

# SharePoint

## A platform for enterprise mashups



A Microsoft White Paper

Published: May 2008

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For the latest information, please see <http://www.microsoft.com/mashups>

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## WHO SHOULD READ THIS PAPER?

This paper provides information about enterprise mashups, their relevance to business users, and the technologies that make enterprise mashups a reality. We also discuss how SharePoint® products and technologies, the collective name for Microsoft Office SharePoint Server and Windows® SharePoint Services, address the challenges and roadblocks to the enterprise adoption of mashups, and how enterprise mashups initiatives should be seen within the context of a broader enterprise social computing strategy. This information is relevant to business and technical decision makers who are considering or planning to implement mashups and social computing projects across their organization. This paper will help these individuals better understand the business value of enterprise mashups and the benefits that SharePoint products and technologies provide.

## INTRODUCTION

Over the past few years, the word “mashup” has become one of the most repeated buzzwords in the industry. With its promise of easy data integration and rapid end user development, mashups are now widely considered an integral part of the Web 2.0 lexicon. Many people are now familiar with the stereotypical mashup example of some data rendered on a geographical map.

Most initial applications of mashup technology happened in the consumer space. For example, in 2007 Microsoft set out to create a tool integrated with a social network targeting the typical MySpace user. Popfly™ ([www.popfly.com](http://www.popfly.com)) was the result of those efforts and has a very large user base already. It was even voted as one of PC World’s Top 25 Most Innovative Products for 2007.

Information Technology (IT) organizations have now begun to consider the applicability of mashup technologies to business use, attracted not only by the potential benefits derived from giving end users the ability to get things done on their own, but also to maximize the return on investment on SOA and data integration initiatives.

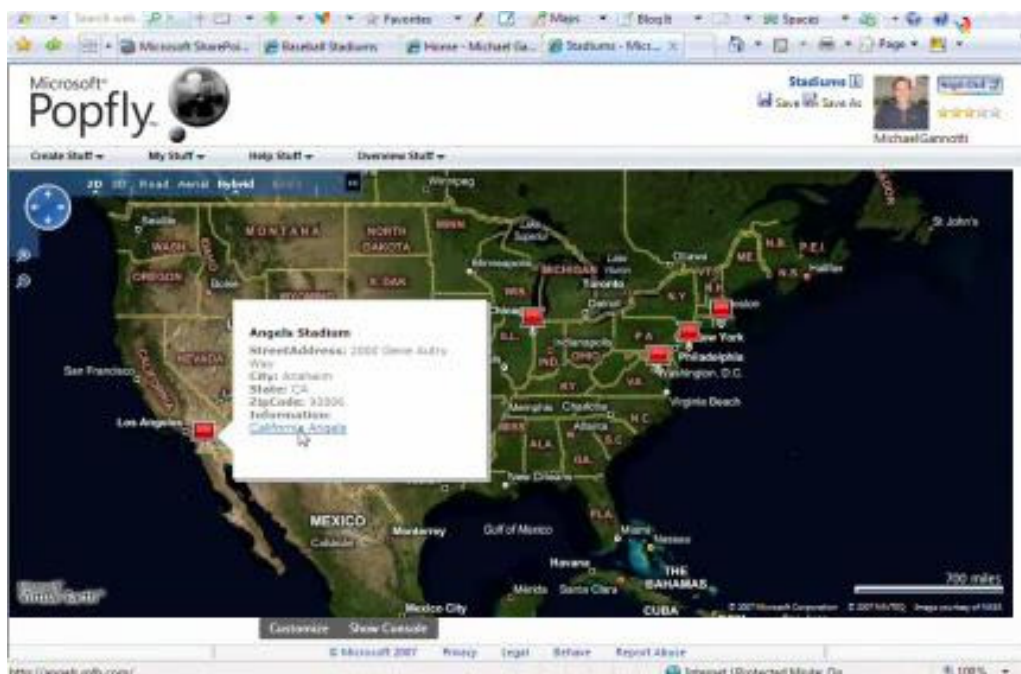
**This paper discusses Microsoft’s view of mashups within the Enterprise.** We believe that enterprise mashups represent an extension of our original vision of productivity and empowerment for business users that Microsoft Office and SharePoint Server have delivered to enterprises of all kinds and sizes. We also believe that enterprise mashups bring a number of challenges to the Chief Information Officer (CIO). From security to management, we believe that these challenges need to be addressed proactively in order to fully deliver the value of mashups to end users and to ensure that enterprise data and assets are protected and governed. More importantly, we believe that, in order to obtain the maximum benefits from enterprise mashups technologies, these investments need to be seen within the context of a broader Web 2.0 and Social Computing strategy for the enterprise.

