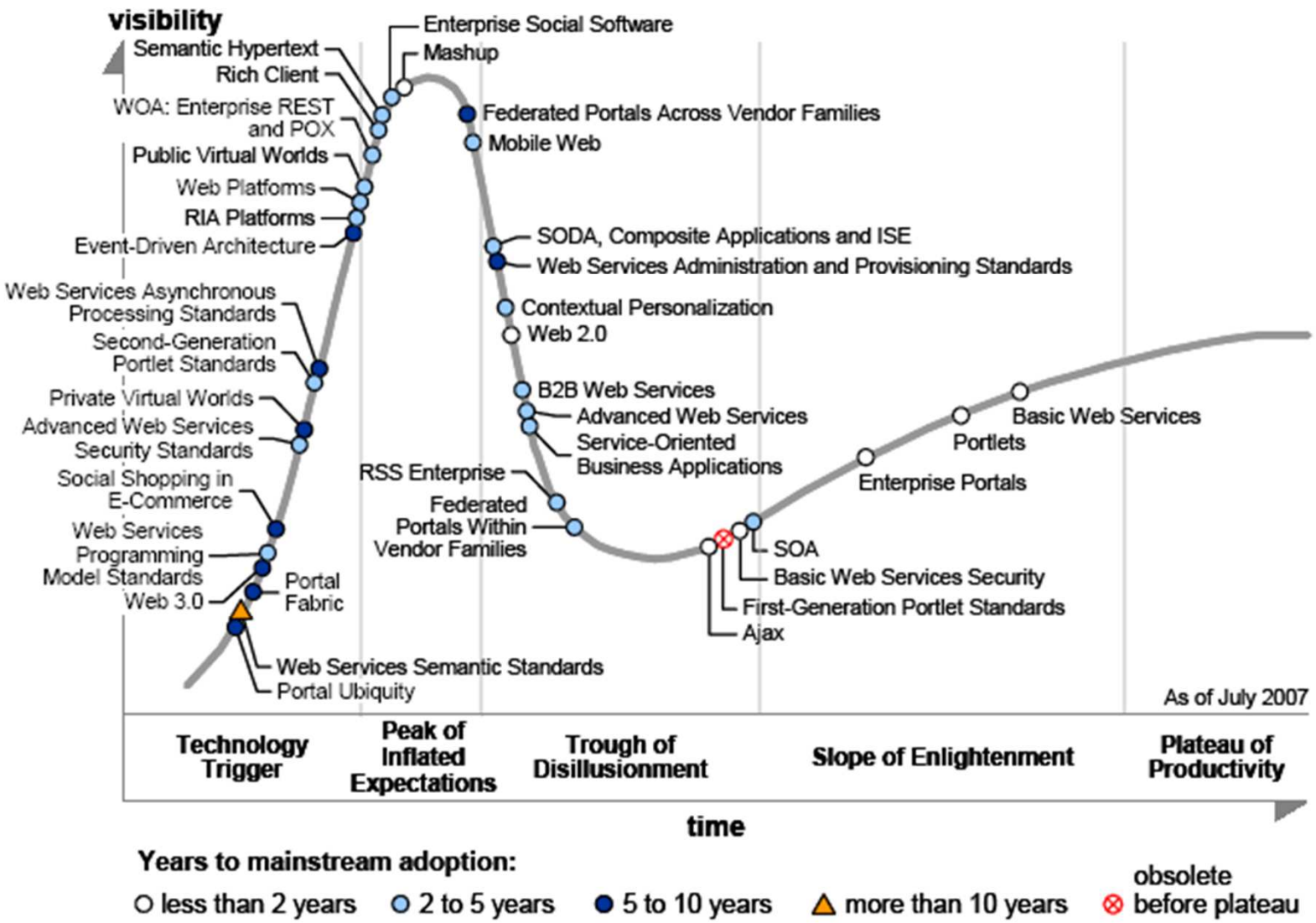
The Web has been a staple of IT departments for more than a decade. Intranets, extranets and Internet sites are common for companies of all sizes, in all industries and in all geographies. The Web has truly become a ubiquitous tool for IT.

Traditional Web sites continue to be the mainstay of most enterprise user interface (UI) strategies. The ubiquity of the Web browser makes it the most appropriate tool for interacting with customers, trading partners and employees. Although the Web enjoys a significant presence in the enterprise, there are still many opportunities for improvement, including better processes and tools for content management, deployment and management of international, decentralized and multilingual Web sites, as well as Web sites for handicapped users.

