Seam Dev Tools Reference Guide

Version: 3.0.0.GA

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Introduction

1.1. What is Seam?

This introduction will help you to understand what is Seam.

Seam is a fully featured application framework on top of Java EE 5. It is also one of the most popular enterprise Java framework today. Seam deeply integrates many other standard-based or open source frameworks (e.g., JSF, EJB3, JMS, Web Services, jBPM, JBoss Rules, Ajax4jsf, RichFaces, Facelets, Spring, iText, Quartz, TestNG, etc.), and provides a single programming model for developers to "drive" those underlying frameworks via simple annotated POJOs (Plain Old Java Objects). It makes life easier for developers to tackle complex enterprise applications with many component frameworks.

1.2. Installation into Eclipse

Here, we are going to explain how to install Seam plugin into Eclipse.

Seam is a one module of JBoss Tools project. Since Seam has a dependence on other JBoss Tools modules we recommend you to install a bundle of all <u>JBoss Tools plug-ins</u> [http:// labs.jboss.com/tools/download/index.html]. Installation instruction you can find on JBoss Wiki in <u>InstallingJBossTools</u> [http://labs.jboss.com/wiki/InstallingJBossTools] section.

1.3. Other relevant resources on the topic

The <u>Seam Framework</u> [http://seamframework.org/] - Next generation enterprise Java development.

All latest release versions of JBoss Developer Studio/JBoss Tools documentation you can find <u>here</u> [http://docs.jboss.org/tools/2.1.0.GA/].

The latest documentation builds are available <u>here</u> [http://download.jboss.org/jbosstools/nightly-docs/].

Creating a New Seam Project via the New Seam Project wizard

In this chapter we provide you with the necessary steps to start working with Seam Framework.

At first, we suggest setting the specific Seam perspective that combines a number of different views and editors needed for work with resources concerned. For that select *Window > Open Perspective > Other > Seam* or you can also access it through the button in the right top corner.

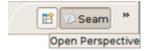


Figure 2.1. Seam Perspective Icon

Also the Open Web Browser action is directly available in the Seam perspective.



Figure 2.2. Embedded Web Browser Button

2.1. Create standalone Seam Web Project

The best way to get started with Seam is to organise a simple Seam Project and experiment with it by creating variations.

Thus, you should select *File > New > Seam Web Project* to run the New Seam Project wizard. The wizard form allows you to create runtime and server instances in order to get started creating, running, and debugging J2EE (only) applications.

Seam Web Project wizard has an option for selecting the actual Server (not just WTP runtime) that will be used for the project. This allows the wizard to identify correctly where the required datasource and driver libraries need to go.

Let's get through the wizard step-by-step. First, you should enter a name and a location directory for your new project.

New Seam Project	(
eam Web Project	and
Create standalone Seam Web Project	
Project name: seamproject	
Project contents:	
☑ Use <u>d</u> efault	
Directory: //opt/workspace/seamproject	Browse
Target Runtime	
JBoss 4.2 Runtime	≎ N <u>e</u> w
Dynamic Web Module version	
2.5	0
Target Server	
JBoss 4.2 Server	\$ New
Configuration	
Dynamic Web Project with Seam 1.2	S Modify
Configures a Dynamic Web application to use Seam v1.	.2
② < <u>Back</u> <u>Next</u> >	Einish Cancel

Figure 2.3. New Seam Project Wizard

On the figure above you can see the runtime and the server already created.

If you need to create a new runtime, click on the *New...* button in the Target Runtime section. It brings up the wizard where you can specify a new JBoss Server Runtime environment or the other type of runtime appropriate for configuring your project. Let's create one more JBoss 4.2 Runtime. Hence, after choosing it click on *Next* button.

New Server Runtime Environment	
New Server Runtime Environment	
Define a new server runtime environment	
Download additional server adapt	ers
Select the type of runtime environment:	
type filter text	
D 🗁 IBM	
Boss	
▽ 🗁 JBoss Community	
JBoss 3.2 Runtime	
JBoss 4.0 Runtime	
😲 JBoss 4.2 Runtime	
JBoss 5.0 Runtime	
JBoss Deploy-Only Runtime	
👂 🗁 JBoss Enterprise Middleware	
👂 🗁 ObjectWeb	
👂 🗁 Oracle	~
JBoss Application Server 4.2	
Create a new local server	
(2) < Back Next > Finish Cancel	

Figure 2.4. Specifying Target Runtime

All what you need here is to name runtime, type the path to its install directory or locate it by using *Browse* button, select a Java Runtime Environment, and select which configuration you want.

New Server Runtime Environment	×
JBoss Runtime Wizard	55 4.2
A JBoss Server runtime references a JBoss installation directory. It can be used to set up classpaths for projects which depend on this runtir as well as by a "server" which will be able to start and stop instances of JBo	
Name	
JBoss 4.2 Runtime 1	
Home Directory	
/opt/jboss-4.2.2.GA Browse	a
IRE	
Default JRE	RE
Configuration	
🐨 an 🎆	Ξ
1 minimal	-
	0
Image: Second	

Figure 2.5. Specifying Target Runtime Configurations

Clicking on Finish returns you to the New Seam Project wizard page.

The next step is to define a Server that you can do by clicking on *New...* button in the Target Server section. In appeared New Server dialog the last server which matches the runtime will be selected.

All declared runtimes are listed in the combo box under the servers view. Here, you can indicate a server runtime that you need. Click *Add* if you want to add a new Server Runtime.

New Server	×
Define a New Server	
Choose the type of server to create	
Server's <u>h</u> ost name: localhost	
Download additional server a Select the server type:	idapters
type filter text	
JBoss AS 4.0	
😲 JBoss AS 4.2	
🖓 JBoss AS 5.0	
C procedure on the comment	~
JBoss Application Server 4.2	
Server name: JBoss AS 4.2 at localhost	
Server runtime environment: JBoss 4.2 Runtime	Add
Configure runtime environ	ments
⑦ < Back Next > Finish Ca	ncel

Figure 2.6. Specifying Target Server

Next page allows you to verify the information for chosen server. Leave everything as it is and click on *Next*.

	New Server	
reate a new J	Boss Server	05 9 4.2
	nanages starting and stopping instances of JBoss. mand line arguments and keeps track of which modules have been dep	loyed
JBoss 4.2 Serve	er	_
Buntime Informa	ation	
If the runtime in and then Add to	iformation below is incorrect, please press back, Installed Runtimes, o create a new runtime from a different location. / /opt/jboss-4.2.2.GA /usr/lib/jvm/java-1.5.0-sun-1.5.0.15 (ava-1.5.0-sun-1.5.0.15)	
Configuration	default	
0	< Back Next > Finish Cano	el

Figure 2.7. Specifying Server Configurations

On the last wizard step you can modify your projects to configure them on the Server.

2	New Server		Þ
Add and Remove Projects Modify the projects that are cor	nfigured on the server		
Move projects to the right to co	nfigure them on the server		
Available projects:	_	Configured projects:	
👼 JSFKickStart	A <u>d</u> d >)	
	< <u>B</u> emove		
	Add All >>]	
	<< Remove All		
0	< <u>B</u> ack Next :	- <u>F</u> inish	Cancel

Figure 2.8. Project Modification for Configuring on the Server

Once you have the Target Server defined click on *Finish* button to return to the first page of the New Seam Project wizard.



