



## **The business case for enterprise mashups.**

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**Why mashups matter**

In business, organizational responsiveness and effectiveness are moving targets. No situation or challenge is the same as the last one. To be effective now and in the future, organizations must be able to adapt existing ways of working to new challenges with speed and agility that was unimaginable even five years prior. Technology needs to allow companies to act appropriately and competitively regardless of the situation – without long lead times or high incremental expense.

More and more companies are turning to enterprise mashups, which combine information and capabilities from more than one source to deliver new functions and insights. Businesses can remix information from inside and outside the enterprise to solve situational problems quickly. Individual users can create these situational applications themselves, by “mashing” together multiple information sources into a lightweight Web application that is “good enough” to solve a situational problem that pops up.

Enterprise mashups complement existing IT assets and projects that address strategic business processes – they help individuals create applications to solve a situational problem versus mission-critical, strategic IT-created assets that support the entire enterprise. Enabling business users in this way can reduce application backlog, development time and costs and can lower the cost of customizing information so individuals can adapt information easily into exactly the form they need it – increasing the reuse of existing assets to reach new audiences more cost-effectively. Research indicates that the average IT shop spends 63% or more of its budget on ongoing expenses, leaving precious few dollars for new projects or custom applications.<sup>1</sup> There is clear value in using enterprise mashups to enable business users to fulfill their own requests and to focus scarce IT resources on strategic business applications for core business processes.

The value of enterprise mashups is measured not only through cost reduction and productivity, but also in terms of innovation and growth. In 2008, 8 out of 10 CEO’s indicated their organizations were facing substantial change in the next 3 years and rated their ability to manage change 22% lower than their expected need for change.<sup>2</sup> A successful strategy for adapting to rapidly changing business needs includes providing more people with the tools and information they need to look at situational problems differently, develop insights into solving them,

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**Highlights**

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***With enterprise mashups, employees can create applications that help them solve situational problems and take advantage of business opportunities.***

***Mashups complement existing IT investments because they can access and use existing applications in new ways.***

and take advantage of new business opportunities. Enterprise mashups help accomplish this goal cost-effectively in a compelling interface. Forrester expects that a fully implemented mashup platform will garner licenses from somewhere between 55-95% of all employees.<sup>3</sup> Imagine the level of innovation that can be achieved by enabling more than 50 percent of your employees to create simple applications that help them solve a situational problem or take advantage of a new business opportunity. The economics of reaching more people, engaging them with the right information effectively and letting them collaborate is a core principle of Web 2.0 technology. Enterprise mashups bring together many elements of Web 2.0 principles and technologies – enabling business users to create their own applications, find and transform information easily, and share and manage mashups for collaboration.

**The promise of enterprise mashups—the long tail**

Enterprise mashups support one of the principles of Web 2.0: reach the “long tail” of the marketplace cost-effectively. Coined in 2004 by Chris Anderson in *Wired* magazine, the long tail concept addresses how businesses can cost-effectively reach small marketplaces. Applying that concept to applications results in a graph (see figure 1) that shows strategic applications at the top with a long tail at the bottom consisting of situational applications. In the past, the level of customization required for the IT department to build small applications for individuals made those applications far too expensive and labor intensive. This resulted in a large backlog of requests for small applications from business people. Enterprise mashups can help business users create their own applications, reducing the backlog on the IT department.

Enterprise mashups deliver one of the long-sought goals of computing: the ability to quickly deliver applications as needed for a specific business challenge. These Web applications are assembled quickly and help individuals and communities to iteratively refine applications and content.

Enterprise mashups complement existing investments in IT because they can access and use existing applications in new ways. They complement the existing applications and infrastructure that IT departments have created to support strategic business processes such as portals, information management solutions and service-oriented architecture (SOA) projects.

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Highlights

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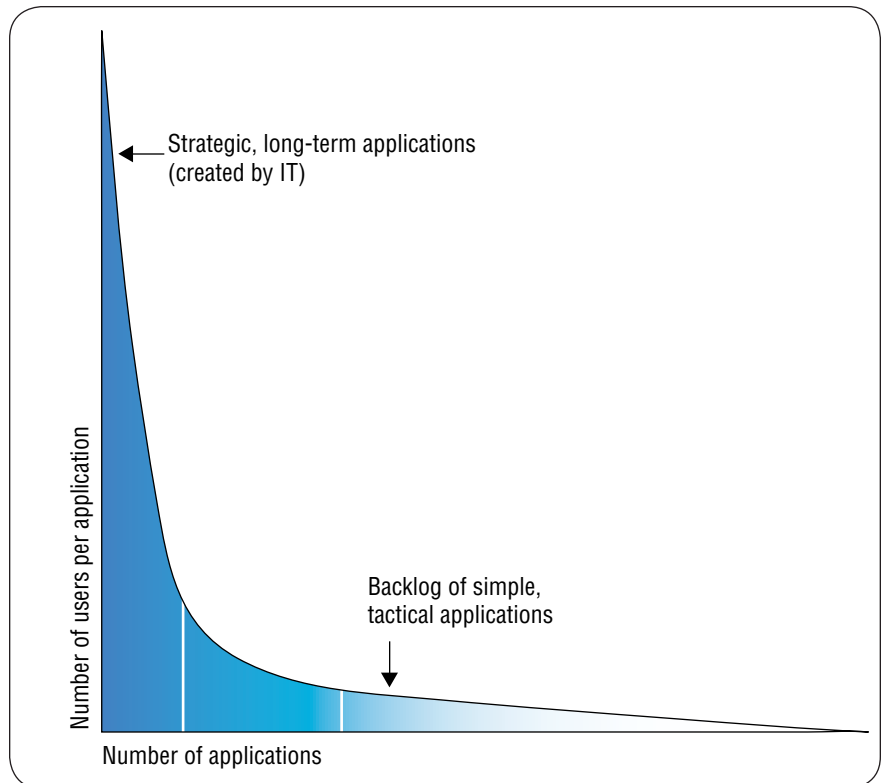


Figure 1. Enterprise mashups serve the long tail of applications.