Web services continue to be a primary tool of portal interoperability and integration. From the basic SOAP and Web Services Description Language (WSDL) standards, Web services have grown to incorporate security, transaction processing and management. During the past year, the standards efforts around Web services have seen a slowdown, due in part to the complexity of the WS-* advanced Web services standards. At the same time, the rise of representational state transfer (REST)/plain old XML (POX) as a simple method of Web interoperability has caused some to wonder if the WS-* efforts will continue to bear fruit. We feel that WS-* standards, although they have seen a slowdown, will continue to evolve and be adopted by the industry.

One of the most hyped areas of the Web is Web 2.0. It is also an area with the most opportunities for enterprises. Web 2.0 is a collection of methodologies, technologies, and social and business models highlighted by openness, participation, the use of lightweight technologies (many times using open-source software), and decentralized, distributed processes. Web 2.0 applications (such as blogs, wikis, folksonomies and social networks) have enjoyed great success on the public Internet, and are seeing early adoption among Type A enterprises.

Figure 1. Hype Cycle for Web and User Interaction Technologies, 2007



Source: Gartner (July 2007)

	less than 2 years	2 to 5 years	5 to 10 years	more than 10 years
transformational	**Enterprise Portals** **Web 2.0**	**Public Virtual Worlds** **SOA** **Web Platforms**	Event-Driven Architecture Portal Ubiquity	
high	**Basic Web Services Security** **Mashup** **Portlets**	B2B Web Services Enterprise Social Software Mobile Web RIA Platforms Service-Oriented Business Applications SODA, Composite Applications and ISE WOA: Enterprise REST and POX	Federated Portals Across Vendor Families Portal Fabric Private Virtual Worlds	
moderate	Ajax Basic Web Services	Advanced Web Services Contextual Personalization Federated Portals Within Vendor Families Rich Client RSS Enterprise Second-Generation Portlet Standards Semantic Hypertext	Social Shopping in E-Commerce Web Services Asynchronous Processing Standards	Web Services Semantic Standards
low		Advanced Web Services Security Standards Web Services Programming Model Standards	Web 3.0 Web Services Administration and Provisioning Standards	

As of July 2007

Source: Gartner (July 2007)

Web 3.0

Analysis By: Anthony Bradley

Definition: Web 3.0 is emerging as a term for the next "generation" of the Web once Web 2.0 becomes mainstream.

Position and Adoption Speed Justification: The Web is a complex ecosystem. It is not a product that goes through a well-defined road map. The x.0 label is ambiguous and unsuited for the evolution of the Web. The x.0 label is only meaningful when preceded by a well-defined entity, such as a product offering. Placed after a phenomenon such as the Web, it provides no descriptive value and must be further defined. This invariably leads to confusion because different parties espouse different definitions in hopes of achieving their own end. Masses of people, including vendors, technology proponents, analysts, bloggers and authors, are trying to use the Web 3.0 term to suit their needs and visions. At least five factions are competing to don the "Web 3.0 robes," including semantic Web proponents, virtual world advocates, ubiquitous computing fans, event Web believers and Web-as-a-platform supporters. More are expected as time passes. This will lead to significant hype and confusion followed by potential missteps for IT leaders.

Social Shopping in E-Commerce

Analysis By: Ray Valdes

Definition: Social shopping technology enables consumers to more closely replicate, in the online world, their buying experiences in the real world — experiences that are often social in nature. Until now in conventional Web-based e-commerce, the act of making a purchase was an event that occurred in solitude, rather than in the company of others. There are enabling technologies for social shopping that offer a variety of mechanisms to add a social dimension to the solitary act of making a purchase. These mechanisms include real-time, peer-to-peer communication (instant messaging); real-time observation (shared browsing); cross-vendor navigation; user-contributed content (consumer reviews and ratings); reputation management systems; and cross-vendor authentication and payment mechanisms (to approximate "frictionless" e-commerce and enable the prominence of the social dimension). Some of these technologies are long-standing; others are new. However, the aggregation of these to support the social-shopping experience is embryonic and siloed. Integrated technologies that enable Web-based social shopping have great potential, but the impact has yet to be felt.

A leading-edge indicator of what is required is found in immersive virtual environments, such as Second Life, which represents a world disjointed from the Web and fully integrated such that a significant portion of purchases made there are "social shopping" transactions. These purchases are for virtual goods, and currently there are limitations in how Second Life can be used to purchase "off world" goods and in how Web-based e-commerce can integrate with virtual environments. These technology barriers will diminish over time.

Advanced Web Services Security Standards

Analysis By: Daniel Sholler

Definition: Web services security standards and specifications are designed to promote security system integration across independently managed trust domains. The industry does not necessarily have complete solutions for this complex topic, which includes such standards as WS trust, secure conversation, Extensible Access Control Markup Language (XACML) and WS-Federation.