New Seam Project	
Seam Web Project	and a
Create standalone Seam Web Project	E
	0
Project name: seamproject	
Project contents:	
☑ Use default	
Directory: //opt/workspace/seamproject	Browse
Target Runtime	
JBoss 4.2 Runtime	> N <u>e</u> w
Dynamic Web Module version	
2.5	0
Target Server	
<custom></custom>	New
Default Configuration for JBoss 4.2 Runtime	
Dynamic Web Project with Seam 1.2	
Dynamic Web Project with Seam 2.0	Modify
Dynamic Web Project with Seam 2.1	
JavaServer Faces v1.1 Project	
JavaServer Faces v1.2 Project	
Minimal Configuration	
(?) < Back Next > Einish	Cancel
Lansi	curren

Figure 2.9. Completion of Runtime and Server Configuration

The last section on this wizard step is Configuration. Here, you can select one of the pre-defined project configurations either associated with Seam 1.2, Seam 2.0 or with Seam 2.1. Furthermore, you can create your own configuration by pressing the *Modify...* button. It will open the dialog which allows to configure your own set of facets for adding extra functionality to your project.

Pass to the next section to find out more details on this dialog.

2.2. Select the Project Facets

The Project Facets wizard allows you to enable or disable specific facets which define necessary characteristics for the project. In time you switch to this wizard form, all critical facets are already checked for the chosen Configuration.

Notice that this page of the wizard also allows you to set the necessary version for any facet.

	Project Face	ts
roject Facets Select the facets that should be enabl	ed for this project.	
onfigurations: Dynamic Web Project	with Seam 1.2	\$ <u>S</u> ave As <u>D</u> elete
Project Facet	Version	Details Runtimes
Axis2 Web Services		Seam 1.2
🗹 💑 Dynamic Web Module	2.5	Enables the project to work with JBoss Sear
🗹 🔬 Java	5.0 1.0	Requires all of the following facets:
Java Persistence JavaScript Toolkit	1.0	🗔 Dynamic Web Module 2.5 or newer
JavaServer Faces	1.2	Java 5.0
Boss Web Services	1.1	JavaServer Faces 1.2 or newer
🖌 📄 Seam	1.2	
🗌 📄 WebDoclet (XDoclet)	1.2	
	2.0	
	2.1	
0		OK Cancel

Figure 2.10. Project Facets Selection

Moreover, here you can specify your own preset of selected facets by checking needed ones in project facets window and clicking on *Save* button.

	Proj	ect Facets 🗙
Project Facets Select the facets that should be enable	d for this p	project.
Configurations: <a>custom>		Save As Delete
Project Facet	Version	Details Runtimes
Axis2 Web Services		📄 Seam 2.0
🗹 👼 Dynamic Web Module	2.5	Enables the project to work with JBoss Se
🗹 🔊 Java	5.0	Requires all of the following facets:
🗌 🚸 Java Persistence	1.0	Dynamic Web Module 2.5 or newer
🗌 📄 JavaScript Toolkit	1.0	J Java 5.0
🗹 📄 JavaServer Faces	1.2	JavaServer Faces 1.2 or newer
🗌 📄 JBoss ESB	4.3	Save Preset
JBoss Portlets		Name:
▶ □ Digital D		Custom Facets Preset
🗹 🗎 Seam	2.0	Description:
🗌 📄 WebDoclet (XDoclet)	1.2.3	
< III		OK Cancel
0		OK Cancel

Figure 2.11. Specifying Custom Facet Preset

To see all available Server runtimes click on Runtimes tab on the left. You can create a new one using the *New* button. If more than one runtimes are checked here, the *Make Primary* button won't be dimmed yet. So you can make use of it to mark primary runtime.

6	Project Face	ets 🛛 🗙
Project Facets Select the facets that should be ena	bled for this project.	
Configurations: Dynamic Web Project	ct with Seam 1.2	Save As Delete
Project Facet	Version	Details Runtimes
 Axis2 Web Services Dynamic Web Module Java Java Persistence JavaScript Toolkit JavaServer Faces JBoss ESB JBoss Portlets 	2.5 5.0 1.0 1.2 4.3	IBoss 4.2 Runtime
 IBoss Web Services Seam WebDoclet (XDoclet) 	1.2 1.2.3	Show all runtimes Make Primary New
< <u> </u>		Runtime Composition: <no runtime="" selected=""></no>
0		OK Cancel

Figure 2.12. Runtime Manipulations

Ok button will bring you to the Web Module wizard form again.

2.3. How to Configure Web Module Settings

As we deal with a Dynamic Web Application we should first specify the top level directory of our application for deploying it to a server afterwards. You know, this kind of application contains both Web and Java code resources. Thus, it's also important to indicate the content directory as well as Java source directory. The wizard will put all those values itself. So you can leave everything as it is.

New Seam Project
Web Module
Configure web module settings.
Context Root:
seamproject
Content Directory:
WebContent
Java Source Directory:
src
☑ Generate deployment descriptor
⑦ < Back Next > Einish Cancel

Figure 2.13. Web Module Settings

Choose *Next* to switch to the next wizard form.

2.4. Adding JSF Capabilities

This wizard helps you to add JSF capabilities into your project for representing appropriate behaviours associated with JSF.

Checking *Server Supplied JSF Implementation* means that you will have a default JSF implementation given by server.

0	New Seam Project
JSF Capabilities Add JSF capabilities to the	his Web Project
JSF Libraries:	Server Supplied JSF Implementation Server Supplied JSF Implementation Peploy New Component Libraries
	> Deploy Library Name <
JSF <u>C</u> onfiguration File:	/WEB-INF/faces-config.xml
JSF <u>S</u> ervlet Name:	Faces Servlet
JSF Servlet Classname:	javax.faces.webapp.FacesServlet
<u>U</u> RL Mapping Patterns:	*.seam <u>A</u> dd Remove
0	< Back Next > Bnish Cancel

Figure 2.14. Adding JSF Capabilities to Web Project

In case when you want to use your custom JSF implementation check a lower radio button. You are able to create a library of jars by clicking on *New* button.

Here, it's necessary to type a Library Name, select a Version Supported and add proper Library jars. Then click on *Finish* to complete the choice.

() C	reate JSF Implementation Library
JSF Library Create a library of j	ars that make up a JSF implementation library.
Library <u>N</u> ame:	CustomJSFImplementation
Version Supported:	v1_1
Library Jars	
	t/Desktop/rhds/eclipse/plugins
✓ Is JSF Implement	tation
0	<u>F</u> inish Cancel

Figure 2.15. Create JSF Implementation Library

In the Component Libraries section of the wizard you can also add Component Libraries (e.g. <u>*Richfaces*</u> [http://www.jboss.org/jbossrichfaces]). Just click on <u>New</u> button. Appeared dialog will ask you to type the Library name, supported version and add necessary jar's. Press *Finish* to complete the choice.

e c	reate JSF Implementation Library
JSF Library Create a library of j	ars that make up a JSF implementation library.
Library <u>N</u> ame:	Rich Faces
Version Supported:	UNKNOWN
Library Jars	
☐ richfaces-ui-3.	Add Add Bemove ation
0	<u>F</u> inish Cancel

Figure 2.16. Create JSF Implementation Component Library

The last wizard options allows to edit a path for JSF Configuration File, a name for JSF Servlet, JSF Servlet Classname and change URL Mapping Patterns.