***For IT organizations, creating new applications used to be costly and time consuming; situational applications bring a new agility to the development process.***

Enterprise mashups can change the business application paradigm

For most IT organizations today, creating and deploying new applications can be a costly and time-consuming process – especially when the desired result is a mission-critical application that serves large numbers of users. For these types of applications, rigorous development cycles involving highly skilled developers are necessary to deliver the robustness and business results required.

However, when it comes to creating situational applications (or the application long tail), the economics of formal development processes no longer make sense. Structured and long project timelines don't support the agility organizations need to quickly produce ad hoc applications that address new situational problems or support new business opportunities.

**Highlights**

***Time to value with mashup development takes days to weeks, instead of weeks to years with traditional IT application development.***

***Mashup lifespans are short-lived, but these applications can be “good enough” to solve specific, local business requirements.***

In light of this, departments inevitably find work-around solutions to manage their tactical needs—frequently reverting to paper or turning to spreadsheet-based processes and workflows, which are difficult to audit and prone to human error. Adding to this challenge is the siloed nature of enterprise information, which makes it even more difficult for individuals and teams to get access to the information they need.

Enterprise mashups help to address these challenges by providing ad hoc or good-enough Web application capabilities as depicted in table 1. These are decentralized, community-driven work efforts that satisfy specific, local business requirements.

**Table 1. Mashups development and traditional IT development**

		Mashup development	Traditional IT
Scope	Time to value	Days to weeks	Weeks to years
	Lifespan	Variable, often short	Long lived
Process	Development phases	Ad hoc or good enough	Defined, scheduled
	Governance	Decentralized, community	Formal, centralized
	Evolution	Organic	Top-down, centrally driven
Users	Application builders	Line of business, individuals or groups	All users, customers, employees or partners
	Targeted users	Small teams or known users	Large groups
Technology		REST, RSS, Atom, AJAX, JSON, XML, etc.	SOAP, WS-Security, J2EE, BPEL, REST, RSS, Atom, AJAX, JSON, XML, etc.

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Highlights

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***Enterprise mashups can solve a wide range of situational problems, but there are several patterns or use cases that are common.***

**What are the business drivers for enterprise mashups?**

Enterprise mashups help individuals creatively solve situational problems and help focus the collective creativity of business users to make better decisions as they share and iterate mashups as a community. In addition, they provide IT with new options for delivering lightweight composite Web applications. Due to their inherent flexibility, enterprise mashups can solve a wide range of situational problems, but there are several patterns or use cases that are common. The ways in which enterprise mashups reduce costs and improve competitiveness can be distilled into three primary patterns—all of which are built to change in response to quickly evolving business needs.

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**Mashup**—a lightweight Web application created by combining information or capabilities from more than one existing source to deliver new functions and insights. Mashups have been built both for the consumer and in enterprise usage form.

**Mashup platform**—technology that allows organizations to create, deploy, modify and share Web applications by assembling information and capabilities from multiple sources, with no programming required.

**Widget**—a small application or piece of dynamic content that can be easily placed into a Web page. Different vendors call widgets by different names: including gadgets, blocks or flakes. Widgets can be written in any language or can be simply HTML code. “Mashable” widgets pass information or events, so that they can be wired together to create something new.

**Web feed**—a data format used to provide users with frequently updated content. Users can read or subscribe to Really Simple Syndication (RSS) or Atom feeds via the feed readers in browsers. Feeds are emerging as a common way for organizations to expose existing enterprise data for consumption.

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**Highlights**

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***The first pattern involves enterprise mashups built in response to a situational problem that needs to be solved quickly.***

***These mashups typically pull information from several enterprise-wide applications but have a key dependency on departmental applications.***

Pattern 1: organizational rapid response to changing conditions

This is an organization's response to changing needs, and typically involves a group or team of people using an enterprise mashup to solve a situational problem. These enterprise mashups are built in response to a problem that needs to be resolved quickly, and effective handling of the issue requires a holistic view of the situation. The trigger event can be unpredictable, such as the day-to-day issues that arise in complex logistical management, or impossible to predict, such as especially harsh weather. Other examples include changing regional buying patterns based on sporting events.

These mashups typically pull information from several enterprise-wide applications but have a key dependency upon departmental applications. This topic is covered in more detail later on in the paper; please see the "How enterprise mashups fit with existing enterprise solutions" section on page 19. For example, in a supply chain for a durable good it is common for hundreds, if not thousands, of components to be delivered on time and in the order required for successful assembly. That results in thousands of individual events that have to be managed, all of which depend upon different circumstances. In these processes it is known that things can change, but predicting exactly what, when and where change may occur is impossible. Despite this difficulty, the business still needs to operate effectively—this is where mashups play an important role in helping the business work flexibly with this diverse set of information.

In this instance, enterprise mashups can be especially effective when a base inventory of enterprise feeds is pre-established and can be consumed and mixed as needed for a given issue. Core systems information can be combined with feeds from suppliers and even external marketplace events harvested from the external Web.

Let's look at two specific examples of how customers are using mashups to solve situational problems in this use case.