This paper is organized as follows:

- First, we cover the definition of a mashup, what they are and what problems they attempt to solve.
- Second, we use our definition of a mashup to highlight the most important benefits to business users, and to discuss the challenges that mashups bring to CIOs looking to deploy these technologies within the enterprise.
- Third, we explain how Microsoft Office and SharePoint products and technologies help end users receive the most value from their investments, while also helping IT organizations tackle the roadblocks to the adoption of mashups within the enterprise.
- Finally, we summarize how our view of mashups fits within the context of Microsoft's Web 2.0 and Social Computing solution for enterprises.

## What is a mashup?

Definitions of what constitutes a mashup abound. In order to have a meaningful conversation, let's use a definition that is useful, one that helps us pinpoint what an enterprise mashup is and who creates it. Let's start by defining a mashup as an application created by combining multiple sources of data and visualizations. **In the context of an enterprise then, we define an enterprise mashup as an application that results when a business user combines multiple sources of enterprise and public data with some visualization and interaction capabilities.** Usually, mashed data is layered on top of some graphical view to provide context. A typical example is overlaying customer information onto a geographical map, as seen here:



Let's now analyze this definition and use it to highlight the value that mashups bring to enterprises.

## THE VALUE OF ENTERPRISE MASHUPS FOR BUSINESS USERS

From our previous section, there are three key parts in our definition of an enterprise mashup:

1. An application created by a **“business user”**
2. combining **“multiple sources of enterprise and public data”**
3. with some **“visualization and interaction capabilities”**

Let’s explore each one of them next.

### Enterprise mashups empower business users

First of all, an enterprise mashup is an **application** that a **business user** creates.

Why would business users create applications? Business users face many situations where the tools they are provided at work fall short in solving specific business problems. These ad-hoc business problems require **ad-hoc applications** or solutions. As we will later see, IT organizations are forced to prioritize some projects over many of these issues due to a lack of resources and personnel, causing these issues to go unsolved. In general, these ad-hoc applications may not be as sophisticated or last as long as traditional custom applications created by the IT organization but have a high impact because of their ability to produce a result within a short period of time and with minimal investment. They are also likely to be used by a small number of people initially, and these users tend to derive most of the benefits that come from investing in the creation of the solution. In this sense, enterprise mashups serve to empower these business users to solve some business problems quickly and on their own.

Also, note that a mashup is not an application created by a professional programmer. **Many people use the words “mashup” and “composite application” interchangeably.** A composite application is more generally a collection of software assets that have been assembled to provide a given capability. Our definition of mashup is more specific because it states that mashups are **created by business users**, not by professional developers. Note that using our definition, all mashups are composite applications, but not all composite applications are mashups. The focus is on the experience involved in the creation of the application, one that targets business users as opposed to another one that targets programmers.

It is useful to distinguish **two types of business users**. On the one hand, we have a **typical business user** with no technical skills on programming or application development. On the other hand we have a **power user**, who is an individual who is more inclined and able to use and create technical solutions to solve problems. We should note that power users are not typically paid to do the job of a professional programmer, and any programming efforts that they perform tend to be basic and only applied to the extent that they solve the business problem at hand.