Position and Adoption Speed Justification: Advanced security standards will likely proceed at an uneven pace because the functions that they support are difficult to resolve with the existing portfolio (for example, access control in the case of XACML) or token translation in the case of WS-Trust. These standards will be supported by the vendors of security technology relatively quickly after ratification, but their adoption rates will be slow; customers will add these capabilities to their overall security environments as part of the development cycle for those environments.

User Advice: Use these standards, but do not expect widespread adoption by business partners for several years.

RIA Platforms

Analysis By: Ray Valdes

Definition: Rich Internet Application (RIA) platforms enable organizations and software vendors to build applications that provide a richer, more-responsive user experience compared to older-generation, "plain browser" Web platforms. RIA platforms and technologies span a range of approaches that, from a runtime perspective, fall into three basic categories: browser-only, enhanced browser and an outside-the-browser.

The browser-only approach is known as Ajax, which leverages the capabilities that are already built into every modern browser (for example, Firefox, Internet Explorer, Opera and Safari), such as the JavaScript language engine and the Document Object Model (DOM) support. The Ajax approach is supported by vendors, such as Backbase, Jackbe and TIbco, and by open-source toolkits, such as Dojo and Kabuki. The enhanced-browser approach begins with a browser and extends it with a plug-in or other browser-specific machine-executable component (unlike the JavaScript-centric Ajax approach, which is mostly browser-independent). Examples of this approach are Adobe Flash (further enhanced by Adobe Flex server-side technology), Google Gears, Microsoft Silverlight and the Curl RIA platform from Curl.

The outside-the-browser approach means adding some large-footprint system software to the client operating environment, such as the Java Virtual Machine (JVM) runtime, the Microsoft .NET language environment or the Adobe Integrated Runtime (AIR) software stack. On top of this stack can be additional layers that add capabilities for client-side data persistence, automatic provisioning and versioning of platforms and applications, and migration of server-side component models. Examples of this approach include Adobe AIR, IBM Lotus Expeditor, Microsoft Windows Presentation Foundation and Sun JavaFX.

Web Platforms

Analysis By: David Mitchell Smith

Definition: Web platforms use Web technologies to provide programmatic access to functionality on the Web, including capabilities enabled by not only technology but by community and business aspects as well. This includes, but is not limited to, storage and computing power. They have ecosystems similar to traditional platforms. Web platforms are emerging as a result of market and technology changes collectively known as "Web 2.0." These platforms will serve as broad, general-purpose platforms, but, more specifically, they will support business flexibility and speed requirements by exploiting new and enhanced forms of application development and delivery. Web platforms reuse many of the capabilities and technologies that have been accessible in Web sites for more than a decade through browsers by adding programmatic access to the underlying global-class capabilities. Recently, reuse has come through Web services and is starting to be delivered via Web-oriented architecture (WOA) interfaces such as REST, POX and Really Simple Syndication (RSS).

Position and Adoption Speed Justification: This is happening in consumer markets now. In addition, the concepts are apparent in enterprises' use of service-oriented business applications.

User Advice: Web platforms and related phenomena will affect consumer markets first, but enterprises should evaluate the growing space as an appropriate extension to internal computing capabilities. Use of Web platforms will drive WOA, which enterprises should adopt where appropriate, along with simple interfaces such as REST, POX and RSS (wherever possible), to exploit the interoperability, reach and real-time agility of the Internet.

Business Impact: Web platforms can be leveraged as part of business solutions and will form much of the basis for the next generation of interest in "the virtual enterprise." Web platforms can decrease barriers to entry and can deliver substantial value for small and midsize businesses that could not afford to internally build and maintain capabilities and infrastructure. Examples include Amazon AWS (including S3 and EC2), salesforce.com Apex and Microsoft Live.

Public virtual word

Definition: A public virtual world is an online (and hosted on a publicly accessible infrastructure) networked virtual environment, in which participants are immersed in a three-dimensional representation of a virtual space and interact with other participants through an avatar — a representation of themselves in the virtual world.

Position and Adoption Speed Justification: The growth of publicly accessible virtual worlds — such as Second Life (from Linden Lab), There (built by Makena Technologies), Cyworld, Habbo Hotel (owned and operated by Sulake) and many others — has been rapid, with initial signups growing exponentially, although there is a steep dropout rate. Media attention is high, and significant numbers of enterprises are building a presence to take advantage of a potentially significant new channel and market. Second Life is the primary target for mainstream corporate activity, and the upcoming launch of spatial audio capabilities alongside instant messaging (IM) communication will drive Second Life to the peak. However, it is suffering from significant scalability, availability and reliability issues that, when coupled with growing awareness of security concerns, will push it (and other virtual worlds by association) into the Trough of Disillusionment. Considerable skepticism still exists among business and IT leaders as to the value of this consumer-led phenomenon, which will further accelerate the move into the trough.