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Highlights

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***Mashups also provide an economic way to meet the needs of a small group or even a single user.***

*Supply chain interruption*

Enterprise mashups can help line-of-business (LOB) employees rapidly drill down into exceptions and interruptions in logistics such as supply chain details. Customers are using mashups to quickly assess what impact weather and other interruptions can have on their supply chain – assembling a view of how they can reroute shipments based on interruptions to ground transportation, rail and container shipments, alongside inventory data, to minimize the disruptive effects on their operations.

*Effective customer support*

Enterprise mashups provide realtime views into expected or new issues that need to be managed. Frequently, the visibility of account managers into in-progress customer support activities is hampered due to lack of access to and detailed information on customer support systems. Account managers can use enterprise mashups for visibility into customer support work – analyzing the triggering event, viewing documentation related to the issue, and accessing logistics and field resources that are in the vicinity to quickly resolve urgent situational problems.

Pattern 2: individual business user situational awareness

Most IT organizations are equipped to develop widely deployed applications, but how about applications for an audience of 50, or even 5 employees? What if the application is needed by only one user? Unlike the first pattern, this pattern is focused on providing an economically efficient way to meet the application needs of a small group or individuals. IT can develop the solution and delegate it to a nondeveloper such as a business analyst, or to a power user in the LOB. These mashups can pull information from several core enterprise-wide IT applications, departmental applications or both, just as in other use cases. The amount of control that enterprise IT and the LOB choose to share varies by organization, and there is no right answer – every organization has a different culture and operating environment.



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Highlights

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***Employees can use situational mashups to increase marketplace awareness, or to get a broad view of customer information—from both internal and external resources.***

While it is true that most enterprise business users have a variety of applications they can turn to for a specific piece of the puzzle, few knowledge workers have anything approaching an application that pulls all of their specific supporting information together. Users may have one system for financial reporting, but lack integration with in-flight planning systems or modeling spreadsheets across their team. Other users may have customer buying history or event sales forecasts, but need to rely on word of mouth to learn who has the sales skills to actually achieve forecasted sales in a given territory. Enterprise mashups are especially well suited for these scenarios because no one knows the operating environment—or situation—facing business users better than the users themselves.

Examples of business users building their own situational applications include:

- ***Ad hoc research and marketplace awareness.*** Enterprise mashups provide highly flexible and end user-driven tools to explore and understand rapidly changing marketplaces and research by combining internal and external information sources.
- ***Ad hoc customer engagement management.*** Enterprise mashups provide new, easily assembled, dynamic views into account travel planning, resource and expert locations, customer interactions, outstanding trouble tickets, sales activity, and external events and drivers.

Pattern 3: rapid delivery of good-enough applications from IT

This mashup pattern involves IT quickly developing and deploying good-enough Web applications on behalf of business users. Good-enough applications have several traits. They may be temporary in nature: such as mashups built in response to seasonal retailing trends or in response to an acute but short-term situational problem. With this pattern, IT can fulfill long-standing needs for small audiences. Because most IT organizations are geared toward the development, support and deployment of wide-scale applications, IT finds it too costly to provide Web applications for small groups of users. Mashups can provide a new way for IT to quickly assemble situational applications for small user communities, and can empower lower-cost IT resources to actually fulfill that need.

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**Highlights**

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***Pre-established feeds let IT focus on how to deliver information, not how to find and enable it.***

***IT professionals, business analysts and business users are all instrumental in the mashup creation workflow.***

As with the other patterns we have talked about, enterprise mashups are especially effective when a base inventory of enterprise feeds is pre-established so the feeds can be consumed and mixed as needed for a given issue. The inventory of feeds allows IT to focus on how the information needs to be delivered rather than how to find and enable it, and broadens the IT population that can respond to business needs. Establishing an inventory of feeds is a highly cost-effective and pragmatic way for Web 2.0 technology to enable legacy systems, and can go a long way toward helping satisfy unmet LOB information access needs.

**How are enterprise mashups created and who is involved?**

There are several participants in the typical enterprise mashup creation workflow. They work together in a value chain to create enterprise mashups, as depicted in figure 2 (page 11). Participants include:

- ***IT professionals*** – create applications for internal use by their organization’s LOB users and manage databases and internal information assets. They are responsible for data security and governance.
- ***Business analysts*** – provide an interface between IT and the LOB, and work with IT to establish costs, requirements for line-of-business applications, solutions or reporting needs. They support LOB information requirements.
- ***Business users*** – need better access to information to enhance their performance. Business users include LOB team members with little experience using technical solutions outside of Microsoft® Office software, and they often work with business analysts to determine business-unit needs from the IT department.