The key reason we highlight these two different groups is that they tend to have different preferences on how to attack and solve a business problem. A typical business user prefers to solve problems **within the context of their work**, and is only interested in getting the work done and only marginally driven to create an application. This is in contrast to a power user who is more **inclined to use "tools,"** those advanced features in software or even separate programs used outside of the context of work but which enable the creation of solutions to do work more effectively. Classifying business users as either typical business users or power users is clearly arbitrary, but it helps pinpoint how these users want to see or use mashup technologies.

It is instructive to recognize that the fundamental value of mashups, the empowerment of business users to solve business problems on their own, is something that Microsoft and others pioneered years ago during the desktop revolution. As an example, for many years business users have been able to connect to multiple enterprise data sources to create rich charts and reports using Microsoft Office Excel® with relative autonomy. More recently, with Microsoft Office and SharePoint servers and technologies, business users have also been able to use Excel Services and dashboards to create personalized portals using rich web parts and to share and collaborate on them.

While the word "mashup" may be in vogue now and the power of the web and web standards make it possible to access more data than before, the principle of end user empowerment is not new.

## Mashups help business users combine sources of data

The second part of the definition of enterprise mashups relates to the combination of data.

It is well known that business users have tremendous amounts of data at their disposal. However, they typically have a harder time getting useful information. Business Intelligence (BI) solutions look at facilitating this discovery of useful and intelligent information, but implementing BI solutions requires involvement of IT personnel to gather existing enterprise data repositories, cleanse the data, integrate it to create new data, and to ensure that the data is frequently updated.

Mashup technologies provide the potential to satisfy some information needs for situations where the full set of capabilities of Business Intelligence is not needed. In addition, mashups complement BI by also providing access to data not commonly associated with business intelligence, such as data accessible via RSS, REST, or web services, which can be combined with internal, enterprise business intelligence.

## Mashups help users provide context to information

The final element of our definition of enterprise mashups is a set of visualization and interaction capabilities. A picture is worth a thousand words. Standard reporting in tabular or graphical format is no longer enough. Mashups help business users combine the deeper insights they have obtained with interesting visualizations to provide context to that information. As we have said before, a geographical map is one of the most commonly known mashups. As technologies such as Microsoft Silverlight™ bring even more sophisticated interactivity and visualizations to the user

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experience, many more possibilities open up. Information can be rendered on a timeline, or on an organizational chart, or on a custom manufacturing plant layout, etc. While these visualizations are typically created by a developer or programmer, business users benefit from the availability of different **visual surfaces that provide context to information** as well as capabilities to interact with the resulting visualization.

Enterprise mashups enable business users to render internal business intelligence on externally available visualizations such as maps from Microsoft Live Search Maps or Microsoft Virtual Earth. By combining internal and external sources of information, a business user is able to **obtain even deeper insights**.

## In summary: self-serviced, contextual insights for business users

We can summarize the three main values that mashups deliver to business users as follows:

- **Deeper insights:** Users are looking for way to combine multiple data sources in creative ways to generate new insights, without the complexities, costs and risks of information integration or BI projects.
- **Self-service:** End users benefit from a solution that requires minimal technical skill and that allows them to create tactical and opportunistic solutions on their own, without requiring dedicated support from their IT organization.
- **Contextual visualization and interaction:** Mashups enable users to create visualizations that improve understanding by adding context to the information. Creative ways of conveying information in context and a level of interaction (for example, using maps, zooming, searching, etc.) have become very popular on the public Internet and enterprise users can benefit from them as well.

Microsoft's focus on the direct benefits to business users will continue be one of our core pillars in our products as we look at incorporating rich internet experiences with our Microsoft Silverlight technologies, other sources of data such as photos and RSS feeds (in addition to numeric and financial data), seamless access to data available via web services, and social computing, among others, to ensure that business organizations receive the full benefits of enterprise mashups.