•	New Seam Project
JSF Capabilities Add JSF capabilities to the	his Web Project
JSF Libraries:	 Server Supplied JSF Implementation CustomJSFImplementation Component Libraries Deploy Library Name Richfaces New
JSF <u>C</u> onfiguration File:	/WEB-INF/faces-config.xml
JSF <u>S</u> ervlet Name:	Faces Servlet
JSF Servlet Classname:	javax.faces.webapp.FacesServlet
URL Mapping Patterns:	*.seam
	*.faces
0	< Back Next > Bnish Cancel

Figure 2.17. JSF Capabilities Wizard

Finally, as we are arranging the Seam Web project, the last step we should do is to adjust project configurations associated with the Seam.

2.5. Configure Seam Facet Settings

The last wizard step is related to Seam facet and allows you to do the following:

0	New Sean	n Project		×
Seam Facet Configure Seam Facet Settings			CP.	
General Seam Runtime: Seam 1.2.AP Deploy as: ③ WAR 〇 E			¢ Ad	d
Database Database Type: Connection profile: Database Schema Name: Database Catalog Name: DB Tables already exists in dat Recreate database tables and		HSQL DefaultDS	Edit) Net	◆ ₩
Code Generation Session Bean Package Name: Entity Bean Package Name: Test Package Name:	org.domain.te org.domain.te org.domain.te	st.entity		
0	< <u>B</u> ack	<u>N</u> ext >	<u>Finish</u> Cance	21

Figure 2.18. Seam Facet Settings

• Create Seam runtime and define Seam home folder.

For that click on *Add* button in the General section. Notice that in this wizard presented below you can create a Seam runtime only for that version which was selected in the *Project Facets* wizard (version 1.2 in our case).

0	New Seam Runtime
Seam Runtim Create a Sean	
Name: Version: Home Folder:	Seam_runtime 1.2 \$ /opt/work/jboss-seam-1.2.1.GA Browse
0	[Einish Cancel

Figure 2.19. Seam Runtime Creation

- Select EAR or WAR deployment by checking a necessary radio button.
- Select a Database Type

)	New Seam	Project	
eam Facet Configure Seam Facet Settings			
General Seam Runtime Seam 1.2.AP Deploy as: WAR E Database Database Type:		DB2 DB2/390 DB2/400 Derby Firebird FrontBase HSQL Informix	
Connection profile: Database Schema Name: Database Catalog Name: DB Tables already exists in dat Recreate database tables and Code Generation		Ingres Interbase Mckoi SQL MySQL MySQL (InnoDB) MySQL (MyISAM) MySQL 5	
Session Bean Package Name: Entity Bean Package Name: Test Package Name:	org.domain.Sea org.domain.Sea org.domain.Sea		
		Pointbase PostgreSQL Progress SAP DB SQL Server Sybase Sybase 11	
0	< <u>B</u> ack	Sybase Anywhere	

Figure 2.20. Seam Runtime Creation

• and then specify a *Connection profile* appropriate for your database.

8	New Seam	Project		Þ
Seam Facet Configure Seam Facet Settings				
General Seam Runtime: Seam 1.2.AP Deploy as:				\$ Add
Database Database Type:		HSQL		+
Connection profile:		DefaultDS	+	Edit New
Database Schema Name: Database Catalog Name: DB Tables already exists in dat Recreate database tables and				
Code Generation Session Bean Package Name: Entity Bean Package Name:	org.domain.tes org.domain.tes			
Test Package Name:	org.domain.tes	t.test		
0	< <u>B</u> ack	<u>N</u> ext >	<u>F</u> inish	Cancel

Figure 2.21. Connection Profile Options

You can edit chosen profile by using *Edit* button or organise a new one by clicking on *New* button and selecting necessary for you type of connection profile.

New Connection Profile	×
Wizard Selection Page	
Please select the connection profile type:	
Derby Embedded Database	
Seneric JDBC Connection	
BSQLDB Connection Profile	
PostgreSQL JDBC Connection	
Sybase ASA	
(?) < Back Next > Enish	Cancel

Figure 2.22. Connection Profile Selecting

On the other dialog you'll be asked to enter its name and description. And then you should select a proper driver and adjust connection details. Press *Next* to preview all the adjusted settings and complete the creation of the new profile.

٢	HSQLDB Database	×
Specify a Driver	and Connection Details	
Select a driver from the connection.	n the drop-down and provide login details for	
Select a driver from	the drop-down:	
Hypersonic DB		+
Database:	SAMPLE	
Database location:	MyDB	Browse
User name:		
Password:		
URL:	jdbc:hsqldb:MyDB	
Save Password		
Optional properties:	:	
		Add
		Up
		Down
		Remove
		Clear All
	Jes	t Connection
0	< Back	Cancel

Figure 2.23. Connection Details

The next block of settings in the Seam Facet wizard are describing a Database and a connection to it.

In the Code Generation section the wizard have already put the names for your Session Bean, Entity Bean and Test packages. Of course, you can change them into the others which you like.

Session Bean Package Name:	org.domain.seamproject.session
Entity Bean Package Name:	org.domain.seamproject.entity
Test Package Name:	org.domain.seamproject.test

Figure 2.24. Code Generation Section

Click on *Finish* to generate a project.

Directory Structure of the Generated Project

In this chapter we describe where the Seam wizard puts the generated files for both EAR and WAR deployments.

The Seam Project wizard generates projects like Eclipse WTP style in order to utilize Eclipse WTP features and to have a correct classpath. To be more precise it generates one project per artifact.

3.1. WAR Deployment

The project layout for WAR projects is:

🕯 Package Explorer 🛿 👔	Project Explorer	- 0
	⊟ 4	\$ ▽
🕨 🚰 seamproject		
👂 😂 seamproject-test		

Figure 3.1. Project Layout for WAR projects

A WAR project can only use Seam JavaBean and JPA Entity bean components; it cannot use EJB3 Session beans etc.

WAR projects are generated to enable Seam 1.2.1 war hotdeploy feature. Classes put into *src/ action* will be deployed to *WEB-INF/dev* from which Seam 1.2.1 automatically will perform hotdeploy of new components.



Note:

Because of Eclipse WTP limits the hot deployed classes also existed in *WEB-INF/ classes*, but since Seam gives *WEB-INF/dev* precedence it will work.

Furthermore the Seam Project wizard generates a test project that is setup to run <u>TestNG</u> directly against the proper libraries and server runtime libraries. When the TestNG plugin is installed you can just run your tests via Run As > TestNG Test.

In order to deploy WAR project on server, right-click on the project and select *Run As > Run on Server.* Studio will deploy WAR project into one web application on server to deploy folder.

3.2. EAR Deployment

The project layout for EAR projects is:

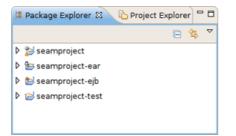


Figure 3.2. Project Layout for EAR projects

An EAR project can use the whole range of Seam components, including EJB3 Session beans.

In order to deploy EAR project on server, right-click on the project with -ear postfix and select *Run As > Run on Server*. Studio will take care about all modules and deploy EAR project into one enterprise application on server to deploy folder. EAR application keeps ejb and war modules of the EAR project.