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Highlights

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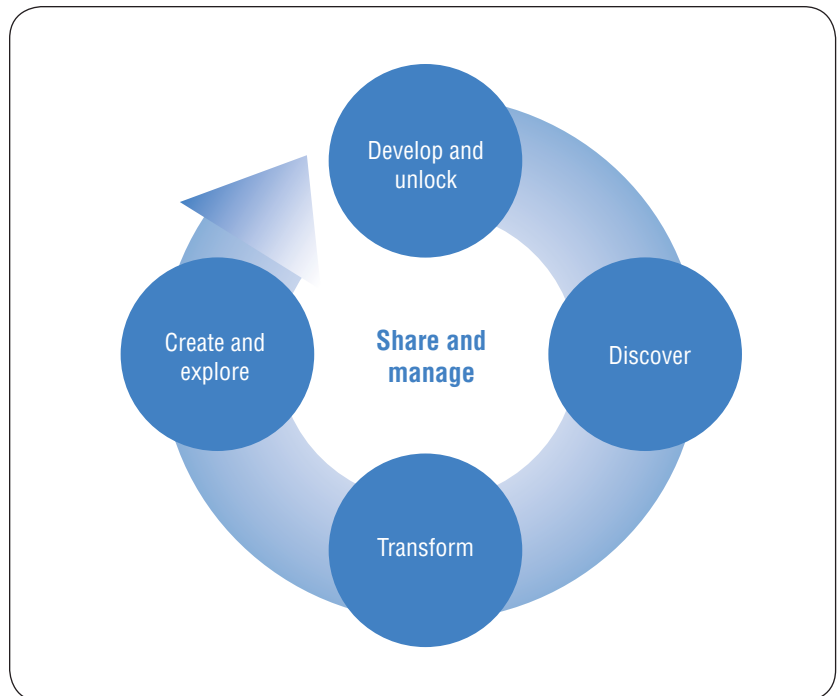


Figure 2. The mashup development cycle—Reuse existing assets in new combinations.

***The first step in creating enterprise mashups is to develop assets, such as widgets, that can be shared in a catalog.***

Develop and unlock

The first step to creating enterprise mashups centers on developing and sharing mashable assets in a catalog. IT professionals and business analysts develop interactive widgets, unlock new information sources or both. New widgets are created by IT professionals with scripted code or by business analysts through the use of wizards for nondevelopers. New information sources are unlocked and enabled with Representational State Transfer (REST)-based interfaces such as Atom or RSS formats.

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Highlights

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***Using tags, ratings and feedback, anyone can discover and reuse assets for new enterprise mashups.***

***In the transform stage, information sources are standardized and turned into feeds.***

Discover

The new mashable assets are placed in the catalog with Web 2.0-style tags, ratings and other social computing characteristics. Anyone can discover and reuse the assets for new enterprise mashups, taking advantage of the tags, ratings and collective experience of previous users. These community characteristics of a mashup platform combine social aspects, such as ratings and comments, with the ability to share mashups.

Transform

IT professionals and business analysts can next engage in a transform step, when information sources can be mixed and mashed together. A wide variety of information sources are automatically standardized and converted into feeds. There is a powerful set of operators including: filter, merge, combine, group, sort, annotate and augment. Net-new and purpose-built feeds can be quickly and easily created for the need at hand. These operations are all accomplished by a graphical tool that provides realtime previewing of feeds as they are created. The format of the outbound feed can also be transformed, regardless of the original information sources, into standards-based RSS, XML or Atom formats.

Create and explore

Next comes the create step that most people associate with mashups, which uses a browser to assemble and “wire together” the mashable assets. The wiring step involves creating pull-down menus with no programming and is accessible to business users as well as business analysts and IT professionals. Within the create step, customers engage in explore activities similar to assemble activities, but the end goal is to research complex situational problems and not to set up subsequent “steady-state” usage.

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**Highlights**

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***Users are exploring data for mash-ups in much the same way they explored data in early spreadsheets.***

***IBM Mashup Center combines an intuitive user interface with extensive access and transformation capabilities.***

In the explore step, research is carried out to dig in to the data and content. The user typically doesn't know what they don't know. In fact, the explore activity is similar to the first introduction of spreadsheets, which, at the time, gave the user an opportunity to download data from the mainframe and just play with it. They gained insights through exploration, and we see the same activity happening now with mashups.

Notice that, in most cases, the business-side roles (analysts and users) rely on IT to make available a catalog of potentially mashable assets. It's the catalog from which the best, most useful elements can be accessed. The mashable assets include:

- *Feeds—XML data streams with REST-based formats like RSS and Atom.*
- *Widgets—script-based wrappers for feeds that often have a user interface component.*
- *Services—Web services based on SOA formats such as Simple Object Access Protocol (SOAP).*

There is cross-pollination in this area—just as IT does mashups in certain cases, some power users are capable of preparing their own feeds, widgets and services. The value of this new, closer alignment of business and IT is that it leads to new business insights, greater efficiencies and, ultimately, increased competitive advantage in the marketplace.

**The technology behind enterprise mashups: IBM Mashup Center and IBM WebSphere sMash software**

To help organizations capitalize on the power of mashup technology, IBM offers two new products—IBM Mashup Center and IBM WebSphere® sMash software.

IBM Mashup Center is a business mashup platform designed for ease of use. It supports LOB assembly of dynamic situational applications with the security and governance capabilities IT requires. It combines the intuitive user mashup capabilities from IBM Lotus® Mashups software and the information access and transformation capabilities of IBM InfoSphere™ MashupHub software into one tightly integrated, comprehensive mashup offering.

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Highlights

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***IBM WebSphere sMash software enables developers to build and run REST-style components.***

***IBM Mashup center provides out-of-the-box connectors to the most common back-end sources, such as SAP applications or Web sites.***

With this lightweight mashup environment, organizations can unlock and transform enterprise, Web, personal and departmental information into consumable or mashable assets, including information feeds and widgets. These assets can then be dynamically assembled, at the glass, into new applications that address daily business challenges. With IBM Mashup Center, organizations can reduce their application backlog and improve productivity by empowering line-of-business, self-service application development.

In addition to IBM Mashup Center, IBM also offers IBM WebSphere sMash software, an agile dynamic scripting environment that allows developers to build and run REST-style components using visual tooling and dynamic scripting languages like PHP and Groovy, a language for the Java™ Virtual Machine. Scripting developers can use WebSphere sMash software to quickly create widgets that can be assembled into new Web applications using IBM Mashup Center.