## THE VALUE OF ENTERPRISE MASHUPS FOR IT ORGANIZATIONS

We have discussed the value of enterprise mashups to business users. We now focus our attention to the benefits to Information Technology organizations.

### The long tail of applications: addressing the application backlog

Within Microsoft, we sometimes euphemistically give the label "**Top 10 IT Projects**" to those projects that an IT organization can commit to deliver. The key question then is "**What happens to Project 11 and beyond, the long tail of solutions that cannot be served by such IT organization?**" That long tail of applications represents the

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application backlog, a typically large set of projects and applications that are needed by business groups but that cannot be delivered by the IT organization because of resource and personnel constraints. Most CIOs and their VPs of Application Development are very familiar with this backlog. While the IT organization would like to help all business groups with all of their needs, the reality is that limited resources and personnel restrict their capacity to do it. This happens even to the detriment of the business and end user satisfaction, especially because “Project 11” is very important to some business group or set of users, even if it does not make the list of the “Top 10” projects.

IT organizations then see value in enabling mashups across the enterprise because of their potential to **help decrease this application backlog** by empowering business users to solve a class of business problems on their own without a lot of dedicated IT support. In addition, the organization overall benefits from an **increased return on investments** made on existing applications as a result of making information available to and easy to use by more people.

## Decentralization of innovation: from development to enablement

CIOs and their IT groups recognize that they need to lead the organization through the broader business challenges that come from a more dynamic and competitive business environment. In this environment, change happens at a faster pace and windows of opportunity are shorter. It is not possible for the IT organization of today to tackle all of the business needs of each business constituency across the company. As a result, the IT organization needs to find ways to scale **by shifting from developing to enabling**, from being the single provider of solutions to the company’s needs, to an enabler of solutions created by departments, teams, and people across the organization.

However, CIOs also understand that in order to achieve appropriate level of end user enablement, IT organizations must retaining some level of **control over the IT assets, including applications, data and information**. Enabling IT organizations to exercise control and governance over enterprise mashups represents one of the most important challenges as mashups make their way into the enterprise.

## In summary: decentralizing innovation, while retaining control

The paradox is then how to decentralize innovation while retaining control. Shifting IT personnel and resources away **from solution development towards solution enablement** can help IT organizations **increase their scale and scope** and, in the process, also **increase end user and organizational satisfaction** across their business constituencies, but IT still requires mechanisms to fulfill its mission as the steward of corporate IT assets.

## ROADBLOCKS OF MASHUP TECHNOLOGIES IN THE ENTERPRISE

While we believe in the potential of mashups to deliver direct benefits in productivity, business insights, and empowerment to business users, we are also committed to facilitating the adoption of these technologies across the enterprise by assisting IT organizations with the technologies to address the roadblocks that will appear. These roadblocks can be categorized in two classes: technical and management roadblocks.

## Technical roadblocks to the adoption of enterprise mashups

Technical roadblocks to the adoption of mashup technologies in the enterprise center on security, compliance, web services readiness, and ensuring data trustworthiness.

- **Security, Authorization, and Compliance:** The vast majority of information available on the Internet can be accessed anonymously. Given that most enterprise mashups would combine multiple sources of enterprise information, one challenge is to ensure that these sources of information are available only to people who have the appropriate permissions. An enterprise will face challenges as people try to create mashups using information to which they have not been granted the right permissions.
- **Web Services readiness:** Enterprises have large amounts of information available to their users. Mashup technologies make heavy use of web standards to access that information. However, not all of this information is web services-enabled, which means that IT organization will need to invest in creating web services interfaces to these sources before enterprise mashups can be more broadly adopted. Any mashup platform should facilitate the process by which enterprise data is made available to end users.
- **Data trustworthiness:** One of the problems of enterprise data is the availability of multiple versions or copies of the same information. With IT-developed solutions, this has not been a problem, as the developer has the discipline and expertise to ensure that the right information is being produced. As end users start developing mashups that can be easily shared across the organization, ensuring that the information in those mashups is correct and up to date will be a problem. Master Data Management (MDM) products address some of these needs. Master Data is critical to an organization as it represents all of the “nouns” in the enterprise (products, employees, customers, etc.) that most users utilize across a large set of applications. While MDM expands the ability of IT to ensure the quality of master data, management of reporting hierarchies, and processes to ensure the governance of master data (sometimes called master data stewardship), not all organizations have deployed MDM technologies or have implemented processes and disciplines for the management of master data.

