Application Reuse Through Portal Frameworks
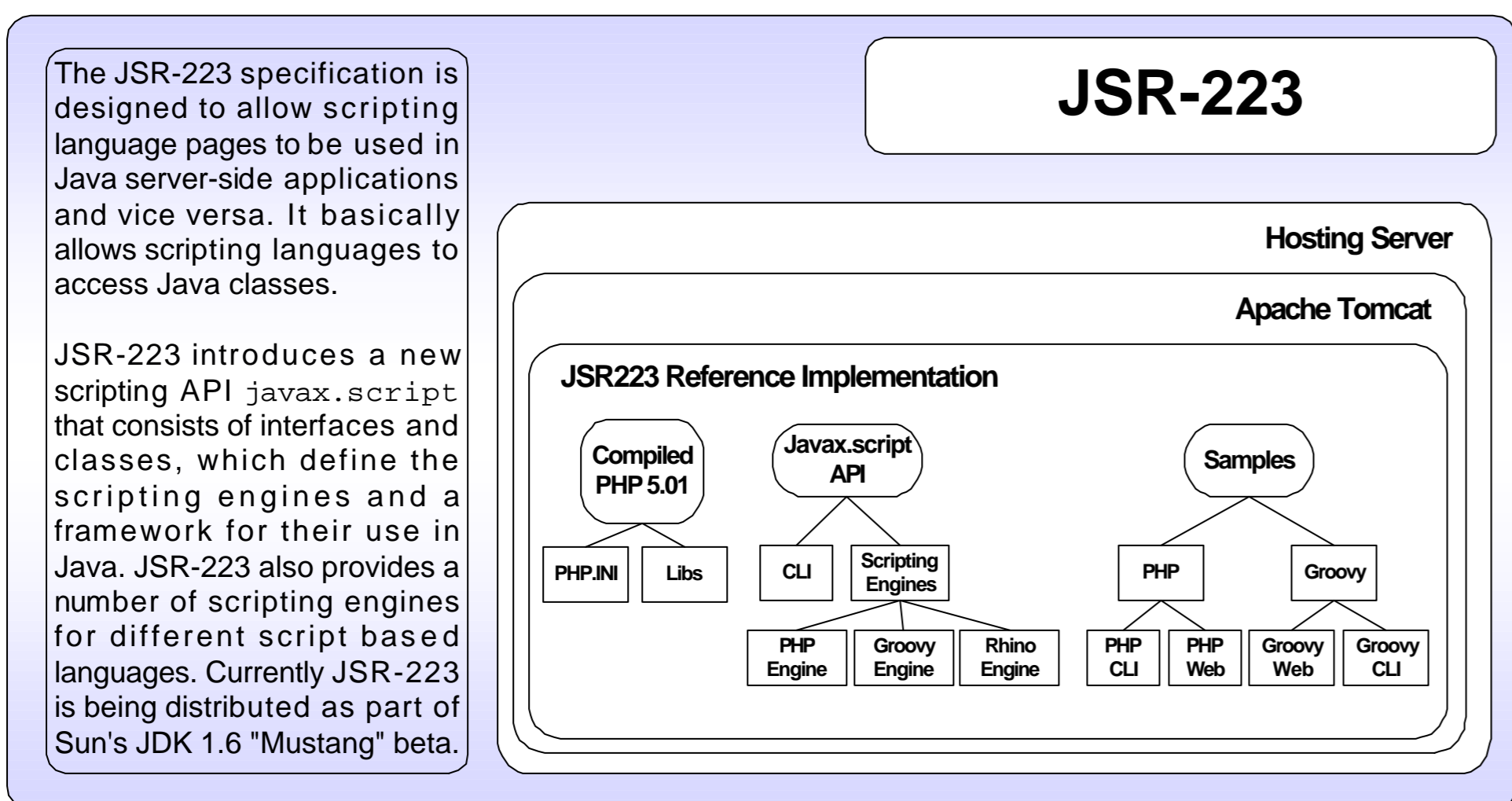