How IBM Mashup Center works: supporting each step of the mashup creation process  
IBM Mashup Center provides robust support for each step in the enterprise mashup creation process. The following provides a summary-level view into how IBM Mashup Center components support fast, easy and accurate creation of new enterprise mashups.

*Unlock information sources*

IBM Mashup Center helps unlock a wide range of information sources within the enterprise, such as databases, desktop and departmental information, and internal and external Web sources. IBM Mashup Center provides out-of-the-box connectors to the most common back-end sources—from enterprise systems such as SAP, custom-built applications, Web sites and Software as a Service (SaaS) solutions to desktop data such as spreadsheets. Customers can also create their own connectors using the highly extensible IBM Mashup Center plug-in framework.

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**Highlights**

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To create consumable feeds, technically savvy users can simply point and click using a wizard-based interface. Through this interface, users can enable caching for performance optimization, add technical documentation and specify security permissions. Using the feed generation capabilities of IBM Mashup Center, existing core systems can be better utilized and shared without the need to copy or replicate data sources and without requiring changes to the underlying systems.

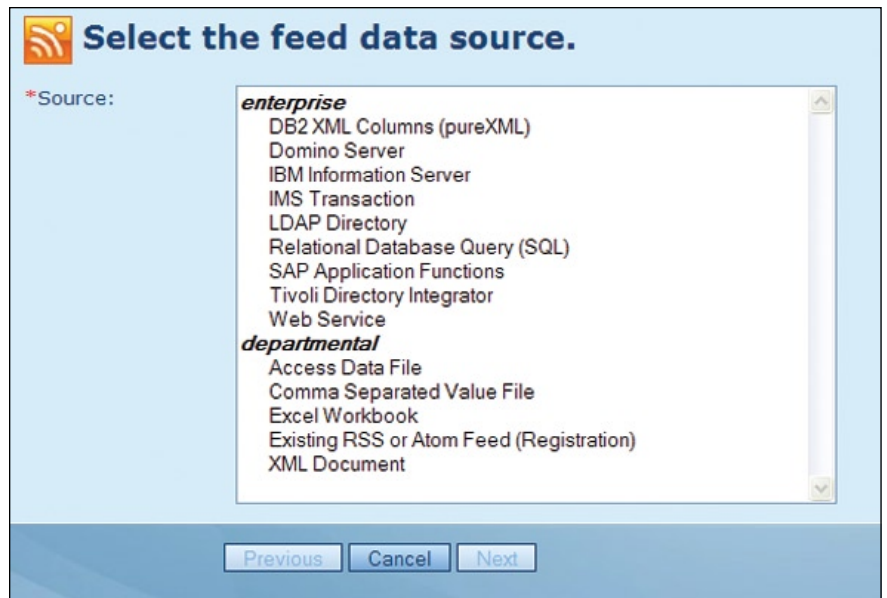


Figure 3. A wizard-based interface walks users through the feed creation process.

**Users can rapidly create new widgets without coding.**

*Develop dynamic widgets*

IBM Mashup Center includes IBM Lotus Widget Factory software—a powerful widget creation environment that helps developers of all skill levels to rapidly generate widgets without coding. Intuitive wizards encapsulate common widget creation tasks, such as building interactive user interfaces for REST-based services, enabling widgets to send and receive events, or generating dynamic widget personalization screens. Lotus Widget Factory software is tightly integrated with IBM Mashup Center, supporting automatic deployment of widgets to the mashup server, helping to speed testing and increase developers’ productivity.

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***IBM WebSphere sMash software supports fast, script-based development of widgets.***

For fast, script-based development of widgets, IBM Mashup Center developers can also choose to extend their widget creation options by utilizing WebSphere sMash software. With this software, scripting developers can quickly pull together dynamic Web 2.0 applications that can also be repurposed as widgets for use in mashups.