## Management and administration roadblocks

As the initial technical challenges are addressed, organizations (and especially IT groups) will have to face the increasing complexity of managing the growth and adoption of these solutions across the enterprise. These management challenges will fall within two categories:

- **SOA and Web Services change:** Mashups have a very strong dependency on the definition of the underlying web services being used. If the external interface of these services changes, then the mashup will not work as intended or may stop working completely. This problem is not really specific to mashups but to all applications that depend on web services. Web Services Management and SOA Management and Governance solutions exist to address these challenges. However, not all enterprises have adopted them.
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- **Mashup and Component Lifecycle Management:** As mashups become more widely adopted across an enterprise, the challenges across their lifecycle will become apparent. Mashups will have dependencies on their components, and these dependencies can be broken. Components and mashups will also change frequently, making it difficult to keep track of what versions of components work with what mashups. Even locating a specific mashup may be difficult once multiple versions are available.

## KEY REQUIREMENTS OF AN ENTERPRISE MASHUP PLATFORM

Now that we have discussed the most important aspects of mashups, their value to an enterprise, and the potential challenges that IT organizations will face as mashup adoption increases, it would be useful to focus our attention to the key requirements that a mashup tool needs to meet in order to ensure broad enterprise adoption across business users and also acceptance within the IT organization.

### Business user requirements: easy and integrated, powerful, social

- **Easy to use for business users:** Earlier in this document, we made the point that mashups are a sub-class of composite applications because they can be created not by professional developers but by business users. It is because of this distinction that we believe that mashup tools and platforms need to be really easy to use in order to gain adoption within the group of typical business users (this is, not just power users). The complexities of the backend data, line of business systems, web services, and other aspects of mashup creation that are more closely associated with professional application development need to be hidden from business users.
- **Integrated with business users' daily work life:** In order to reap the full potential of mashups in the enterprise, mashups technologies need to be fully integrated in the way people do their work. If typical business users are going to adopt this technology, it is critical that they do not require a "tool," something separate from the context of their work. Business users should be able to create enterprise mashups directly on their browser or directly within their productivity suite, and more importantly, directly within the context of their work. For example, a business user using a Business Intelligence suite should not have to switch to a "tool" to create a mashup on their data. In the same manner, a person using a spreadsheet program should not have to use another "tool" to combine data into a mashup or to publish it to a company portal.
- **Powerful for power users to "finish the whole job":** Just as typical business users expect ease of use from their mashup platform, power users expect a set of capabilities to create advanced solutions within their higher expertise and skill level. As we have said before, power users are not afraid of "tools." They require a tool or capabilities to be able to not only create a mashup, but to do all of the tasks that exist beyond the creation of the mashup. These other tasks include creating a web page to host the mashup, customizing its look and feel, incorporating other content into the host web page, publishing the web page to the company portal, and

providing the required security mechanism to ensure that the mashup only reaches its intended audience. These power users want to finish the whole job, and that involves activities beyond the actual creation of the mashup.

- **Social and viral:** The power of mashups to deliver new business insights is one of their most important benefits. As new business insights are created by business users, others across the organization should be able to put these insights to work in the creation of even deeper insights that help the business improve. The viral potential of mashups can only be achieved within a platform that provides the tools to share them across not only large geographical groups but also virtual ones. The ability to pinpoint expertise across the company, to deliver mashups to a certain social network that shares a specific affinity for it, and to encourage collaboration and sharing (both across the Intranet and Extranet) make mashups an even more valuable tool for the organization.