User Advice: The value of virtual worlds for enterprises lies primarily in their ability to deliver a rich and immersive collaborative environment. However, security and reliability concerns make public worlds less desirable for internal enterprise use, in which sensitive discussions may be involved. Enterprises should investigate the possible use of private worlds in this context, but they should continue to investigate and experiment with public worlds as a valuable learning environment and to better understand the dynamics and values of these rapidly evolving and emergent environments. In the longer term, virtual worlds will emerge as important media channels and community access mechanisms for enterprises seeking to tap into the broader community and engage the community actively in their business model. At this point, effective business models and a critical mass of committed users are still emerging, although some virtual worlds targeted at specific and well-defined niche audiences are becoming well-established. Enterprises should avoid heavy investment and rely on in-house expertise on a "skunk works" basis or on smaller subcontractors.

Semantic Hypertext

Analysis By: David Cearley; Rita E. Knox

Definition: Semantic hypertext refers to a series of approaches that provide defined mechanisms for embedding semantics into HTML and XML documents. Semantic hypertext is used to add meaningful tags to Web documents with the primary goal of making it easier for Web designers to add slightly better descriptive information to these pages. Semantic hypertext starts with the current document-oriented Web model and uses one of the Web's basic technologies (HTML) to add simple semantic extensions. It is focused on creating simple vocabularies, using a Web 2.0 community model and adding simple elements to existing HTML pages to more fully describe the elements on these pages. Microformats are the most widely used semantic hypertext model.

Position and Adoption Speed Justification: We expect semantic hypertext approaches to be most broadly used on the Web itself, because it enables Web site designers to easily and incrementally add simple semantic definitions to data on existing Web pages and within RSS or Atom feeds. Microformats, a particular form of semantic hypertext, have gained significant momentum on the public Web. A new working group was established in the fourth quarter of 2006 to address Resource Description Framework (RDF) embedding in more detail, but we do not expect formal World Wide Web Consortium (W3C) recommendations to appear before late 2007. Meanwhile, embedded RDF is another approach to using RDF to annotate HTML documents. Although open to all, this model was created and promoted by Talis, a provider of products and services for public and academic libraries in the U.K. and Ireland. Outline Processor Markup Language (OPML) may be yet another mechanism for dealing with semantic hypertext. Through 2012, these semantic hypertext approaches will evolve and compete for attention, while maturing standards and the use of bridging approaches will bring semantic hypertext and a fuller version of the Semantic Web closer together. For example, structured blogging enables publishing of structured XHTML with microformat-compatible page tags, and it provides automatic conversion to RDF (a classic Semantic Web standard). In addition, Gleaning Resource Descriptions From Dialects of Languages (GRDDL) enables semantic hypertext to be exposed as RDF data and used as the foundation for a future Semantic Web.

Mashup

Analysis By: Ray Valdes; Anthony Bradley; Nikos Drakos

Definition: A "mashup" is a lightweight, tactical presentation layer integration of multisourced applications or content into a single, browser-compatible offering. It is a lightweight variant of the older notion of a composite application ("composite app"), and the heavier service-oriented architecture orchestration approach to composite apps. In the usual use of the term, composite apps are built on enterprise platforms, internal-facing and not necessarily Web-based.

In contrast, the usual notion of a mashup is a Web-based application that leverages consumer-oriented sites for external-facing audiences. These original notions are being blurred as mashups move onto enterprise platforms and composite apps swivel to face outward. Even with the enterprise, mashups partly rely on data and services from public Web sites, such as Google Maps, craigslist, eBay, Amazon and others. Because mashups leverage content and logic from other Web sites and Web applications, they're lightweight in implementation and are built with a minimal amount of code (which can be client-side JavaScript or server-side scripting languages, such as PHP or Python). These are not fixed requirements, but reflect the original implementation of the mashup concept in Web 2.0 startup companies, which typically do not use enterprise-oriented platforms, such as Java or .NET.

Mashups exploit lightweight mechanisms, such as Representational State Transfer-based application programming interfaces (APIs), to public Web services, as well as Ajax "snippets" and "widgets" (see "Adopting Ajax Means Choosing From Four Levels of Ajax Technology"). Mashups aren't intended to be strategic, systematically built, industrial-strength enterprise applications; rather, they're created quickly or opportunistically to meet a focused tactical need.

Mashups are generally personalized to fulfill personal productivity needs rather than the requirements of a long-standing corporate role. The cultural context of mashups involves the confluence of many innovations: Web APIs, lightweight client-side scripting, delivery of content via RSS, wikis, Ajax, social networking and the explosion of Web-based communities. For a long time, the closest thing to mashup-creation tools for "civilians" (users who do not write code) was an RSS feed reader or podcasting client, which enabled them to "mash" content from more than one site. That situation has improved, with recently announced, more-powerful tools (such as Yahoo Pipes, Microsoft Popfly and Google Mashup Editor).