3.3. Changing the Seam Version

To upgrade or downgrade your projects Seam version use the facet preferences. You should right-click your project and choose *Project Facets* category. Next select *Seam* and change its version to needed one.

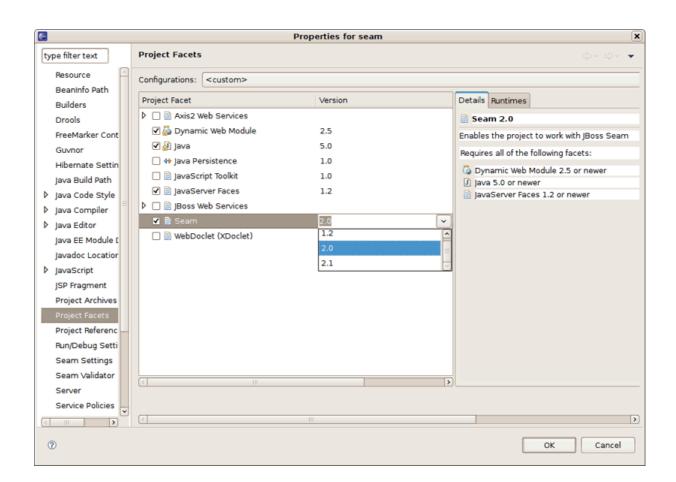


Figure 3.3. Changing the Seam Facet Version

After pressing *Apply* the wizard for adjusting new Seam runtime settings appears.

Seam Runtime Settings Set Seam Runtime Old Seam Runtime: iboss-seam-2.1.1.GA New Seam Runtime: iboss-seam-2.0.0.GA Add Libraries Update libraries Project: seam Libraries to be removed: Libraries to be removed: Commons-beanutils.jar Commons-beanutils.jar Commons-digester.jar Core.jar drools-compiler.jar drools-core.jar drools-core.jar jboss-el.jar	🔄 Seam Ru	intime Settings	×
Old Seam Runtime: jboss-seam-2.1.1.GA New Seam Runtime: jjboss-seam-2.0.0.GA Libraries Image: Comparison of the seam of the se	-		m h
New Seam Runtime: [jboss-seam-2.0.0.GA Libraries Update libraries Project: seam Libraries to be removed: Ibraries to be removed: Ibraries to be added: antic-runtime.jar commons-beanutils.jar commons-beanutils.jar core.jar drools-core.jar drools-core.jar	Set Seam Runtime		E
Libraries Update libraries Project: seam Libraries to be removed: Carterontime.jar Commons-beanutils.jar Commons-beanutils.jar Commons-digester.jar Core.jar	Old Seam Runtime: jboss-seam-2	.1.1.GA	
□ Update libraries Project: seam Libraries to be removed: Libraries to be added: ☑ antir-runtime.jar antir-runtime.jar ☑ commons-beanutils.jar image: commons-beanutils.jar ☑ commons-digester.jar commons-digester.jar ☑ core.jar drools-compiler.jar ☑ drools-core.jar drools-core.jar	New Seam Runtime: jboss-seam-2	2.0.0.GA 0	Add
Project: seam Libraries to be removed: Libraries to be added: anti-runtime.jar commons-beanutils.jar commons-digester.jar core.jar drools-corpiler.jar drools-corp.jar drools-core.jar	Libraries		
Libraries to be removed: Libraries to be added: Image: standard sta	 Update libraries 		
	Project: seam		
✓ commons-beanutils.jar ■ commons-beanutils.jar ■ ✓ commons-digester.jar commons-digester.jar commons-digester.jar ✓ core.jar core.jar drools-compiler.jar ✓ drools-core.jar drools-core.jar drools-core.jar	Libraries to be removed:	Libraries to be added:	
Commons-digester.jar commons-digester.jar Core.jar core.jar drools-compiler.jar drools-compiler.jar drools-core.jar drools-core.jar	🗹 antlr-runtime.jar	antir-runtime.jar	A
Image: core.jar core.jar Image: core.jar drools-compiler.jar Image: core.jar drools-core.jar	🗹 commons-beanutils.jar	commons-beanutils.jar	=
Image: Construction of the second	🗹 commons-digester.jar	commons-digester.jar	
✓ drools-core.jar	🗹 core.jar		
	🗹 drools-compiler.jar		
🗸 iboss-el.iar 🔍 iboss-el.iar	drools-core.jar		
	✓ iboss-el.iar	iboss-el.iar	~
	🎄 Seam configuration files and th	eir XSDs won't be changed.	
Seam configuration files and their XSDs won't be changed.			
& Seam configuration files and their XSDs won't be changed.	(?)	ок с	ancel

Figure 3.4. Changing the Seam Facet Version

If you need to update the libraries for you project, check the *Update libraries* option. All libraries you checked will be removed and the libraries from the new Seam distribution will be added after clicking *Ok*.

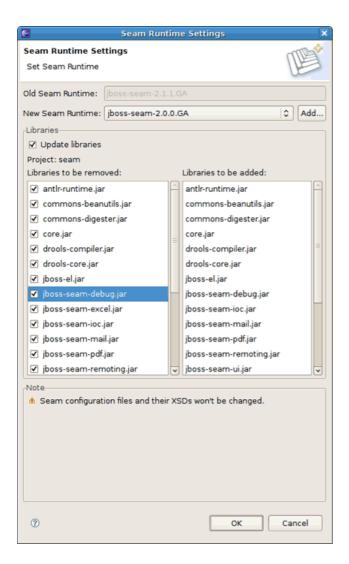


Figure 3.5. Changing the Seam Facet Version



Note:

The note "Seam configuration files and their XSDs won't be changed" is meant that the libraries, Seam facet and runtime version will be changed, but configuration files that refer to the old version will have to be manually updated.

3.4. Changing Seam Parent Project

Starting from the 2.0.0.CR2 version of JBoss Tools it is possible to change the Seam parent project. In earlier versions this was only controllable at a project creation time, now it can be changed for existing projects too.

Go to your project preferences and select *Seam Settings* category on the left. Press the *Browse* button next to the *Main Seam Project* section to select the other Seam parent project.

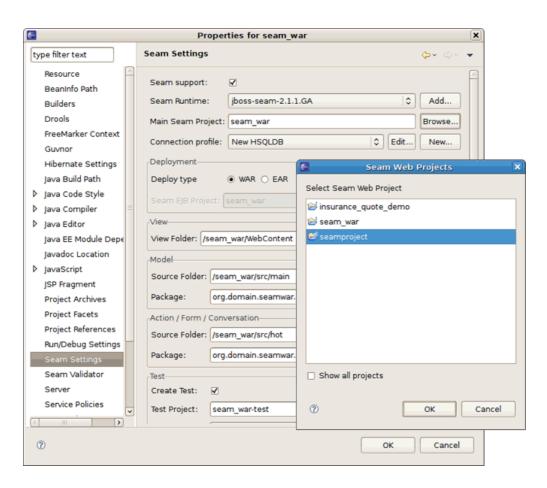


Figure 3.6. Changing Seam Parent Project

3.5. Renaming the Projects and Folders

If you need to rename one of the Seam Project artifacts (*<project_name>*, *<project_name>*test, *<project_name>*-test or *<project_name>*-ejb) or any entire folder like *<project_name>*/ WebContent, *<project_name>/ejbModule*, *<project_name>*-test/test-src, or project name in packages org.domain.<project_name>.session, org.domain.<project_name>.entity, you can do this by brining the context menu and navigating *Refactor > Rename...* or just pressing *Shift* + *Alt* + *R* under the chosen resource.