## Key technical elements of a mashup platform

The previous non technical requirements are made possible by a few key technical architecture elements of a mashup platform. This is not an exhaustive list, but it is useful in understanding the key components of a mashup platform:

- A **repository of web services** that helps users and IT managers to publish and manage trusted corporate and public information that business users can easily leverage in the mashup creation process.
- A **gallery of visualization components** to help users select the best visualization context for the newly created insights. These parts help deliver corporate information contextually, and it is critical that these parts provide the right level of richness and user experience appeal.
- **Mashup creation capabilities** that are easy to use, requiring minimal technical sophistication, to allow business users to combine data from different web services. As we have said, these capabilities need to surface within the context of their existing desktop productivity suite, portal, business intelligence or social networking platform.
- A **site creation tool** for power users to create the context or site where the mashup will be hosted, and to customize it, extend it, and publish it to the corporate portal.
- An **ecosystem of partners and contributors** that enables further innovation on the mashup platform, providing data sources extensions into the repository of web services and contributing to the gallery of visualization parts.
- Finally, a **portal and social platform** that supports the deployment and manageability of mashups across both internal (Intranet) and external (Extranets) users as well as the social networking capabilities that help people create, share and connect with others.

## SHAREPOINT: AN ENTERPRISE MASHUP PLATFORM

Before discussing how SharePoint products and technologies help address the roadblocks posed by mashups in the enterprise, it is useful to describe at a high level some of the key components that make SharePoint a great platform for enterprise mashups.

### SharePoint background: enterprise-ready, social, and extensible

Microsoft Office SharePoint Server is Microsoft's leading product for portal hosting, content management, document management, team collaboration, and enterprise search, among other capabilities. It builds on Windows SharePoint Services, which provides basic collaboration and document management. SharePoint Server also includes a number of features that makes it very synergistic with enterprise mashups. The following list is not exhaustive. Please refer to <http://www.microsoft.com/sharepoint> for more detailed information about the capabilities of SharePoint products and technologies.

- A **Business Data Catalog (BDC)** that supports access to line of business (LOB) systems and data (such as ERP or CRM systems). The BDC is SharePoint's repository of web services and its link to line of business information.
- **SharePoint Designer** is the design product for SharePoint and provides site design and customization tools for SharePoint products and technologies.
- The **Web Parts Framework**, which forms the basis of portals. Web Parts are the basic unit of functionality and user interface, and are mini-Web applications that can be configured by end users. SharePoint products and technologies ship with several Web Parts out of the box and provide a framework on which custom Web Parts can be developed. Business users can easily create dashboards and pages directly using the browser or using SharePoint Designer.
- **Excel Services** are server components for input and distribution of Excel documents. It enables sharing and collaboration on excel spreadsheets directly through a browser.
- **Enterprise Search** across all kinds of information, documents, LOB data, and people.
- A **social computing foundation** that includes support for wikis, blogs, RSS, tight integration with real-time presence and communication, personal sites, and search.
- Because **SharePoint is built on top of Microsoft's application platform** (Microsoft .NET Framework), integration with other Microsoft technologies is simplified. Technologies such as **Microsoft SQL Server®** and **SQL Server Analysis Services** provide a great data foundation for sophisticated data and business intelligence mashups, while **Microsoft Silverlight** provides the power of a rich end user experience directly on the browser to enable the creation of very sophisticated mashups.

## SharePoint helps address the roadblocks to enterprise mashups

Office SharePoint Server and Windows SharePoint Services provide the essential platform for the deployment of a successful mashup strategy. These technologies help deliver the value of mashups to the desktops of business users while helping address the roadblocks of mashups in the enterprise.