Mobil Web

Definition: Mobile Web refers to the use of Web technologies and applications on wirelessly connected mobile devices, such as cell phones. Examples include HTML, Ajax, RSS, Cascading Style Sheets and widgets.

Position and Adoption Speed Justification: The first generation of the mobile Web used weak technologies, such as Wireless Application Protocol. Many applications were unfriendly and provided limited functions, resulting in a poor user experience. However, the second wave of the mobile Web is emerging. This is characterized by more-capable devices (such as smartphones), the growing availability of more-standard Web technologies (such as HTML and Ajax) and a slow relaxation of network operator control, which provides Web innovators easier access to consumers.

We expect some future disillusionment with this second phase as well, because smart devices are expensive, some technologies are proprietary, platforms and tools are fragmented technically, mobile browsers are not as capable as PC browsers and cellular Web access sometimes is expensive. However, technological and commercial trends are moving in a favorable direction; within three to five years, most barriers will be much lower.

User Advice: By 2010, in most markets, the majority of handsets will have simple Web capabilities. In markets such as Western Europe and Japan, more than 60% of handsets will be smartphones with sophisticated Web access. Any organization with a Web strategy must define a mobile Web strategy. This will require business decisions to determine which services will be offered on mobile devices, as well as technical decisions to determine which devices and Web technologies will be appropriate to a customer's demographics.

Business Impact: The potential business impact is substantial for any organization with customer-facing Web applications. By 2011, more than half of the mobile subscribers in advanced markets, such as Europe and the U.S., will be familiar with using the mobile Web. Mobile phones and new Web-enabled wireless devices, such as Linux tablets, music players and games machines, will offer a wide range of opportunities to communicate with customers and employees. A new category of "mobile business 2.0" will emerge. It will be similar to Web 2.0 but not identical because of principles such as ambient (location-aware) business. Mobile Web applications will be important for many companies and transformational for a few.

SODA, Composite Applications and ISE

Analysis By: Charles Abrams

Definition: Through 2010, the application development market will experience radical changes, based on new methods and tools that perform service-oriented development of applications (SODA) in support of SOAs centering on composite application formation occurring on an increasingly real-time basis.

Position and Adoption Speed Justification: In 2007, SODA continues to represent the latest paradigm for the development of service- and process-oriented systems. The continued development of composite applications, business process management (BPM) and standards-based integration are also drivers for SODA.

Integrated service environments (ISEs) are deployed in conjunction with runtime infrastructures from most suppliers, and will continue to support the assembly and orchestration of services from a process-centric developer perspective. Specifically, ISEs provide the bridge between integrated development environments (IDEs) — developer and architect tools — and BPM tools to help map from business process models to service implementations. However, the emphasis to date on Web service-based integration, specifically focusing on SOAP and WSDL, includes REST, POX and other simpler, proprietary-based approaches.

ISEs provide a complete environment for building and deploying service-oriented solutions based on SODA and SOA concepts. The inter-relationship of ISEs and BPM will grow stronger; however, the concept of SODA will be a long-term requirement of a service orientation.

User Advice: Enterprises should make SODA a key component of their SOA strategies. Invest in developer training on SOA concepts, as well as the new methodologies, tools and techniques required to practice SODA. Examine such technologies as ISEs and BPM to round out your SODA capabilities.

Business Impact: SODA, composite applications and ISEs provide more-cost-effective, flexible and responsive solutions, and affect build vs. buy decisions.

Web 2.0

Analysis By: David Mitchell Smith

Definition: We identify three anchor points that describe Web 2.0:

- Technology and architecture — consisting of Web platforms and WOA
- Community — describing the "architecture of participation," dynamics of social networks, and other personal content publish/share models, including wikis and other collaborative content models
- Business model — consisting of Web-services-enabled business models, mashup/remix applications, long-tail economics, advertising and other monetization models

Position and Adoption Speed Justification: Web 2.0 concepts have seen widespread adoption in the consumer market. As is the case with many technologies and models, we expect that consumerization will drive Web 2.0 into the enterprise. Web 2.0 concepts are rapidly penetrating IT. However, the Web 2.0 hype has peaked as constituencies vie for the next generation of the Web. A high level of interest and numerous starter implementations indicate that over the next two years, enterprises will steadily gain more experience and success with Web 2.0.

User Advice: Become familiar with Web 2.0 technologies and concepts. Plan for enterprise use of Web 2.0, and be prepared to implement controls when appropriate, but beware of negating the benefits by imposing too much control.