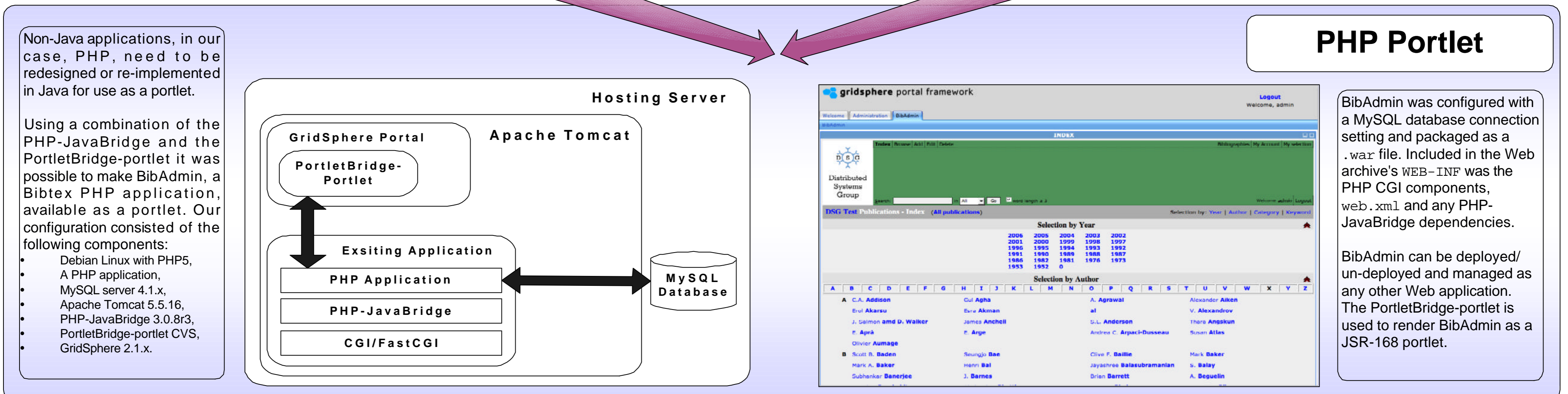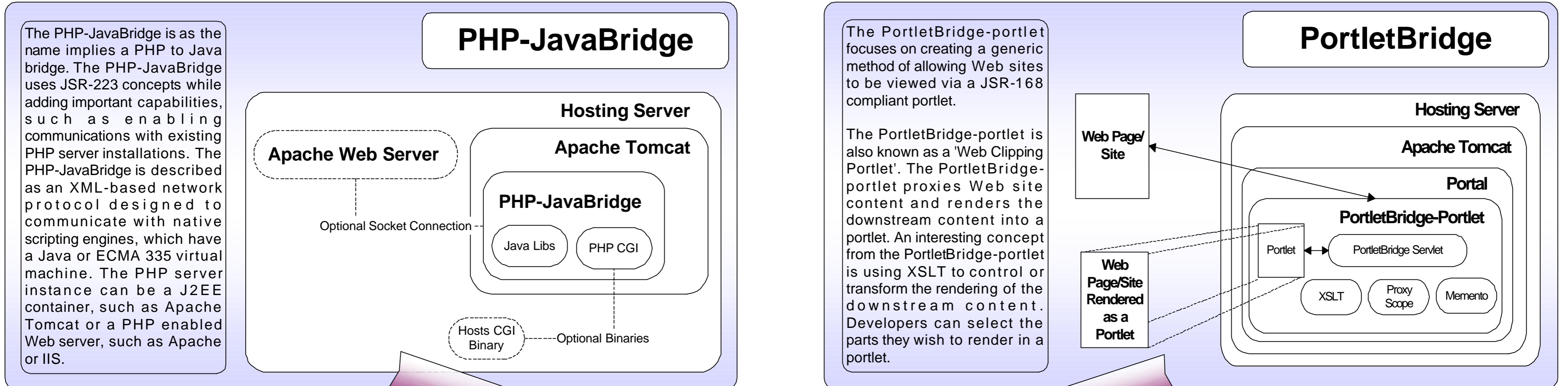
JISC