We have previously discussed the challenges of mashups as they make their way into the enterprise. In this section we discuss how SharePoint technologies help address and mitigate these challenges:

- **Security, Authorization and Compliance:** The Business Data Catalog (BDC) represents the facility through which administrators can ensure that access to LOB data used in mashups is secure and provided only to users who are authorized. The BDC provides two authentication models. In the trusted subsystem model, clients access data as a service account (either a service process account or credentials from an SSO group account). In the impersonation and delegation model, the BDC authenticates the currently logged-on user or it can use the credentials from an SSO account. In terms of authorization, SharePoint Server supports backend authorization (for impersonation and delegation authentication) and middle-tier authorization, which actually supports granular access control at the level of application, LOB system, entity and methods. These security mechanisms are in place not only to ensure people do not access data to which they have not been granted access, but also to protect users from accidentally deleting or corrupting sites and others' content.
- **Web Services readiness:** As we discussed, one of the challenges of mashups in the enterprise is the availability of data through web services. Enterprises who have already adopted SOA or have web-services enabled their data sources can incorporate them directly into SharePoint through the BDC. However, for data sources not available as web services, the BDC also supports database access through ADO.NET, simplifying tremendously the amount of work required to make LOB information readily available for mashup creation. ADO.NET provides consistent access to data sources such as Microsoft SQL Server, as well as data sources exposed through OLE DB and XML. Data-sharing consumer applications can use ADO.NET to connect to these data sources and retrieve, manipulate, and update data.
- **Data trustworthiness:** One more roadblock we discussed for mashups is how to ensure that data represents the true and last version of information. In contrast to letting end users decide what data sources to utilize, giving IT control over which data sources are exposed through the BDC drastically reduces the risks of poor data quality. Through entity and application definitions in the BDC, IT decides not only which sources are exposed, but also how. Future releases of SharePoint Server will also include Master Data Management (MDM) capabilities. As we said before, MDM helps IT ensure the quality of master data, management of reporting hierarchies, and the processes required to ensure the governance of master data.
- **SOA and Web Services change:** As we have discussed, changes to public definitions or interfaces of web services will create problems for downstream applications, including enterprise mashups. However, by using the

BDC entity definitions instead of the underlying source web services, mashups deployed on SharePoint can be isolated from these changes. While web service changes will still break dependent mashups, these mashups will depend on the source web services only indirectly, and any changes to these web services will only affect the BDC entity and application definitions. IT administrators have then a single point of change control in the event of changes to web service definitions, tremendously simplifying the work required when a change is needed.

- **Mashup and Component Management:** As enterprise mashups become pervasive across an organization, IT organizations need to ensure the management of the created mashups as well as of the underlying parts and components. SharePoint products and technologies provide versioning functionality (check out, check in) that can be used to track changes. In addition, different levels of control can be granted to different types of users across the company (from expert application developers to less technically sophisticated business users).

## SharePoint is easy and integrated, powerful and social

Finally, SharePoint meets the requirements of a mashup platform in terms of ease of use in an integrated and social end user experience, as well as the technical requirements to deploy it successfully.

In contrast to solutions that need to be integrated across different vendors, SharePoint product and technologies provide a consistent end user experience that is seamless across both the browser and the desktop. Using this environment, business users are free to explore and become mashup creators. SharePoint products and technologies provide an integrated set of capabilities across portals, content management, forms and business intelligence and with Microsoft Office, making both the desktop and browser experiences easier to use and adopt.

In addition, Office SharePoint Designer provides power users with tools to automate business processes, build efficient applications on top of the Microsoft SharePoint platform, and tailor a SharePoint site to an organization's needs, all in an IT-managed environment. Office SharePoint Designer provides the professional-quality design tools needed to create great-looking SharePoint pages that are compatible with a wide range of browsers. It provides an intuitive design experience through a high-quality what-you-see-is-what-you-get (WYSIWYG) editor to format SharePoint pages quickly using cascading style sheet (CSS) tools, and to easily change the layout and format of a site through full support of ASP.NET master pages.

