



Integrating IBM WebSphere Portal and IBM Mashup Center software.

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What is a mashup?

A mashup is a lightweight Web application created by combining information or capabilities from more than one existing source to deliver new functions and insights.

What is a mashup platform?

An enterprise mashup platform allows users to create, deploy, modify and share Web applications by assembling information and capabilities from multiple sources—without coding.

Introduction

This white paper outlines the potential integration options between IBM WebSphere® Portal and IBM Mashup Center software. Organizations can implement these integration options to achieve greater flexibility while lowering costs.

What is the relationship between Web portals and mashups?

Web portals provide users with a single, security-rich, personalized interface that combines numerous sources of information from within a company's firewall and from the Internet at large. The right portal solution can bring cohesion to the IT infrastructure and drive business innovation, whatever the company's size. And it can help employees and business partners work more efficiently—streamlining business processes and enabling companies to implement new, highly responsive product and service delivery offerings.

Mashup platforms support development of quick applications that can be rapidly assembled and shared by individuals and teams. Typically, the applications, or mashups, built using a mashup platform are relatively simple, tactical applications built to solve a specific business need. Mashup platforms can support business development of applications that span personal, departmental or Web information. They help improve the speed of IT to respond to changing business needs—and enable more flexibility for business users to work with their own targeted applications and innovate in a protected environment that doesn't interfere with mission-critical applications.

Portals and mashups are complementary—supporting both IT and business-based development of mission-critical and situational applications. This paper outlines the integration of WebSphere Portal and IBM Mashup Center software—charting a path for organizations to take advantage of these tools for greater efficiency and innovation.

What is the difference between a widget and a portlet?

Conceptually, widgets and portlets are the same. In fact, widgets can be surfaced as portlets in most portals, including WebSphere Portal software. The key difference is that widgets are lightweight browser-based components that can be written in practically any language (HTML, PHP, Java™, Microsoft® .NET and other languages). Portlets are also components, but they are written and adhere to a well-known and industry-standard set of Java application programming interfaces (APIs).

Portlets and widgets are similar in two important ways. They are both component models that support ad hoc mashing up or aggregation within a single user interface. Both of these models provide capabilities for configuration and context sharing of combined components, supporting lightweight “on-the-glass” integration of information and applications.

Table 1: Important differences between widgets and portlets in three areas— aggregation, language and standards

	Widgets	Portlets
Aggregation	Client-side JavaScript-based integration from practically any server	Server-side execution in a standardized portlet container; generated markup can be aggregated client-side or consumed remotely.
Language	Widgets can be written in Java, PHP, Microsoft .NET, Ruby on Rails, HTML, JavaScript and other languages. A widget can even be a portlet.	Portlets are written in Java.
Standards	None; current proposal in OpenAjax Alliance. IBM uses the iWidget* specification.	JSR 168, JSR 286, WSRP 1.0, WSRP 2.0

** IBM has proposed the iWidget specification to the OpenAjax Alliance. References to iWidget throughout the paper refer to this specification.*

The iWidget specification defines characteristics of HTML markup, metadata formats and JavaScript services for enabling aggregation of iWidget components into a single HTML page. While typically being served up by a server somewhere, the widget’s run-time container is the Web browser. The iWidget specification does not imply a specific server-side implementation for generating the iWidget compliant markup. Widgets can be implemented using various server-side technologies including static files, Java/Java 2 Platform, Enterprise Edition (J2EE), PHP, Ruby on Rails or Microsoft .NET languages.