Introduction

Sakai is open source hosting framework for Virtual Learning and Virtual Research environments. Sakai was developed in the USA with funding from numerous sources, including the Mellon Foundation and Ivy League Universities.

Sakai VRE Demonstrator Project

This project aims to introduce scientists and researchers to the capabilities of a VRE through a working portal-based demonstrator and to use Sakai as a framework technology. The project is extending the framework, developing further tools for collaboration and research, and engaging with the research community.

Portal Bridges

Portal frameworks impose a number of contraints and limitations on the integration of legacy applications. This typically means that significant effort is needed to embed an application into a portal, and results in the need to fork the source tree of the application for the purposes of integration. We have been investigating the use of exsiting Web applications through portlets via bridging technologies.

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PHP-JavaBridge

The PHP-JavaBridge is as the name implies a PHP to Java bridge. The PHP-JavaBridge uses JSR-223 concepts while adding important capabilities, such as enabling communications with existing PHP server installations. The PHP-JavaBridge is described as an XML-based network protocol designed to communicate with native scripting engines, which have a Java or ECMA 335 virtual machine. The PHP server instance can be a J2EE container, such as Apache Tomcat or a PHP enabled Web server, such as Apache or IIS.

Hosting Server — Apache Web Server — Apache Tomcat — PHP-JavaBridge — Java Libs — PHP CGI — Optional Socket Connection — Hosts CGI Binary — Optional Binaries

PortletBridge

The PortletBridge-portlet focuses on creating a generic method of allowing Web sites to be viewed via a JSR-168 compliant portlet.

The PortletBridge-portlet is also known as a 'Web Clipping Portlet'. The PortletBridge-portlet proxies Web site content and renders the downstream content into a portlet. An interesting concept from the PortletBridge-portlet is using XSLT to control or transform the rendering of the downstream content. Developers can select the parts they wish to render in a portlet.

Web Page/Site — Web Page/Site Rendered as a Portlet — Hosting Server — Apache Tomcat — Portal — PortletBridge-Portlet — Portlet — PortletBridge Servlet — XSLT — Proxy Scope — Memento

Non-Java applications, in our case, PHP, need to be redesigned or re-implemented in Java for use as a portlet.

Using a combination of the PHP-JavaBridge and the PortletBridge-portlet it was possible to make BibAdmin, a Bibtex PHP application, available as a portlet. Our configuration consisted of the following components:
- Debian Linux with PHP5,
- A PHP application,
- MySQL server 4.1.x,
- Apache Tomcat 5.5.16,
- PHP-JavaBridge 3.0.8r3,
- PortletBridge-portlet CVS,
- GridSphere 2.1.x.

Hosting Server — Apache Tomcat — GridSphere Portal — PortletBridge-Portlet — Exsiting Application — PHP Application — PHP-JavaBridge — CGI/FastCGI — MySQL Database

PHP Portlet

BibAdmin was configured with a MySQL database connection setting and packaged as a `.war` file. Included in the Web archive's `WEB-INF` was the PHP CGI components, `web.xml` and any PHP-JavaBridge dependencies.

BibAdmin can be deployed/ un-deployed and managed as any other Web application. The PortletBridge-portlet is used to render BibAdmin as a JSR-168 portlet.

JSR-223

The JSR-223 specification is designed to allow scripting language pages to be used in Java server-side applications and vice versa. It basically allows scripting languages to access Java classes.

JSR-223 introduces a new scripting API `javax.script` that consists of interfaces and classes, which define the scripting engines and a framework for their use in Java. JSR-223 also provides a number of scripting engines for different script based languages. Currently JSR-223 is being distributed as part of Sun's JDK 1.6 "Mustang" beta.

Hosting Server — Apache Tomcat — JSR223 Reference Implementation — Compiled PHP 5.01 — Javax.script API — Samples — PHP.INI — Libs — CLI — Scripting Engines — PHP — Groovy — PHP Engine — Groovy Engine — Rhino Engine — PHP CLI — PHP Web — Groovy Web — Groovy CLI

Future

As bridging technologies become more popular, it will become common practise to merge and manipulate the best features of Java, and script-based languages.

Developers can also concentrate on an applications usability, rather than integration of technologies. This technique can provide rapid portlet development resulting in highly usable portlets.

The Apache Portals Bridges project is anothter bridging technology for script-based languages, which is gathering popularity with portal developers and has started to be included in portals, such as GridSphere. Developments in this area should increase with the inclusion of JSR-223 in the next release of Sun's JDK.

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