Use *Refactor > Move...* (or *Shift + Alt + V*), if you need to move *<project_name>/WebContent* folder, *<project_name>/ejbModule* folder or *<project_name>/test-src* folder in the other place within the Project structure.

Seam Menus and Actions

In this chapter we provide a description of Seam actions that are available from

- Menu bar
- Toolbar
- Context menus in views

4.1. File Menu Actions

In a Seam perspective, by default there are the following actions in File > New submenu

Table 4.1. Seam Actions in the New Submenu

Name	Function
Seam Web Project	Runs New Seam Project wizard for creating a new Seam project
Seam Action	Runs <u>New Seam Action</u> wizard for creating a new Seam action
Seam Form	Runs <u>New Seam Form</u> wizard for creating a new Seam form
Seam Entity	Runs New Seam Entity wizard for creating a new Seam entity
Seam Conversation	Runs <u>New Seam Conversation</u> wizard for creating a new Seam conversation
Seam Generate Entities	Runs <u>Generate Seam Entities</u> wizard

4.2. Navigate Menu Actions

In the next sections we are going to describe Seam actions which can help you to easily navigate through the source code.

4.2.1. Find Seam References/Declarations

To find EL expretions both in *.java* and *.xhtml* files use Find Seam References/Declarations actions. For that, in the main menu bar click on *Search > Find Seam References* or *Find Seam Declarations*.

Look at the description of the actions in the table below.

Table 4.2. Find Seam References/Declarations actions

Name	Function	Keyboard Shortcut
		Ctrl+G

Chapter 4. Seam Menus and Actions

Name	Function	Keyboard Shortcut
Find Seam	Find all references and declarations to the selected	Ctrl+Shift+G
References	element. It's available for EL expressions in both .java	
	and .xhtml files. Differs from normal Eclipse Find	also Ctrl + 1 for .java files
Find Seam D	References/Declarations by showing an EL or Seam	
	references in the Search View.	

On the screenshot example below you could see that the search results are listed in the Search view.

ngin.xhtml 🕴											6	- 0
	value	="#	{ider	ntit	y.rem	nemb	e rMe	}*/>	>			
			-									ΞĒ
<pre><div class="actionButtons"></div></pre>												
<h:commandbutton <="" td="" value="Logi</td><td>n° acti</td><td>on=</td><td>#{10</td><td>dent</td><td>ity.l</td><td>ogi</td><td>n}"><td>></td><td></td><td></td><td></td><td></td></h:commandbutton>	>											
												Ξ
4												~
Visual/Source Visual Source Preview												
A Search 🛙	Ŷ	Ŷ	ж	*	Œ	8	*		% •	đ	~ "	- 0
▽ 🗞 seamProject												
🛠 identity - /opt/work/workspace_jbds/seamPro	ject/Web	Con	tent/\	NEB-	INF/lib	/jbos	s-sea	am.ja	ar			
												_

Figure 4.1. Find Seam Declaration for "Identity"

You can also use Ctrl + 1 in .java files to activate the actions:

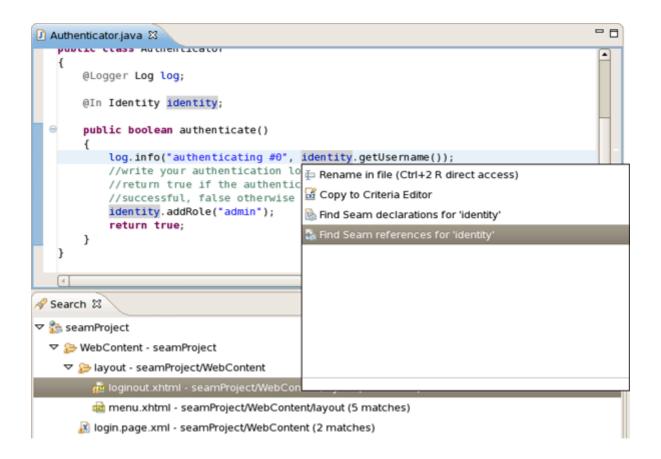


Figure 4.2. Find Seam References for "Identity"

4.2.2. Open Seam Component

To open Seam Components click on *Navigate > Open Seam Component* in the main menu bar. This dialog is also available from toolbar icon or with hot keys combination "Ctrl+Shift+Z ".



Figure 4.3. Open Seam Components icon

In the table below read a description about the dialog.

Table 4.3. Open Seam Components Dialog

Name	Function	Keyboard Shortcut
Open Seam Comp	Brings up the Open Seam Component dialog otoenopen a component in the editor. The Open Seam Component selection dialog shows all Seam components existing in the workspace. You can search the components via their short, imported or full name.	Ctrl+Shift+Z

Enter a name in the text field and see the results as it shown on screenshot:

Copen Seam Component
Enter seam component name prefix or pattern (? = any character, * = any string): 👻
capt
Matching items:
🔊 org.jboss.seam.captcha.captcha - testSeam
🐑 org.jboss.seam.captcha.captcha - testSeam-ejb
🐑 org.jboss.seam.captcha.captcha - seamProject
🐑 org.jboss.seam.captcha.captchalmage - testSeam
🐑 org.jboss.seam.captcha.captchalmage - testSeam-ejb
횐 org.jboss.seam.captcha.captchalmage - seamProject
org.jboss.seam.captcha.captcha - testSeam
⑦ OK Cancel

Figure 4.4. Open Seam Components Dialog

Seam Wizards

This chapter introduces you with Seam Components.

All the Seam component generations options known from Seam-gen are available as wizards (with sensible auto-defaulting) for creating various common Seam components:

- Seam Action
- Seam Form
- Seam Entity
- Seam Conversation

Go to File > New and select the component wizard.

<u> </u>		
<u>Elle</u> dit <u>S</u> ource Refactor	<u>N</u> avigate Search <u>P</u> r	oject <u>R</u> un <u>W</u> indow <u>H</u> elp
<u>N</u> ew	Shift+Alt+N 🔸	🚳 Seam Web Project
Open File <u>.</u>		Project
Close	Ctrl+W	🖶 Package
Close All	Shift+Ctrl+W	Class
Caus.	Ctrl+S	😯 Interface
🛃 <u>S</u> ave 🗟 Save <u>A</u> s	Cui+s	😂 Source Folder
🕼 Sav <u>e A</u> s	Shift+Ctrl+S	😂 Folder
Revert	Shirtositis	🕆 File
		Seam Action
Mo <u>v</u> e		🛞 Seam Form
Rena <u>m</u> e	F2	Seam Entity
Refresh	F5	Seam Conversation
Convert Line Delimiters To	•	Seam Generate Entities
👜 <u>P</u> rint	Ctrl+P	📑 E <u>x</u> ample
Switch <u>W</u> orkspace	,	📑 <u>O</u> ther
import		
🛃 Export		
Properties	Alt+Enter	
E <u>x</u> it		

Figure 5.1. Seam Component Wizards

The wizards create multiple resources and place it in the appropriate folders depending on your project structure (WAR or EAR).