Portlets, on the other hand, are Java components that are executed on a server within a portlet container that specifies the server-side implementation. The set of APIs that portlets provide and use are defined in the portlet API specifications; there are two versions of the open standards Java Specification Request (JSR) 168 (portlet API version 1.0) and JSR 286 (portlet API version 2.0). Remote

access to portlets is provided by the corresponding Web Services for Remote Portlets (WSRP) 1.0 and WSRP 2.0 standards. The WSRP specifications are independent of the implementation technology, and there are WSRP implementations for Java, .NET, PHP, ABAP and other programming languages. Portlet standards do not specify how portlets are aggregated and allow portals to provide flexible aggregation and integration options. In many portal implementations, portlets are aggregated on a server. WebSphere Portal software supports aggregation and integration on the server into a single HTML document, or client-side JavaScript code-based aggregation and integration in the Web browser. Portal administrators can specify per portal page which aggregation approach to use, independent of the implementation of the portlets used on these pages.

Only considering page aggregation capabilities may lead to confusion over the difference in widgets and portlets. With IBM WebSphere Portal Server software, portlets can be invoked individually via a Representational State Transfer service call for integration on the Web browser. Portlets also can generate iWidget-compliant markup that can then be aggregated client side, either within the client-side aggregation framework of WebSphere Portal Version 6.1 software or within IBM Mashup Center. In this case, the portlets are still running on the server, and the markup they emit is aggregated on the client side within the widget JavaScript container. Also, widgets can be aggregated within WebSphere Portal Server software using the IBM WebSphere Portal Widget Portlet.¹

Since portlets can generate iWidget markup, it is possible to create a portlet that generates a widget. If the JSR 168/286 programming model for user interface (UI) components is preferred by an organization for ease of deployment and management of server-side components, the portlet model can be used to create a portlet that emits iWidget-compliant markup—just like servlets can generate widgets, and PHP can generate widgets, and so on, allowing the portlet to be used in WebSphere Portal and Mashup Center environments.

Levels of integration

IBM WebSphere Portal and IBM Mashup Center software offer three levels of integration. Organizations have the flexibility to choose the model that best fits their needs, allowing for a high level of component reuse for user interface components.

- *Integration option 1—Using the IBM WebSphere Portal Widget Portlet with WebSphere Portal software*
- *Integration option 2—Embedding a widget or mashup page in WebSphere Portal software*
- *Integration option 3—Promoting a mashup page to WebSphere Portal software*

Integration option 1—Using the IBM WebSphere Portal Widget Portlet with WebSphere Portal software

Organizations can take advantage of new capabilities built in widgets inside their portal environment by using widgets from IBM Mashup Center in WebSphere Portal software.

The IBM WebSphere Portal Widget Portlet allows integration of widgets for an iWidget server into WebSphere Portal Version 6.0² and 6.1 software.

There are three ways to add a widget to WebSphere Portal software:

- *Point directly to the widget's URL*
- *Browse the IBM Mashup Center toolbox for widgets*
- *Browse the IBM Mashup Center catalog for widgets that are registered in the catalog*

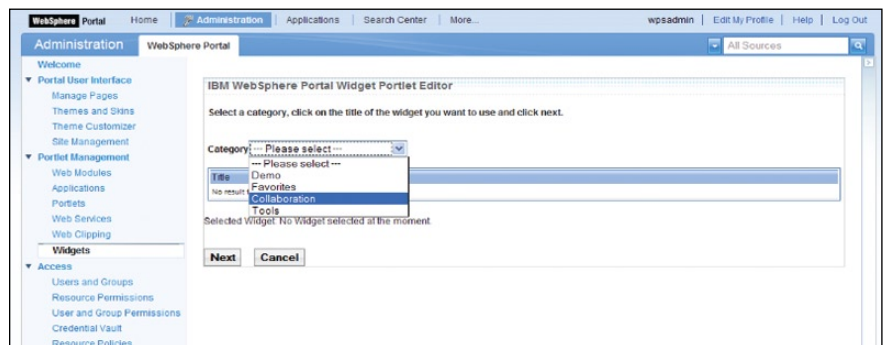


Figure 1: Add a widget to WebSphere Portal software by pointing directly to the widget's URL.