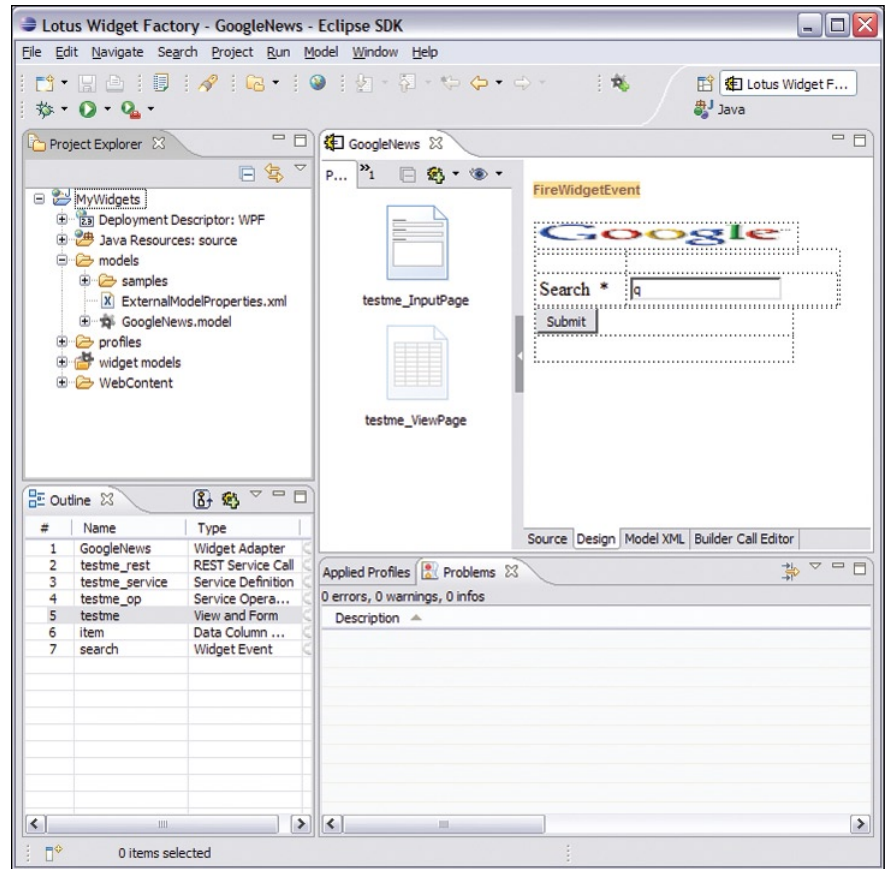


Figure 4. IBM Lotus Widget Factory software can enable rapid widget creation without the need for coding.



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***Information for data mashups can come from core enterprise systems, the Web or personal information sources.***

*Transform information*

IBM Mashup Center allows information feeds to be mixed and transformed into net-new feeds, also known as data mashups. Information can come from core enterprise systems (enterprise resource planning [ERP], customer relationship management [CRM] and enterprise content management [ECM]), line-of-business applications, the Web, or even personal information sources such as spreadsheets. Using a visual, browser-based tool, information and business analysts can remix, merge, group, sort, annotate, filter and transform feeds in a variety of ways, creating a single view of disparate sets of information in minutes. While a rich set of out-of-the-box functions and operators are provided for common manipulation tasks, advanced functions are also supported—such as regular expressions, variance and encoding. Once a new feed is created, it can be published in a number of standards-based formats, including Atom, RSS and XML.

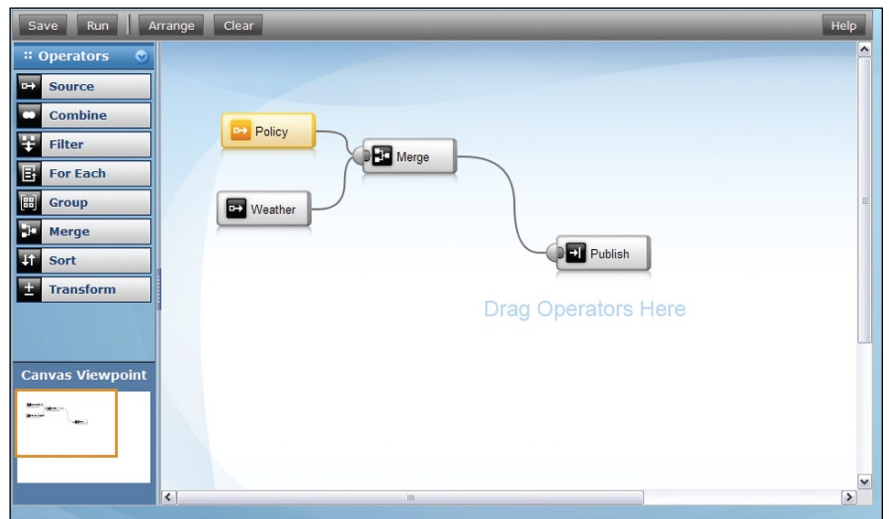


Figure 5. Transform data with powerful visual tools.

**Highlights**

**Users can place assets in a centralized catalog, where they can receive ratings, tags or comments.**

*Discover and share assets*

Once mashups, widgets or feeds are created, they can easily be published to a centralized catalog where other users can discover and reuse them. The catalog includes built-in Web 2.0 community features like ratings, tagging and commenting. These community-enhancing features help to illuminate the most useful assets, while also increasing productivity by encouraging reuse. In addition, with the catalog, organizations can apply the appropriate levels of governance security features by defining which users or groups can see what assets.

Title	Tags	Updated	Rating	Author
Aggregate Policies Mashup	aggregate functions, transform operator, example mashup	5/19/08 10:17 PM	★★★★★	nicole
CD Warehouse	cd, information, xml	5/19/08 10:17 PM	★★★★★	nicole
CD Warehouse Mashup	group operator, xml, example mashup	5/19/08 10:17 PM	★★★★★	nicole
CSV Sample 1	csv, sample	5/19/08 10:17 PM	★★★★★	nicole
Country GMT Service	country, gmt, time, timezone	5/19/08 10:17 PM	★★★★★	nicole
Country List Service	country, list	5/19/08 10:17 PM	★★★★★	nicole
Customer List	customer, demo, excel	5/19/08 11:08 PM	★★★★★	nicole
DTE Customer List	demo, customer	5/21/08 11:32 AM	★★★★★	nicole
Disease Outbreak Mashup	transform operator, merge operator, georss, tutorial	5/19/08 10:17 PM	★★★★★	nicole
Expiring Policies Mashup	variables, transform operator, functions, example mashup	5/19/08 10:17 PM	★★★★★	nicole
GPA Query	access, gpa, statistics	5/19/08 10:17 PM	★★★★★	nicole
IBM Emerging Tech Blog	emerging, technology, blog	5/19/08 10:17 PM	★★★★★	nicole
Insurance Feed		5/20/08 8:50 AM	★★★★★	nicole
Insurance Mashup	merge operator, example mashup, weather	5/19/08 10:17 PM	★★★★★	nicole
MyCo Customer list	excel, customer	5/19/08 10:17 PM	★★★★★	nicole

**Top Tags**

atom country customer demo emerging example mashup excel filter operator for each operator group operator merge operator news pipeline tdi technology transform operator tutorial weather xml yahoo

See all tags

**Categories**

- :: General
- :: Enterprise
- :: Project
- :: CRM
- :: Finance
- :: Sales
- :: Production
- :: Mobile
- :: Human Resources

Figure 6. A catalog with rating and tagging features.