Finally, SharePoint is a solid social computing platform. As we will discuss next, it is important that organizations see any investments in enterprise mashups as a core component of the overall social computing strategy.

## MASHUPS AND YOUR SOCIAL COMPUTING STRATEGY

Social computing is a term used to reference the evolution of collaboration focused on content to collaboration focused around people. Social computing has proved immensely successful over the last few years for consumers on the Internet. Sites such as Facebook and LinkedIn have taken the development of peer groups beyond demographic

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and geographical boundaries, and community solutions such as Wikipedia have created a collaborative encyclopedia which is often referenced as a major resource for information.

The power of social computing lies with the users and with the communities they form, generating business value from the users' experiences and ideas generated through the use of collaboration technologies that reflect natural social behavior. These technologies, collectively known as Web 2.0 (or Enterprise 2.0 when applied to the enterprise) help facilitate social interaction and enable valuable information to be gathered, analyzed, and broadcasted.

More specifically, these technologies provide users with the ability to:

- Establish a richer identity that extends beyond the information contained in their Human Resources file.
- Create content and collaborate seamlessly with colleagues both in and outside the immediate organization.
- Find subject matter experts and form social networks with colleagues.
- Search for resources based on social distance or relevance.
- Become creators, by developing, amending, and publishing dynamic content easily.

**It is this last point that describes how enterprise mashups and Social Computing intersect.** As we have discussed throughout this document, one of the most important goals of enterprise mashups is to empower business users to become self sufficient, addressing some of their own needs by creating solutions that become possible as IT organizations shift their focus from solution developers to solution enablers, all within the control and governance policies required by IT. We believe that an enterprise mashup strategy needs to be seen holistically through the lenses of a social computing strategy for the enterprise.

## SharePoint: a platform for enterprise, social mashups

One of the most important strengths of Office SharePoint Server is that it provides customers with a single social computing platform. This platform is designed to integrate with both internal and external information sources, such as Microsoft Active Directory®, and even line of business applications through the capabilities we have described such as the Business Data Catalog.

While the adoption of social computing by the business world has been slower than it has been on the public web, the reasons for that are very similar to the roadblocks we have discussed for enterprise mashups, especially around security and privacy. But social computing has certainly gained traction and adoption among enterprises over the last year. For a number of organizations, SharePoint products and technologies address their security and management concerns. With these applications, Microsoft has integrated social computing and enterprise mashup technologies within an enterprise and people-ready platform. SharePoint products and technologies are built on well established

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server technologies, including Windows Server and Microsoft SQL Server. In addition to this, SharePoint products and technologies leverage the capabilities of the world's most popular productivity suite, Microsoft Office.

As organizations begin to think about the needs for enterprise mashups, they can get even more business value by thinking holistically about their enterprise strategy for Social Computing. Using SharePoint products and technologies, organizations can now capitalize on the business benefits offered by Social Computing and enterprise mashups by leveraging traditional enterprise investments on business data and applications and enabling their people to network, create, and contribute.

## CONCLUSION

Mashups are making their way into their enterprise because of how they empower business users to autonomously derive new business insights by combining enterprise data and leveraging interactive visualization capabilities that add context to the information. But the adoption of mashups in the enterprise faces a number of roadblocks: technical readiness, security and authorization, and management and administration. It is important that IT organizations prepare themselves by proactively addressing these challenges to ensure that the organization obtains the most value from these investments.

SharePoint products and technologies not only provide a great platform for portals, content management, document management, team collaboration, and enterprise search, but also provide the architecture and platform required to address the roadblocks to the adoption of enterprise mashups, making it a great enterprise mashup platform.

More importantly, SharePoint products and technologies enable enterprises to adopt enterprise mashups within the context of their Social Computing strategy. It is only through this more holistic approach that enterprises can empower their people to network, to become creators and contributors, and to share and collaborate with others, ultimately creating more business value.

## MORE INFORMATION

For more information and updates, please access <http://www.microsoft.com/mashups>