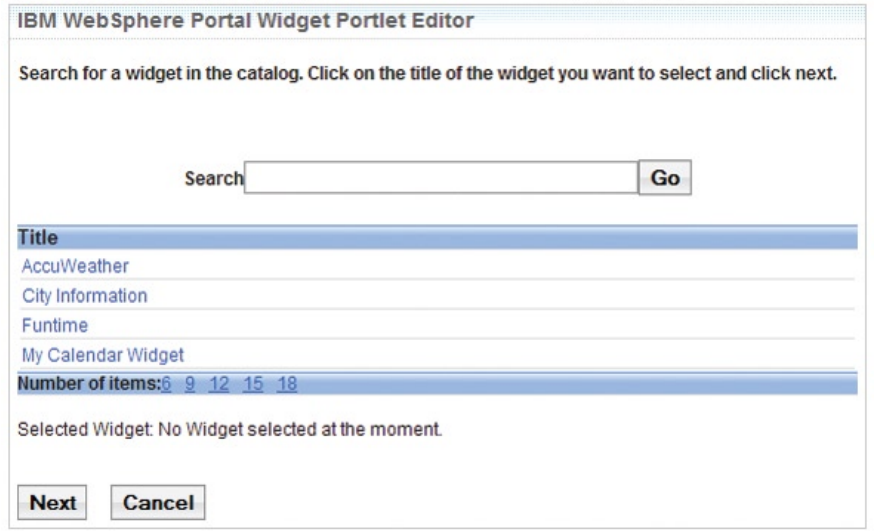


Figure 2: Add a widget to WebSphere Portal software by browsing the IBM Mashup Center toolbox for widgets.

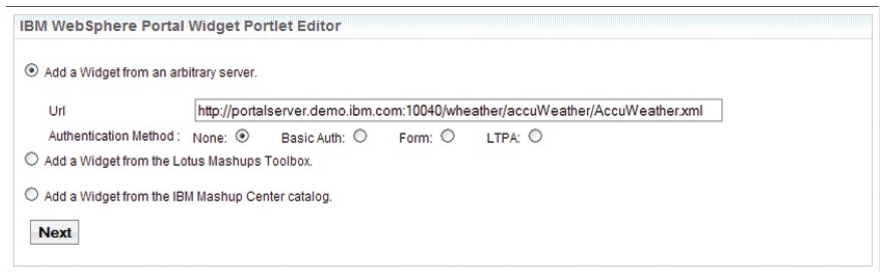


Figure 3: Add a widget to WebSphere Portal software by browsing the IBM Mashup Center catalog for widgets that are registered in the catalog.

If iWidgets are implemented as J2EE components—typically Web archive (WAR) files containing components like servlets, portlets, HTML pages and others—they can be deployed to WebSphere Portal software, which provides a single point of execution for all portal components.

With three steps, a portal administrator can deploy a widget to WebSphere Portal software:

1. Download the widget from the IBM Mashup Center catalog.
2. Deploy the WAR file to WebSphere Portal software using WebSphere Application Server administration.
3. Use the IBM Widget Portlet to integrate the widget as a portlet.

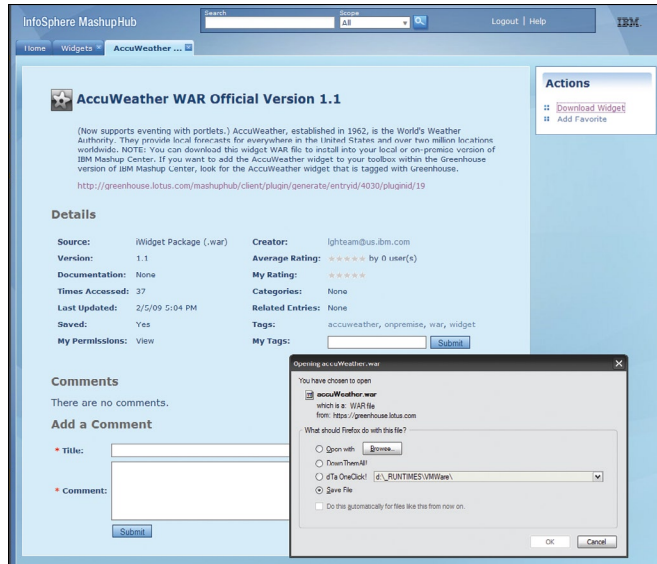


Figure 4: To deploy a widget to WebSphere Portal software, a portal administrator first downloads the widget from the IBM Mashup Center catalog.

