Developing portlets for the IBM WebSphere Portal Server with IBM Rational Rapid Developer

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In the corporate world, computer users want fast, seamless access to applications they use frequently: corporate messaging (email) systems, personal schedulers and address books, HR information and transaction delivery systems, word processing and spreadsheet applications, and more. That is why portals have become such a popular platform for application delivery.

Portals deliver customized application content within a framework of standard services (e.g., a single security sign-on, team meeting places, etc.). Users do not have to remember multiple passwords, and they get a single, personalized view of all the applications with which they work and interact (Figure 1). Plus, by providing common user interface access mechanisms, portals reduce the need for training and save valuable application navigation time.
Portal components: Portlets

To support the development and deployment of application portals, IBM introduced IBM WebSphere® Portal Server. WebSphere Portal Server integrates with IBM WebSphere Application Server to provide a robust, scalable runtime environment. In this environment, you can create portal applications by developing software components called portlets. Portlets are similar to servlets; they consist of a variety of views, or different ways of looking at the portlet (e.g., normal, maximized), as well as business logic that supports these views. Of course, this is a new technology, and you need specialized skills to develop, deploy, and maintain the portlets that comprise a portal application. Developers who have such skills can code portlets directly, from scratch, using the IBM Portal Toolkit for WebSphere Studio.

For developers who may not be as comfortable working in a code-centric development environment or are not well-versed in the technical details of portlet development, IBM® Rational® Rapid Developer offers a quick and easy method for creating and deploying portlets onto WebSphere Portal Server. Rational Rapid Developer complements WebSphere Portal Server by providing a rich, architected rapid application development (ARAD) environment. It enables developers to create portlet views through a simple drag-and-drop, point-and-click interface, and then to enhance the functionality of these portlet views by adding special operations through callback methods. Rational Rapid Developer lets you create an application by developing a set of models -- such as class models, user interface models, and deployment models -- and then using those models to
generate most of the code for the application.

**Developing portlet views**

Portlet applications comprise one or more portlet views and callback methods (Figure 2).

![Figure 2: Portal components and their relationships](image)

IBM Rational Rapid Developer gives you the ability to create portlet views and assign them to a particular portlet application. It also provides a means to create callback methods that can be called during various points in the lifecycle of a portlet. The Page Architect feature in IBM Rational Rapid Developer enables you to create these views. Page Architect is a rich user interface design environment that offers a variety of powerful controls, such as grids and tables that you can easily associate with the application's data (Figure 3).
IBM Rational Rapid Developer supports the creation of different view types that serve different purposes. The basic view type provides a read-only version of the portlet. For example, a stock portfolio portlet might have a basic view that lists the user's current stock symbols and current stock prices. An edit view for this portlet might allow users to add stock symbols to the basic view. A configuration view would allow the portlet administrator to place certain restrictions on other views; for example, the administrator might restrict the number of stock symbols that can be entered or listed to twenty. The configuration view gives the administrator access to configuration data stored for the portlet in DB2 as part of the IBM WebSphere Portal Server data. In addition, IBM Rational Rapid Developer supports a maximized version of each of these view types, which would be displayed when users click the maximize icon in the portlet toolbar. Rational Rapid Developer also supports a "Help" view for portlets.

When designing a portlet in IBM Rational Rapid Developer, you need to determine which of the above view types the portlet will support, and then create corresponding page views in Page Architect. When you define the portlet content, you can add page views to the portlet and then signify the view type (Figure 4). A portlet does not need to support all view types. IBM Rational Rapid Developer also provides a default set of portlet styles for pages and controls that you can augment with company-specific branding and style options.
Portlet callbacks

Portlet callbacks are methods that get called at specific points in the lifecycle of a portlet. They give portal developers a substantial degree of flexibility because they allow the system to call methods when specific events occur (e.g., when the user minimizes or maximizes the view). They also give developers a means of augmenting special events that occur at the portal server level (e.g., when a user logs in). For instance, a stock ticker portlet may load a particular user's favorite stock symbols when that person logs in. In Figure 5, the `portletLoginMethod()` has been defined as a "Login" callback that would be invoked when the user logs in to the portal server.

As Figure 5 shows, with IBM Rational Rapid Developer, you can create these callback methods and identify their type and placement. The framework provides a basic implementation of each of these callback types. Placement determines when your method will be called and when the framework version will be called. If you set the placement to "Before," the method will be called before the framework version of the method. If you set the placement to "After," the method will be called after the framework version is called. Finally, if you set an "Override," the method will be called instead of the framework version.
Portlet callback types

IBM Rational Rapid Developer supports the development of a variety of callback types that can enhance the user experience as well as interaction between portlet views. Some callbacks are related to the view (e.g., "Window Minimize," "Maximize," "Detach," "Closing") and some are related to the Portal Server (e.g., "Login," "Logout," "Begin Page," and "End Page"). Some are general, such as the "Action" callback, which is used to control action events that are targeted for the portlet (e.g., clicking on a link in a portlet). The "Message Received" callback type can be used to update a portlet view, based on receiving a message from another portlet.

Portlet construction and deployment

IBM Rational Rapid Developer takes most of the complexity out of portlet construction and deployment. Based on the portlet definitions and application models, Rational Rapid Developer automatically constructs Java code for all the classes needed to support the pattern for each
To construct the portlets, first you select which portlets you want to build. In the Construct Portlets -- Advanced settings dialog (Figure 6), you can either select to construct all portlets or just select specific portlets, using the Browse button.

![Figure 6: Portlet construction dialog](image)

Once you select the portlets for construction, IBM Rational Rapid Developer generates the code and displays the Build Process dialog (Figure 7).

![Figure 7: Build Process dialog](image)

In this case, a portlet named "TheWeather" was successfully constructed and deployed along with its two views: "InsertView" and "InsertViewMax" (Figure 8).
Rich, customizable content the easy way

Portlets provide users with a rich set of content that is highly customizable to their specific needs and allows them to focus on the applications they require to get their jobs done. IBM WebSphere Portal Server provides a solid platform for building an enterprise class portal environment. IBM Rational Rapid Developer provides developers with a powerful yet easy way to model, construct, and deploy portlets without deep knowledge about portlet development. In combination, these two technologies provide a solid backbone for any portlet development effort.

For more information on the products or services discussed in this article, please click here and follow the instructions provided. Thank you!