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**Highlights**

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***The IBM Mashup Catalog and other software tools extend the number of widgets available to mashup creators.***

***The most effective mashups combine information from several sources to bring users the right information at the right time.***

*Rapid creation of mashups*

With the IBM Mashup Center browser-based assembly tool, end users can quickly and easily create new mashups by dragging and dropping widgets onto the page and then wiring them together on the glass. This tool includes a set of out-of-the-box, business-ready widgets that jumpstart mashup creation and support a wide range of information visualization options such as charts and table views. In addition, users can easily extend their mashup environment by incorporating custom-developed widgets provided by IT, widgets available on the external IBM Mashup Catalog ([greenhouse.lotus.com/mashups](http://greenhouse.lotus.com/mashups)), or widgets from across the Web, including any of the thousands of Google Gadgets™ software tools.

Once a mashup is created it can be easily shared. Visual tools are provided that allow end users to define what users or groups can view or edit their various pages. Mashups can also be published to the catalog, where other users can easily reuse them and easily create derivative mashups from existing cataloged mashups.

*How enterprise mashups fit with existing enterprise solutions*

Now that we have an understanding of what enterprise mashups are and how they work, let's look at how they fit with your existing enterprise solutions. First, they access existing information and applications simply; second, they leverage existing infrastructure to extend the reach of mashups and make them easier to manage.

*Access existing information simply*

Enterprise mashups are most effective when they combine several key information sources to bring the right information at the right time to the user. Helping individuals sort through information to find what they need is a critical capability that can help improve productivity. In addition to information overload, business people are challenged with finding accurate information – in a 2007 survey by

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**Highlights**

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***Leveraging existing infrastructure brings economic value to businesses.***

AIIM almost 50% of users claimed they didn't have confidence in their information.<sup>4</sup> Individuals can use mashups to help sort through the volume, the velocity and the variety of information available to them to distill just the information they need to solve the situational problem at hand.

To optimize productivity, good mashups require good information. This information comes from a mix of four sources: enterprise systems, departmental or line-of-business applications, personal or team resources such as IBM Lotus Symphony Spreadsheets, Microsoft Access or Excel documents, and the external Web.

*Leverage existing infrastructure*

A core part of the economic value that enterprise mashups deliver is that they leverage IT's existing investments and infrastructure and extend the use of those investments to serve new business needs. Enterprise mashups leverage a wide range of IT assets that companies may already have in place—across many layers of architecture. They leverage capabilities from IBM WebSphere Portal software to deploy and manage mashups across the enterprise, extend the use of information management solutions such as IBM Information Server technology, take advantage of existing integration and SOA initiatives, and use existing security infrastructure such as Lightweight Directory Access Protocol (LDAP).

*Integration with WebSphere Portal software*

The lightweight nature of enterprise mashups enables individuals to create and customize content on the fly. As these mashups pages are fine-tuned and shared, the IT department can evaluate the mashups and apply some to a broader audience. In these cases, IT can deploy mashups, widgets and feeds across the enterprise using WebSphere Portal software as a platform to support greater scalability, security, governance and sustainable, trusted performance.

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**Highlights**

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***Mashups can integrate with core information sources, including relational databases.***

IT departments can leverage their knowledge of portlets and IBM WebSphere Portlet Factory software to simply create widgets. In addition, IBM Mashup Center includes Lotus Widget Factory software, which offers a similar approach to creating portlets to create widgets, albeit simpler.

*Integration with core information sources*

IBM Mashup Center enables you to access information from a wide variety of information sources, including core information management solutions from IBM and non-IBM systems. IBM Mashup Center covers a large section of the relational database landscape, including the following: IBM DB2<sup>®</sup>, IBM Informix<sup>®</sup>, Microsoft SQL Server, MySQL and Oracle platforms. Out-of-the-box connectors also include IBM IMS<sup>™</sup> and DB2 IBM System z<sup>™</sup> data sources. You can also use the SAP business application programming interface (BAPI) infrastructure to introduce data from DB2 tools into your mashups.

Beyond point information sources, IBM Mashup Center can provide a single view of the truth via integration with IBM Master Data Management and IBM Information Server managed information sources. Dynamic warehousing solutions from IBM can also be tapped for information as needed. Parameterized URLs found in IBM Cognos 8 software can be used to quickly transform Cognos software-generated reporting into mixable and mashable feeds.

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**Highlights**

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***Mashups can integrate with social software, such as IBM Lotus Connections software, to incorporate blogs, instant messaging and more.***

*Integration with other enterprise systems and enterprise service buses*

IT needs to make content easily accessible for the business to mash up. This is where REST helps simplify access to services. With REST you can expose services from the enterprise as URLs and feeds, simplifying the process for calling a service and helping developers to access your existing services. REST helps IT make other enterprise systems and integration investments accessible for business users, so they can create mashups without additional cost. There are a wide range of systems accessible through REST. IBM has made RESTful services available throughout the core applications in your portfolio, including IBM WebSphere MQ, IBM WebSphere Application Server, IBM CICS® and other software.