Realize that Web 2.0 is penetrating the enterprise and begin planning how to deploy effective Web 2.0 capabilities for maximum business value. Position community identification and cultivation as a foundation for selecting and constructing an enterprise Web 2.0 environment by embracing the architecture of participation, while leaving room for innovative behavior by limiting restrictions and encouraging liberty in community participation. Ensure the proper balance between delivering value to the enterprise and facilitating community participation.

Business Impact: The collaboration facilitated by wikis, blogs and social networks can significantly enhance employee productivity. Social networks can be used for expertise location and management, providing quicker responses to changing business conditions, better leverage of business relationships and appropriate skill selection when staffing projects. Mashups can create a new class of tactical and personalized applications that correlate multiple sets of data at the presentation layer.

Benefit Rating: Transformational

Market Penetration: Twenty percent to 50% of target audience

Advanced Web Services

Analysis By: Daniel Sholler; Yefim Natis

Definition: Advanced Web services are Web services (remotely accessible software interfaces) that not only use the basic Web services specifications of WSDL, SOAP or Universal Description, Discovery and Integration (UDDI), but also deploy additional Web services specifications and protocols to deliver some or all enterprise-class quality of service to the Web-services-based applications. These advanced Web services standards and specifications include the standards for security, transactional integrity, business process management, event notification and many others. Some of the advanced Web services standards are well-established — such as Business Process Execution Language (BPEL) and WS-Security — whereas most others are still in development.

Position and Adoption Speed Justification: Advanced Web services standards develop slowly and are slow to generate unity among competing vendors. The security standards have been defined and completed, but have limited adoption. The BPEL standard is perhaps the most successful of the advanced Web services components, but it is only a small part of the entire objective: to support the enterprise's quality of service for distributed Web services applications.

Most enterprises' use of Web services for mission-critical systems continues to draw other enterprises to proprietary technologies and short-term solutions. Some of the quality-of-service issues, such as transactional integrity, require a fundamental rethinking of the requirements — still in its early stages.

The entire premise of comparable levels of quality of service on the Web and inside the enterprise's firewall is unrealistic, but most users continue to expect gradually increasing scalability, integrity and availability from their Web services infrastructures. In this context, the reality turns out to be increasingly disappointing. As the real standards, with their benefits and limitations, are adopted and better understood, users will emerge from the Trough of Disillusionment into realistic productivity with advanced Web services deployments.

User Advice: Web services technology was designed for simple, low-cost and ubiquitous access to server-side application software from requesting points on the Web. This context is much different from the well-controlled software infrastructure inside the enterprise's walls. Users should not anticipate the same levels of quality of service in both contexts. In fact, users are strongly advised to combine the enterprise-class platform technology as the back-end, and the advanced Web services environment and the worldwide front-end in their large-scale IT architecture planning.

Business Impact: There will be incremental improvements to basic Web services, adding some extended functions and manageability of Web-based enterprise applications. Minimal impact will be seen on basic Web-based information distribution.

Service-Oriented Business Applications

Analysis By: Charles Abrams

Definition: Service-oriented business applications (SOBAs) are delivered as composable services. The technological base is Web services, such as SOAP, Web Services Description Language and Web Services Business Process Execution Language, or non-standardized XML-based approaches, such as plain old XML. SOBAs are meant to be deployed on a wide range of emerging platforms and architectures, such as service-oriented architectures, event-driven architectures, business process platforms and Web-oriented architectures. SOBAs can be modifications of legacy applications through service interfaces, newly developed applications, modular suites or composite applications.

Position and Adoption Speed Justification: SOBAs have made an enormous impact since their inception five years ago because of the stated commitment of industry giants, such as Oracle and SAP, to the concept. However, they still need time to gain additional industry visibility as the full benefit of SOBAs and their corollary definition, software as a service, take hold by Type B and Type C enterprises.

User Advice: Enterprises should consider adoption of SOBAs within the next 24 months. Adoption of SOBAs will occur by default if enterprises use SAP or Oracle family applications, because these two megavendors will have SOBA capabilities inherent in the majority of their applications. In addition, technology providers not traditionally associated with direct marketing of business applications, most notably IBM, will release offerings in the SOBA space for specific horizontal and vertical domain support though 2010 and beyond.

Business Impact: SOBAs enable business process integration of previously "silo resident" applications, such as those in CRM, supply chain management and ERP. SOBAs help enterprises reach conventional business goals by using service interfaces for internal and external integration and interoperation.

Ajax

Analysis By: Ray Valdes

Definition: Ajax is a collection of techniques that Web developers use to deliver an enhanced, more-responsive user experience in the confines of a modern browser (such as recent versions of Internet Explorer, Firefox, Mozilla, Safari or Opera). The term "Ajax" is relatively new (it was coined in early 2005), but the techniques date back to 1997 — although widespread use of these techniques (previously known as DHTML) was not possible because of limitations in browser compatibility and hardware performance. Ajax relies on the JavaScript engine built into modern browsers to update portions of the page without having to redraw the entire page in response to a user interaction. Ajax also relies on a de facto standard, the XMLHttpRequest function, to undertake background transfers of data between the browser and Web server that are not explicitly tied to user actions, such as clicking the "submit" button or hyperlink.