Let's create a WAR project using the New Seam Project wizard.

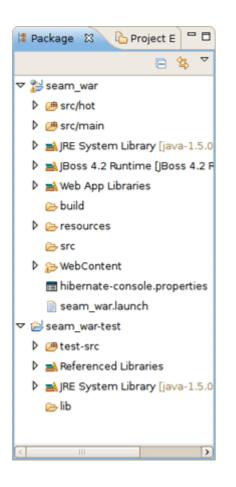


Figure 5.2. Seam Project WAR Deployment

After the project is created you need deploy it on server.

5.1. New Seam Action

In this and following sections you can see example creating Seam Components.

To create a New Seam Action you should select a necessary project, type a name for Seam component, POJO class, Method, Page and select a Package using the *Browse* button.

New Seam Action ×				
Seam Action Create a new Seam action				
Seam Project:	seam_war Browse Settings			
Seam component name:	Action			
POJO class name:	ActionPOJO			
Bean name:	ActionBean			
Method name:	actionMethod			
Page name:	actionPage			
Package name:	org.domain.seam_war.session Browse			
0	<u>E</u> inish Cancel			

Figure 5.3. New Seam Action Wizard

If you specify a class which already exists, the wizard will warn you about it.

6	New Seam Action
Seam Action ④ Such POJO class already	exists!
Seam Project:	seamproject Browse Settings
Seam component name:	Action
POJO class name:	Action
Bean name:	ActionBean
Method name:	action
Page name:	action
Package name:	org.domain.seamproject.session Browse
0	Einish Cancel

Figure 5.4. Wizard Warning against Existing File

You can see the action page in WebContent folder. Click on it to open in JBoss Tools HTML Editor.

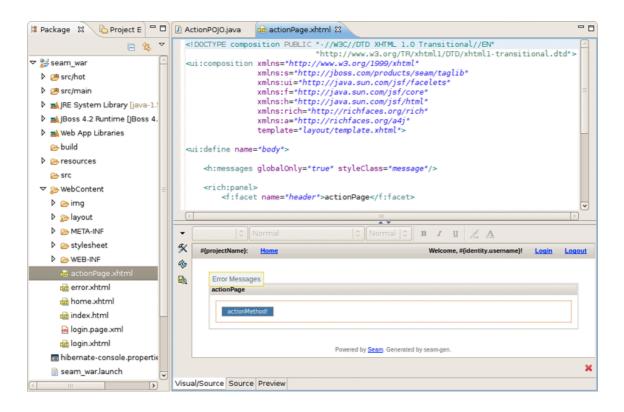


Figure 5.5. Action Page in JBoss Tools HTML Editor.



Action component was hot-deployed. Forms and Conversations will work the same way.

⊛ seam_war ⊠	- C
🗇 🔿 🖀 🗞 http://localhost:8080/seam_war/actionPage.seam	🔹 🕨 🖻
seam_war: Home	Login
actionPage	
action/Method!	
Powered by Seam, Generated by seam-gen.	

Figure 5.6. Action Component

5.2. New Seam Form

Click on actionMethod in the internal browser and add a form in your project using the New Seam Form wizard *File > New > Seam Form*.

Select a necessary project, type a name for Seam component, POJO class, Method, Page and select a Package using *Browse* button.

0	New Seam Form	×
Seam Form Create a new Seam form		
Seam Project:	seam_war	Browse
Seam component name:	Form	
POJO class name:	FormPOJO	
Bean name:	FormBean	
Method name:	formMethod	
Page name:	formPage	
Package name:	org.domain.seam_war.session	Browse
0	Einish	Cancel

Figure 5.7. New Seam Form Wizard

If you specify a class which already exists, the wizard will warn you about it.

e	New Seam Form
Seam Form A Such POJO class already	exists!
Seam Project:	seamproject Browse Settings
Seam component name:	Form
POJO class name:	Form
Bean name:	FormBean
Method name:	form
Page name:	form
Package name:	org.domain.seamproject.session Browse
0	Einish Cancel

Figure 5.8. Wizard Warning against Existing File

The Form Page was created in WebContent folder.

😫 Package Explor 🕴 🗈 Project Explorer 🗖 🗖	3	seam_war	FormPC	OJO.java	formPage.xt	html 🛙	- 0
수 수 🗟 🛢 🔽 🎽		/th <th>composition</th> <th></th> <th></th> <th>XHTML 1.0 Transitional//EN" 3.org/TR/xhtml1/DTD/xhtml1-transition</th> <th>al.dtd"></th>	composition			XHTML 1.0 Transitional//EN" 3.org/TR/xhtml1/DTD/xhtml1-transition	al.dtd">
🕨 🚵 Web App Libraries 🗖	9	<ui:compo< th=""><th></th><th>s="http://</th><th>ww.w3.org/19</th><th>999/xhtml"</th><th></th></ui:compo<>		s="http://	ww.w3.org/19	999/xhtml"	
🗁 build						<pre>products/seam/taglib" com/jsf/facelets"</pre>	
P Sources					//java.sun.co		
🗁 src					//java.sun.co		
▽ 🍃 WebContent						es.ajax4jsf.org/rich* dev.java.net/ajax*	
Þ 🗁 img			templ	late="layo	ut/template.)	<pre>xhtml"></pre>	
👂 😂 layout		4					• •
META-INF		-	¢		\$	¢ B I ∐ / A	
👂 🗁 stylesheet		X atauta			· · ·	Y B I Q Pan In	
👂 🕪 WEB-INF		#{projec	tName}: Home	2		Welcome, #{identity.username}	gin Logout
📾 actionPage.xhtml		\$					
📾 error.xhtml =	1	è Erro	r Messages				
n formPage.xhtml		for	nPage				=
📾 home.xhtml							
index.html		``	alue*	#{Form.v	alue}	Error Messages	
🔊 login.page.xml							
📾 login.xhtml		fe	rmMethod				
hibernate-console.properties							
🖹 seam_war.launch							×
▶ 😂 seam war-test		sual/Source	Visual Source	e Preview			

Figure 5.9. Form Page in JBoss Tools HTML Editor.

Deploy the form on server. Right click on Form Page, select *Run As > Run On Server*.

li seam_war छ	- 0
🔶 🔿 🔳 🤣 http://localhost:8080/seam_war/formPage.seam	💌 🕨 🔛
seam_war: Home	Login
formPage	
Value *	
formMethod	
Powered by Seam. Generated by seam-gen.	

Figure 5.10. Form Component

Form component was hot-deployed.

5.3. New Seam Conversation

Enter some value in the text field (e.g. value1) and click on formMethod.

Add a conversation using the New Seam Conversation wizard File > New > Seam Form.

You should select a necessary project, type a name for Seam component, POJO class, Method, Page and select a Package using *Browse* button.

Create New Conversation			
Seam Conversation Create a new Seam conve	ersation		
Seam Project:	seam_war Browse		
Seam component name:	talk		
POJO class name:	Talk		
Bean name:	TalkBean		
Method name:	talk		
Page name:	talk		
Package name:	org.domain.seam_war.session Browse		
0	Einish Cancel		

Figure 5.11. New Seam Conversation Wizard

If you specify a class which already exists, the wizard will warn you about it.