*Integration with social software*

IBM Mashup Center enables you to produce a mashup page including contacts, profiles, activities and dogear widgets – enabling users to share new insights via instant messaging. Additionally you can pull services from IBM Lotus Quickr™ and IBM Lotus Connections software onto your mashup. You can combine your profiles, activities and communities with content from blogs in relevant social information, inside and outside the firewall. IBM Mashup Center fosters content and file sharing by mashing up Lotus Quickr software-based content library information. And you can tap in to the LDAP system to further increase the number of users who can see, edit or share your mashups.

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**Highlights**

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***Enterprise mashups can tap in to the work IT has already done by integrating with SOA and Information on Demand initiatives.***

Enterprise mashups can help you take advantage of your existing IT investments and make them accessible in a simple way – helping dramatically increase your ability to develop insights, share mashups with colleagues and drive innovation from the bottom up throughout the organization. Enterprise mashups can provide a powerful bridge between your IT infrastructure and individuals – supporting individual collaboration that can integrate to broader communities and tap in to benefits from social software and enterprise collaboration efforts.

**Enterprise mashups extend the reach of SOA and information in new ways**

Building on the idea that good mashups need good information, let's take a closer look at how they extend the value and reach of SOA and information initiatives that companies may already have underway.

SOA is a business-centric IT approach that supports integrating your business as linked, repeatable business tasks or services. Business people can create enterprise mashups that consume SOA, tapping in to the work that IT has already done to align their systems to business processes and helping them find the information they need more easily.

Similarly, enterprise mashups can tap in to work that IT has already done with Information on Demand initiatives, providing access to good information that makes better mashups. Information on Demand initiatives help companies deliver accurate and trustworthy information when and where it's needed in a unified view, regardless of differences in data format and location and independent from how it was originally generated.

IBM approaches enterprise mashups by leveraging current technology assets both internal and external to the organization. IBM Mashup Center extends the reach and value of SOA and helps make it easy to leverage services inside the enterprise alongside services from the Web.

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**Highlights**

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***IBM Mashup Center does not require SOA, but it allows SOA to reach more business users, more quickly and flexibly, than previously possible.***

IBM Mashup Center does not require SOA, but it allows SOA to reach more business users, more quickly and flexibly, than previously possible. SOA was designed to help IT solve situational problems in a platform-agnostic way and increase reuse; it is a proven means to provide enterprise solutions that have critical mass and ROI. IBM Mashup Center allows services produced for the critical mass of the enterprise to be leveraged by small groups or even individual users to solve a situational problem. IBM Mashup Center does this by producing feeds from these services to power mashups created by business users.

Mixing these information sources provides greater flexibility for IT and better insights for business users. Enterprise mashups complement and extend the value of the ongoing work that companies are doing to make their applications and information more flexible with SOA and Information on Demand initiatives. IBM Mashup Center is designed to leverage the driving principles behind these approaches.

Establish a flexible architecture to serve many use cases

The information source management and catalog capabilities of IBM Mashup Center provide a highly flexible way to virtualize access to the underlying systems providing the information. This virtualization—combined with the ability to normalize and output feeds in standard RSS, XML or Atom formats—can serve as an effective one-stop shop for information access across a wide range of consuming applications and mashups.



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**Highlights**

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***Because IBM Mashup Center does not require replication of data, it can deliver realtime information to users and applications.***

**Enable realtime data sharing**

IBM Mashup Center does not require replication of the underlying information sources that it accesses, and as a result can deliver realtime information to mashup users and applications consuming IBM Mashup Center feeds. Widespread data replication specifically to enable mashups is impractical due to the number of information sources that can be mashed together for any given application. IBM Mashup Center allows IT to focus on the necessary information rather than on more replication and storage requirements.

**Improve information availability across the enterprise**

IBM Mashup Center can help organizations promote information availability by maintaining a central catalog of information feeds. In addition, commonly requested feeds are cached, which lowers retrieval latency and enables performance at the back end by lowering the total volume of requests.

**Conclusion and next steps**

Enterprise mashups can help your company reduce application backlog, development costs and cycle times; improve productivity; and enable business users to innovate and collaborate more effectively to drive business growth. These applications offer an exciting way to reuse existing IT assets and infrastructure to enable business users to create their own applications and quickly solve situational problems themselves. This capability is very compelling as companies face difficult economic times that challenge scarce IT resources even more and increase the focus on reuse and productivity across the organization.

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### Highlights

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***Enterprise mashups can help your company extend existing IT investments.***

Enterprise mashups can help extend existing investments such as SOA in new ways and help better meet the needs of business. Balancing flexibility with control and agility with information integrity, IBM Mashup Center is a robust solution for rapidly changing business environments. IBM Mashup Center can help your organization to improve its effectiveness with the ability to adapt existing ways of working to new challenges, quickly.

IBM invites you to explore how enterprise mashups can extend your existing investments to help business people solve situational problems today.

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Try IBM Mashup Center on the IBM Lotus Greenhouse Web environment and help your company address the following questions:

- How can your company help business users access and assemble information and applications the way they need it?
  - How you can use assets and reduce cycle times from weeks to days to create applications that quickly solve situational problems?
-

**For more information**

To learn more about enterprise mashups and the IBM Mashup Center, contact your IBM representative or IBM Business Partner, or visit:

[ibm.com/web20/mashups](http://ibm.com/web20/mashups)

To try enterprise mashups for yourself, visit:

[lotus.greenhouse.com/mashups/](http://lotus.greenhouse.com/mashups/)

For more information about IBM Lotus software, go to:

[ibm.com/software/lotus/services](http://ibm.com/software/lotus/services)

For more information about Information Management software services from IBM, go to:

[ibm.com/software/data/services](http://ibm.com/software/data/services)



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