Other related techniques have been packaged into toolkits and frameworks, many of which are open-source, that developers can use to create "single-page applications," exemplified by Google's Gmail and Google Maps. A single-page Web application consists of JavaScript code, and not just static content in HTML, that is transferred to the browser when the user first lands on the page. This code implements a runtime layer on the basic browser, an event-processing engine in JavaScript that handles user input (keystrokes, mouse), fetches content from the server and updates the display. Depending on the implementation, the amount of code required can be a few hundred lines of JavaScript to tens of thousands on lines of code with a data-transfer volume of 500K bytes.

There are more than 150 Ajax toolkits available, including open-source toolkits such as Dojo and Scriptaculous, to commercial offerings from vendors such as Backbase, JackBe and Tibco Software, to nonproduct toolkits from Web giants such as Yahoo, Google and Microsoft. In addition, broader RIA, toolkits go beyond Ajax in the sense of going beyond the pure browser platform, but interoperate with Ajax or support Ajax as one of several client-side targets. These RIA tools include offerings from Adobe, Laszlo Systems, Nexaweb, Sun and Software AG.

Position and Adoption Speed Justification: Ever since the term "Ajax" was coined in early 2005, Web developers have adopted Ajax techniques in a rapid and widespread manner, at the level of code snippets and user interface "widgets" (for example, pop-up calendar controls). Commercial vendors (such as JackBe, Backbase and Tibco Software) and open-source communities (for example, packages such as Dojo, Kabuki, Scriptaculous and 140 other open-source toolkits) have undertaken more-limited adoption of comprehensive frameworks and toolkits. Major IT software vendors have added Ajax capabilities to their product road map for developer tools or are shipping technology previews (for example, Microsoft, Adobe, Oracle and IBM). Enterprise software packages and applications are enhancing the user interfaces of their current generation of products with Ajax. These product categories include portals, content management systems, CRM and ERP.

Users are encountering limitations with Ajax, primarily in its lack of offline capability (because of being based on pure browser). Other limitations and concerns with Ajax have yet to be encountered, but will likely occur in the next two years. These issues are related to maintainability, security, performance, offline processing, vendor longevity or lack of integration with local devices and applications.

User Advice: Consider enhancing established applications with narrow-scope Ajax (by using snippets and widgets). Evaluate the tactical use of Ajax frameworks and toolkits, while keeping in mind that there are no strategic choices yet. Assess application requirements to see if full-strength non-Ajax RIA technology, such as Adobe Flex, Microsoft Silverlight, Eclipse RCP or Sun's JavaFX, is better suited to your needs. Do not embark on an Ajax or RIA initiative without adopting a usability-centered design process that begins with usable interaction patterns that are independent of front-end technology. Evaluate RIA and Ajax choices from a development-time perspective (the language and tools used by developers, which might be XML or Java rather than JavaScript) and a runtime perspective (browser requirements, memory footprint and widget component model).

Business Impact: A narrow-scope use of Ajax can have a limited impact in terms of making a difficult-to-use Web application somewhat less difficult. Even this limited impact is worth it, and users will appreciate incremental improvements in the usability of applications. High levels of impact and business value can only be achieved when the development process encompasses innovations in usability and reliance on complementary server-side processing (as is done, for example, in Google Maps).

Basic Web Services Security

Analysis By: Daniel Sholler

Definition: Web services (WS) basic security standards include WS Security, WS Security policy, Security Assertion Markup Language (SAML) and other token binding standards, as well as WSI basic security profile. This set of standards enable basic authentication over Web services. These standards do not handle more-complex security arrangements, such as trust domains, federation or even straightforward token translation. However, their use, coupled with XML digital signature and the basic Web Security models, enables secure Web services in most of today's common use cases.

Position and Adoption Speed Justification: Technologies for using basic Web services security standards (for authentication of Web services interactions) are fairly well established, and are in use in customer organizations. Although certain areas (such as the use of SAML bindings) are likely to become more prevalent, this technology can be used effectively by organizations.

User Advice: Basic Web services security should be used with Web services interactions.

Business Impact: Although security overall has a tremendous impact on use, given the low penetration of Web services outside the firewall, the use of these technologies will have a modest business benefit.