Create New Conversation ×				
Seam Conversation	exists!			
Seam Project:	seamproject Browse <u>Settings</u>			
Seam component name:	talk			
POJO class name:	Talk			
Bean name:	TalkBean			
Method name:	talk			
Page name:	talk			
Package name:	org.domain.seamproject.session Browse			
0	<u>F</u> inish Cancel			

Figure 5.12. Wizard Warning against Existing File

Conversation page was created in WebContent folder.

😫 Package Explor 🕴 🖒 Project Explorer 🗖 🗖	t 📾 t	aik.xhtml 8	- 0
 C Q Q Q C Q<		<pre><!DOCTYPE composition PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"</th> </pre>	
 ▷ ➢ layout ▷ ➢ META-INF ▷ ➢ stylesheet 	-	<h:messages globalonly="true" styleclass="message"></h:messages> </th <th>•</th>	•
👂 😂 WEB-INF	-	÷ + A	
actionPage.xhtml	%	, #{projectName}: <u>Home</u> Welcome, #{identity.username} <u>Login Logo</u>	ut 🔺
ळे error.xhtml ळे formPage.xhtml	% 6		
📾 home.xhtml		talk	=
index.html 丞 login.page.xml		Value #{talk.value}	
🔯 login.xhtml			
talk.xhtml inibernate-console.properties		Begin Increment End	•
seam_war.launch		1	×
▷ 🥵 seam_war-test	Visu	ual/Source Visual Source Preview	

Figure 5.13. Conversation Page in JBoss Tools HTML Editor.

Right click on Conversation page, select *Run As > Run On Server*.

ء 🌒	eam_wa	ur 🖾		6	- 0
¢	ې 🖪	http://localhost:8080/seam_war/talk.seam	•		٩
Se	amWar:	Home		Login	
	talk				
	Value	1			
	Begin	Increment End			
		Powered by Seam. Generated by seam-gen.			

Figure 5.14. Conversation Component

Conversation component was hot-deployed.

Click on Begin and Increment buttons to check the conversation functionality.

5.4. New Seam Entity

Entities cannot be hot-deployed, so we need to stop the server.

Create an Entity using the New Entity wizard *File > New > Seam Entity*.

You should select a necessary project, type a name for Entity class, select a Package using *Browse* button, type a name for Master Page and Page.

5	New Seam Entity
Seam Entity	and the second se
Create a new Entity	UE
Seam Project:	seam_war Browse
Seam entity class name:	Customer
Package name:	org.domain.seam_war.entity Browse
Master page name:	customerList
Page name:	customerPage
0	Finish Cancel
U	Einish Cancel

Figure 5.15. New Seam Entity Wizard

If you specify a class which already exists, the wizard will warn you about it.

New Seam Entity		
Seam Entity A Such entity class alread	y exists!	
Seam Project:	seamproject Browse <u>Settings</u>	
Seam entity class name:	Customer	
Package name:	org.domain.seamproject.entity Browse	
Master page name:	customerList	
Page name:	customer	
0	<u>F</u> inish Cancel	

Figure 5.16. Wizard Warning against Existing File

The Master Page and the Entity were created in WebContent folder.

😫 Package Explorer 🕱 📃 🗖	and c	ustomerList xhtml 🛛	- 0
 C C C C C C C C C C C C C C C C C C C	<pre><!DOCTYPE composition PUBLIC *-//W3C//DTD XHTML 1.0 Transitional//EN*</th> </pre>		
 > Iayout > Iayout > Image: META-INF > Image: Description of the style sheet 	-		D
Beline Beline Beline Beline Beline Control	≶⁄ ⊚ ₽	#{projectName}: Home Welcome, #[identity.username} Login Log	<u>out</u>
료 customerPage.xhtml 료 error.xhtml 료 formPage.xhtml 료 home.xhtml		customerList No customer exists Id Name	=
藏 index.html 丞 login.page.xml 훂 login.xhtml		#[customer.id] #[customer.name] Create customer	
talk.xhtml hibernate-console.properties seam_war.launch			- X
N 🚭 saam war tast	Visu	al/Source Visual Source Preview	

Figure 5.17. Master Page in JBoss Tools HTML Editor.

The Entity page is:

😫 Package 🕺 💪 Project E 🖓 🗖	l 🏟 customerPage.xhtml 외	- 0
 ➡ \$\$ \$\$ \$\$ \$\$ \$\$ \$\$ \$\$ \$\$ \$\$ \$\$ \$\$ \$\$ \$\$	<pre><!DOCTYPE composition PUBLIC *-//W3C//DTD XHTML 1.0 Transitional//EN*</td> <td>:d"></td></pre>	:d">
➢ build ▷ eresources ➢ src ▽ ➢ WebContent	<pre><h:messages globalonly="true" styleclass="message"></h:messages> <h:form id="customerForm"></h:form></pre>	
 ▷ img ▷ ipi layout 	Image: Constraint of the second s	
 ▷ ➢ META-INF ▷ ➢ stylesheet 	% #{projectName}: Home Welcome, #{identity.username}! Login %	Logout
VEB-INF	Error Messages	
actionPage.xhtml 쥷 customerList.xhtml 쥷 customerPage.xhtml -	Name * Error Messages	
륦 error.xhtml 쥷 home.xhtml	Save Save Delete Done	
📾 index.html 😡 login.page.xml	Powered by Scam. Generated by seam-gen.	
📾 login.xhtml 🗸	Visual/Source Source Preview	×
	Hodayource boarce Frenen	

Figure 5.18. Entity Page in JBoss Tools HTML Editor.

Run the Entity page on server. This is what you get:

ء 🍪	eam_war Σ	3		-	• 8
¢	چ 🔳 چ	http://localhost:8080/seam_war/customerPage.seam	•		9
se	am_war: <u>Ho</u>	me	Ŀ	ogin	
	customerPag	e			
	Name*				
	Save	Powered by <u>Seam</u> . Generated by seam-gen.			

Figure 5.19. Customer Page

Let's create two customers c1 and c2. Enter the name in the text field and press the Save button. Customer should be successfully created. Press Done. Do the same for c2 customer. The result should be:

⊛ seam_war ⊠		- 0
🗢 🗢 🔳 🦑 [http://localhost:8080/seam_war/customerList.seam?cid=7&clr=true&conversationPropaç		9
seam_war: Home	Login	
customerList		
ld Name 1 <u>c1</u> 2 <u>c2</u>		
Create customer Powered by <u>Seam</u> . Generated by seam-gen.		

Figure 5.20. Two Customers Are Created

Seam Generate Entities

The main purpose of this chapter is to tell you about Seam Generate Entities.

Generate Entities is available directly from within Eclipse using Hibernate Tools plugin for the standard seam-gen generation.

Generate Entities generates a set of CRUD Seam components and web pages based on existing tables in a database or on existing entities in your application.

Generate Seam Entities	×
Generate Seam Entities	
Seam Project: seamproject Browse S Hibernate Console Configuration: seamproject 🗘 Generation Mode Reverse engineer from database Use existing entities	ettings
⑦ < <u>Back</u> <u>N</u> ext > <u>F</u> inish C	ancel

Figure 6.1. Generate Seam Entities Wizard

In the Generate Seam Entities wizard there are two generation modes: Reverse Engineer from database and Use existing entities.