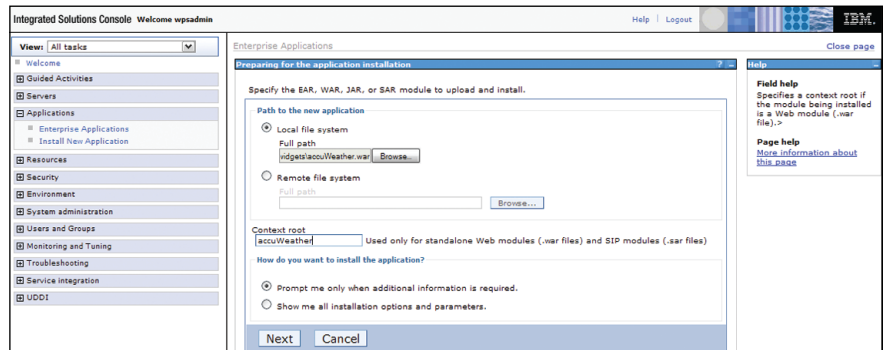


Figure 5: A portal administrator can deploy the WAR file using WebSphere Application Server administration.

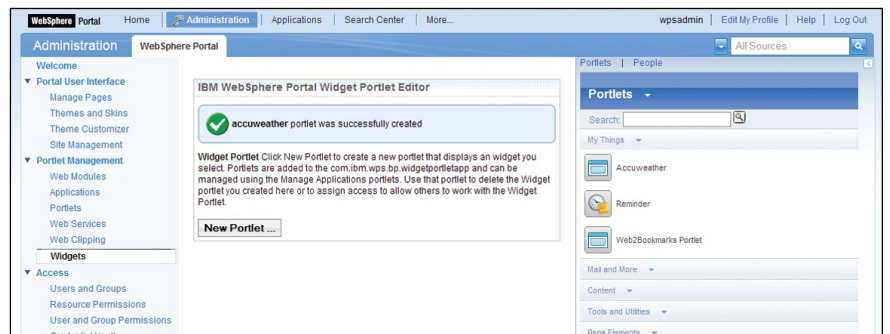


Figure 6: A portal administrator can use the IBM Widget Portlet to integrate the widget as a portlet.

The widget then behaves like a portlet in WebSphere Portal software, and administrators can:

- *Add the widget to a page.*
- *Assign access control to the widget.*
- *Configure the widget's settings.*
- *Wire the widget to other widgets or portlets (supports string and JavaScript Object Notation events).*
- *Add the widget to the palette so your portal users can easily add the widget to pages.*

Figure 7 shows an example of how widgets can quickly add great value and flexibility to existing portal applications. In this case—a travel application in WebSphere Portal software—you can easily add widgets from IBM Mashup Center to let users quickly get a single view across all dimensions of their trip, including weather, locations and more. Search the Mashup Center catalog for your most wanted weather service widget and integrate it into WebSphere Portal software using the Mashup Center catalog integration option. The IBM WebSphere Portal Widget Portlet is available on the WebSphere Portal catalog for free download.³