SOA

Analysis By: Roy Schulte; Yefim Natis

Definition: SOA is a style of application architecture. An application is an SOA application if it is modular; the modules are distributable; software developers have written or generated interface metadata that specifies an explicit contract so that another developer can find and use the service; the interface is separate from the implementation (code and data) of the service provider; and the services are shareable — that is, designed and deployed in a manner that enables them to be invoked successively by disparate consumers. Unlike some other types of distributed computing, services in SOA can be shared across applications running on disparate platforms and are inherently easier to integrate with software from other development teams.

Position and Adoption Speed Justification: The use of SOA is accelerating in response to escalating business requirements, the emergence of Web and Web services standards (such as WSDL and SOAP) and the improving availability of SOA-capable development tools and applications. Competition, globalization and technology advances are driving companies to change their products, business processes and prices more frequently than they did before the mid-1990s. The growing use of BPM and business activity monitoring (BAM) is also causing companies to use more SOA because BPM and BAM are more-effective and easier to develop when using SOA. Vendors of middleware, development tools and packaged applications have committed to moving to SOA, and their product lines are well into the transition. User companies are moving more slowly, on average, and they are experiencing varying degrees of difficulty in ramping up their use of SOA. These difficulties hinder, but will not prevent, the spread of SOA throughout the application portfolios of large companies. The growing, if limited, practical experience with SOA has demonstrated the real costs and benefits of the transition to SOA. SOA skepticism is gradually giving way to a realistic anticipation of costs and benefits. Development and management best practices for SOA are still not fully mature, but companies are largely satisfied with their experience with it.

User Advice: Use SOA when designing new business applications, particularly those whose life spans are expected to be more than three years and that will undergo continuous refinement, maintenance or enlargement. SOA is well-suited especially for building composite applications. When buying packaged applications, rate those that implement SOA more highly than those that do not. Also, use SOA in application integration scenarios that involve composite applications that tie new logic to purchased packages, legacy applications or services offered by other business units. However, do not discard non-SOA applications in favor of SOA applications just on the basis of architecture. Discard non-SOA applications only if there are compelling business reasons why the non-SOA application has become unsatisfactory. Continue to use non-SOA architecture styles for some new, tactical applications of limited size and complexity, and for minor changes to installed non-SOA applications. Recognize that there are multiple patterns within SOA (such as multichannel applications, composite applications, multistep process flows and event-driven SOA), and each of these has its own best practices for design, deployment and management.

Business Impact: SOA is a durable change in application architecture, like the relational data model and the graphical user interface. The main benefit of SOA is that it reduces the effort and time needed to change application systems to support changes in the business. The implementation of the first SOA application in a business domain will generally be as difficult as, or more difficult than, building the same application using non-SOA designs. However, subsequent applications and changes to the initial SOA application are easier, faster and less expensive because they leverage the SOA infrastructure and previously built services. SOA is an essential ingredient in strategies that seek to enhance the agility of a company. SOA also reduces the cost of application integration, especially after enough applications have been converted or modernized to support an SOA model.

Basic Web Services

Analysis By: Daniel Sholler; Yefim Natis

Definition: Basic Web services are remotely accessible software interfaces that use core Web services standards — WSDL for service interface definition and SOAP for service interface invocation. The interfaces may lead to dedicated software modules, to adapters for pre-existing software systems, or to tools that implement orchestrated or composed assemblies of software modules. The consumer is unaware of these distinctions.

Service calls are typically request/reply, although in some cases, they're one-way. In either case, the caller addresses the service directly by name and is dependent on service availability at the time of the call. In other words, the caller has a "dependent relationship" with the service.

Basic Web services are primarily used to achieve client/server software interoperability across Internet firewalls, but they don't offer capabilities beyond basic connectivity. Transaction management, context propagation, access control and other enterprise-class intersystem communication features require second-generation, advanced Web services support. Therefore, basic Web services are typically deployed for stateless client-to-server connections.

Basic Web services standards have achieved a remarkable level of adoption. They're specified by an industry consortium (the Web Services Interoperability Organization) and have become an essential, supported feature for most modern software products.

Position and Adoption Speed Justification: Basic Web services are widely used and supported by a vast majority of software tools. However, their basic quality-of-service support prevents them from being used for more-demanding and mission-critical transactions. The technology is approaching its plateau and will re-emerge with advanced Web-services-enabled products.

User Advice: Recognize the core objectives and limitations of basic Web services design. Avoid overloading the technology, but assume that properly using basic Web services is a safe, long-term investment.

Business Impact: With Web services support, more applications are created with rich-desktop client software connections through enterprise firewalls into server-side software resources. This reinvigorates desktop-based software offerings and improves the reuse of server-based solutions. However, most of the impact is on client/server information-retrieval application styles, and on the least-demanding transactional applications.

Benefit Rating: Moderate

Market Penetration: Twenty percent to 50% of target audience

Köszönöm a figyelmet!