

## 2.2.4 Front End Libraries

### Front End Libraries

GRITS uses several third-party libraries to generate the web pages of the application. All of these are built upon the JSP 1.2 (not JSP 1.3) specification.

JSP stands for Java Server Pages, and refers to the fact that a .jsp page is compiled into a Java Servlet by the JSP container. The *Java* in JSP does not mean that Java code should be embedded in JSP pages. The fact that Java can be embedded in a JSP page according to older specifications of the JSP standard does not mean that you should, and as a matter of fact the ability to embed Java in JSP pages has been turned off by default in later specifications of the JSP standard.

There are much better ways to provide programability and scriptability to the front end. The following table lists the tools that provide this functionality.

Third Party Tool	Version	Home Page	Required	Included in CVS
WebWork2	2.1 or later	<a href="http://www.opensymphony.com/webwork/">http://www.opensymphony.com/webwork/</a>	Yes	Yes
SiteMesh	2.0.1 or later	<a href="http://www.opensymphony.com/sitemesh/">http://www.opensymphony.com/sitemesh/</a>	Yes	Yes
displaytag	1.0-rc1 or later	<a href="http://displaytag.sourceforge.net/">http://displaytag.sourceforge.net/</a>	Yes	Yes
JSP Standard Tag Library	1.0 (not 1.1)	<a href="http://jakarta.apache.org/taglibs/">http://jakarta.apache.org/taglibs/</a>	Yes	Yes

WebWork 2 is the workhorse of the GRITS front end. It is composed of the following jar files:

```
lib/runtime/webwork/cos-multipart.jar
lib/runtime/webwork/mail.jar
lib/runtime/webwork/ognl-2.6.5.jar
lib/runtime/webwork/oscore-2.2.4.jar
lib/runtime/webwork/pell-multipart.jar
lib/runtime/webwork/velocity-dep-1.3.1.jar
lib/runtime/webwork/webwork-2.1.jar
lib/runtime/webwork/xwork-1.0.1.jar
```

SiteMesh is the layout engine of the entire GRITS application, and allows for all of the web pages to be loosely coupled and created independently of other web pages. All of the SiteMesh functionality is contained in one jar:

```
lib/runtime/webwork/sitemesh-2.0.1.jar
```

The displaytag library is a JSP tag library whose only purpose it to ease the display of tables in JSP.