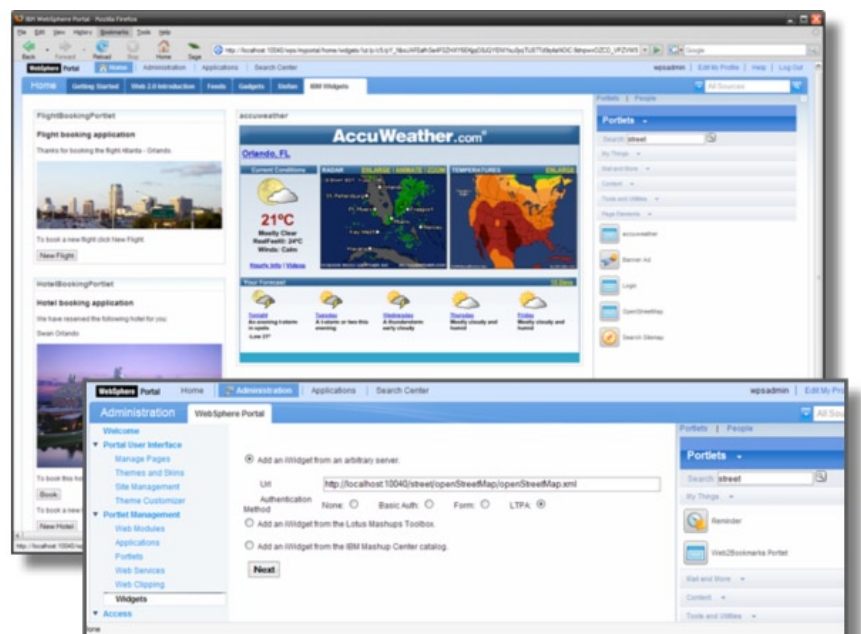


Figure 7: A travel application in WebSphere Portal software shows how widgets can help provide users with a single view of their trip, including weather, locations and more.

Organizations using IBM Mashup Center and WebSphere Portal software provide flexible integration options for their business to respond quickly to business needs while providing a high level of reuse and streamlined component development. Figure 8 shows typical server deployment options for the combination of WebSphere Portal software, IBM Mashup Center and additional widget servers.

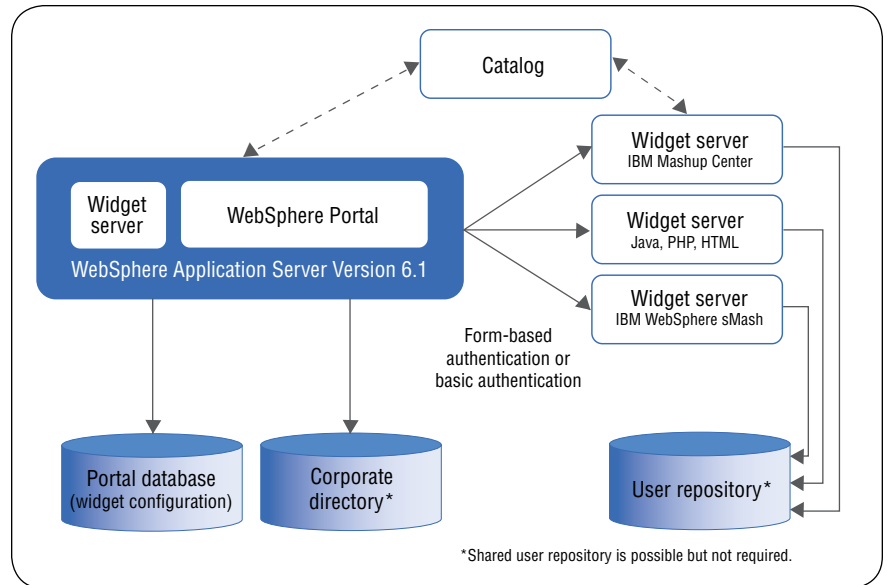


Figure 8: Typical server deployment options for the combination of WebSphere Portal software, IBM Mashup Center and additional widget servers.

Creating widgets

There are many tools available to create widgets that support a wide range of skill sets. One of the newer tools available to support widget creation is IBM Lotus® Widget Factory software, which comes bundled in IBM Mashup Center. Designed to be easy to use, this Eclipse software-based integrated development environment (IDE) supports creating widgets without coding—guiding users through with wizard-based interfaces.

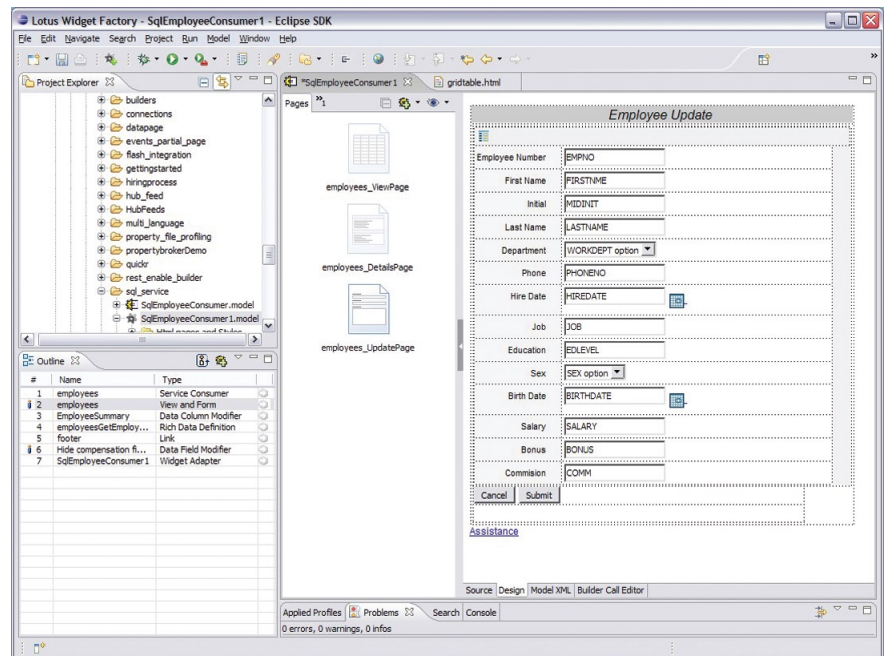


Figure 9: The IBM Lotus Widget Factory interface

Some of the key capabilities of Lotus Widget Factory software include:

- **Widget creation without coding.** Through the use of software automation components called “builders,” powerful widgets can be built very quickly. Lotus Widget Factory software includes builders that help automate tasks like connecting to back-end systems, creating and modifying the UI and generating logic. Even with just a few builders, a widget can be created that supports create, read, update and delete operations.
- **Automatic deployment.** Right from the Lotus Widget Factory IDE, widgets can be automatically deployed to the Mashup Center server and toolbox.
- **Business user customization.** Using Lotus Widget Factory software, it is easy to create configuration screens for widgets, allowing business users to easily customize the widgets by modifying their settings.

Integration option 2—Embedding a widget or mashup page in WebSphere Portal software
Another way to extend the reach of a widget or mashup page is to embed it in WebSphere Portal software or another browser-based page — such as blogs, wikis and Web content pages.

From the IBM Mashup Center assembly tool, users have the ability to generate a small JavaScript code snippet (for a widget or a page) that they can embed into a browser-based page. The net result is that the widget or page will be dynamically served up from the Mashup Center server into that desired HTML page.

To embed a widget, navigate to the toolbox, mouse over the widget, and select the “Add to Web Page” menu option.

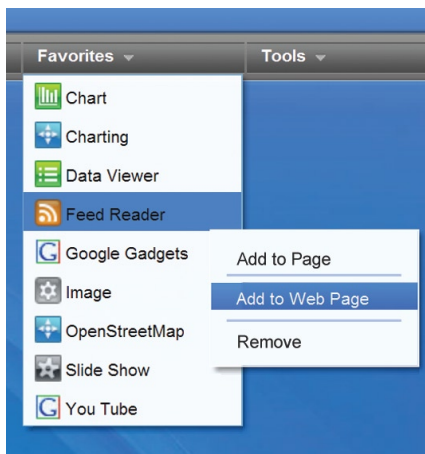


Figure 10: A screenshot shows the “Add to Web Page” menu option in the IBM Mashup Center assembly tool.

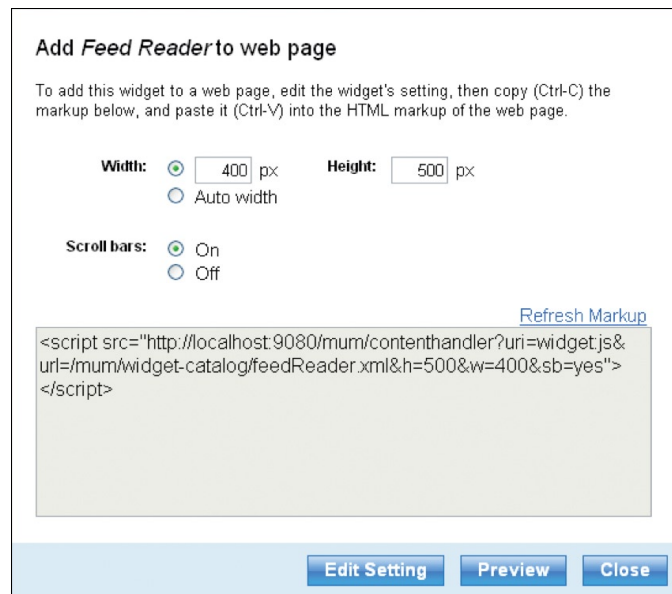


Figure 11: A screenshot shows the “Add to Web Page” interface in the IBM Mashup Center assembly tool.

From here, the “Add to Web Page” interface will open up. This interface allows users to:

- *Edit the settings for the widget—for example, specifying the RSS feed that should be displayed in the feed reader.*
- *Preview the widget.*
- *Copy the markup used to embed the widget.*

This same type of functionality exists at the page level. From the assembly tool, users can select the option “Display on a Web Page,” which brings up an interface similar to the one shown above for widgets. From here, users can modify the width and height of the page and copy the markup needed to embed the page.

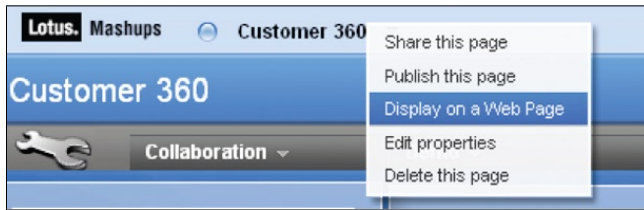


Figure 12: A screenshot shows the "Display on a Web Page" option in the IBM Mashup Center assembly tool.

Integration option 3—Promoting a mashup page to WebSphere Portal software

In the future, organizations will be able to host mashup pages directly in their WebSphere Portal environment. The IBM Mashup Center catalog will allow administrators to add entire mashup pages directly into the portal environment. Administrators can then assign appropriate access to the mashup page hosted in WebSphere Portal software from inside the WebSphere Portal environment.

Conclusion

Together, IBM WebSphere Portal software and IBM Mashup Center software offer one of the most comprehensive enterprise platforms for mashup development and deployment, social computing and Web 2.0 principles. They help extend service-oriented architecture (SOA) to the end user, providing a personalized collection of resources for a more efficient, productive workplace. The combination of WebSphere Portal software and IBM Mashup Center helps contribute to less effort, less cost and faster time to value.

For more information

To learn more about IBM WebSphere Portal and IBM Mashup Center software, contact your IBM representative or IBM Business Partner, or visit:

ibm.com/software/info/business-mashups

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- 1, 3 For more information about IBM WebSphere Portal Widget Portlet software, visit <http://www-01.ibm.com/software/brandcatalog/portal/portal/details?catalog.label=1WP1001PI>
- 2 IBM WebSphere Portal Widget Portlet for WebSphere Portal Version 6.0 software does not support iWidget events.