The Reverse Engineer from database mode can be described in four steps:

- 1. The wizard gets in database, extracts the tables and their connections
- 2. On basis of this metainfomation the Entity classes are generated into org.domain.project.entity package
- 3. For the entities from step 2 the classes EntityList and EntityHome are generated into org.domain.project.session package

4. The xhtml pages are generated.

Checking the Use existing entities mode the wizard executes only 3 and 4 steps. It generates missing classes and xhtml pages.

Read the <u>Generate a CRUD Database Application</u> chapter in order to see how the Generate Seam Entities wizard can be used.

Seam Editors

This chapter tells about Seam Editors and their features.

7.1. Visual Page Editor

Visual Page Editor fits perfectly for authoring view Seam pages. The major features of VPE are listed in *Main Features of Seam Editors*

You can also read more about Visual Page Editor in <u>Visual Page Editor</u> [http://download.jboss.org/ jbosstools/nightly-docs/en/jsf/html/editors.html#visual_page] chapter of "Visual Web Tools Reference Guide".

7.2. Seam Pages Editor

Seam Pages Editor provides a handy way to edit the pages.xml file.

You can edit the pages.xml file in three modes: Graphical, Tree and Source.

7.2.1. Graphical Mode

Graphical mode provides you with a set of visual tools to organize your project pageflow, exception handling etc.

/home.xhtml	me.xhtml
• o.j.s.f.EntityNotFoundException	/error.xhtm
J.p.EntityNotFoundException	
J.p.OptimisticLockException	
o.j.s.s.AuthorizationException	
.f.a.ViewExpiredException /error.xhtml	

Figure 7.1. Seam Pages Editor: Graphical View

The Graphical part of the editor has some visual elements. The table below shows graphical representation of the elements and explains their meanings.

Element	Description
PageName.xhtml ⊞	A yellow box with a solid border represents a <page> element.</page>
	Pressing on the plus icon (

Element	Description
CustomersEdit.xhtml	
customersFrom:	
customers: #{customersH	ome.custom
employeesFrom:	
employees: #{employeesH	lome.employ
PageName.xhtml	A red cross in the upper left corner of the page box indicates that the view-id is not found in the project.
/login.xhtml	A gray box with a dashed border represents a page that has navigation (navigation rule) to but the page is not defined in the page.xml file.
j.p.EntityNotFoundException	An <exception> is represented by a blue box with a orange diamond.</exception>

Pageflow relations are shown with gray arrows, when you select a relationship the arrow is changed to orange.

On the lefthand side of the Graphical view of Seam Page Editor you can find a toolbar with a set of icons for the most frequently used commands.

Icon Image	Command
k₂	Select a page element
[]	Marquee a page item
٦,	Add a page relationship
•	Add an exception rule

Context menus are also available when you click either on an item or a blank space.

A context menu called on a blank space of the diagram provides the following options:

- Page creates a new page element on the diagram
- Exception creates a new exception element on the diagram
- Auto Layout formats the layout of the diagram automatically

• Select Element calls the Select Element Wizard with a filter to perform a quick search through the pages file

Rightclicking on a *<page>* element calls a context menu where you can choose the following options if you click on the **New** menu item:

- Rule defines a new navigation rule for the element
- Param adds a <param> tag to the <page> element

7.2.2. Tree Mode

Tree Mode provides a wider range of options and way to edit and modify the pages.xml file.

Seam Pages Editor pages pages xml Conversations Pages Pages PageName.xhtml PageNatextanters PageNatextanters<!--</th--><th>🕑 pages.xml 🕴</th><th>- 8</th>	🕑 pages.xml 🕴	- 8
Image: Signal Signa	Seam Pages Editor	
Conversations ▼ Pages ▼ PageName.xhtml ▼ Navigation ▶ % home ▼ Mathematical Structures ♥ begin-conversation % # {customersHome.xire} © customersFrom © customersCustomernumbe © employeesFrom © employeesEmployeenumbe > % # {customersHome.persist > % pages > % pages > % pages > % arg.persistence.EntityNotFot > * Advanced	▼ pages	▼ Page
V ♥ javax.persistence.entityNotFol	▼ Mages.xml Conversations ▼ Pages ▼ PageName.xhtml ▼ MageName.xhtml ▼ PageName.xhtml ▼ MageName.xhtml ▼ MageName.storestorestorestorestorestorestorestore	Action: View ID: PageName.xhtml Browse Description: Advanced Switch: No Conversation View ID: Browse Conversation Required: default(false) Login Required: default(false) Scheme: Timeout: Bundle:
Graphical Tree Source		Restrict:

Figure 7.2. Seam Pages Editor: Tree View

In this mode all elements and attributes of the page.xml file can be viewed and edited in a visual, user friendly way.

7.2.3. Outline Support for Seam Pages Editor

Seam	Pages Editor	provides Outline	view	support.	You	can explore	the page	es.xml
using	Outline	view	in	two		modes:	Tree	(
La la								
)	and	Ε	Diagram			Navigation		(
).								

The Diagram Navigation mode of Outline view gives a birds-view of the layout to allow quick navigation for large-scale applications.

ges.xml 🛛		- 8	문 Outline 없	
		^	5×	H E
o.j.s.s.NotLoggedInEx	cention /login.xhtml		400000000000000000000000000000000000000	
A	-> Alogin.xhtml	den in		
			(C. spinel result result result	
		÷	and sound spec	
/CustomersEdit.xhtml	/Customers.xhtml	ŝ.	a supervision and a	
	/Customers.xhtml /CustomersList.xhtml			
	/Customers.xhtm	à:	· · · · · · · · · · · · · · · · · · ·	
		"e		
		7. I.		
	······			
	-> 🗋 /CustomersList.xhtml			
			(in succession of the successi	
/EmployeesEdit.xhtml	/Employees.xhtml	÷.		(a. ese
	/Employees.xhtml	1		
	/Employeescist.xitiii	ł.		
		<u>}</u>	-ej	
	/EmployeesList.xhtml			
		>		

Figure 7.3. Outline view: Diagram Navigation mode

The Tree mode shows a tree for every element in the pages.xml file. You can get a quick overview of the whole file and selecting an element the related element is highlighted in the Graphical, Tree or Source page of Seam Pages Editor.

🕞 pages.xml 🕴 🗖 🗖	🗄 Outline 🛛 🗖 🗖
	ि 🖪 🛃 🏹
O.j.s.s.NotLoggedInException /login.xhtml	
↓ /login.xhtml	#{employeesHorr
	▷ 🏷 #{employeesHom
	🕨 🗋 /EmployeesList.xhtml
CustomersEdit.xhtml	▽ 🗋 /CustomersEdit.xhtm
/Customers.xhtml /CustomersList.xhtml	begin-conversation
E //Customers.xhtml	🍓 # {customersHom
customersFrom:	🔍 customersFrom
customersCustomernumber: #{customersHome.customersCustomernumber}	🔍 customersCustom
employeesFrom: employeesEmployeenumber: #{employeesHome.employeesEmployeenumber}	🔍 employeesFrom 😑
emproyeescmproyeendmber. wtemproyeesnone.emproyeescmproyeendmber?	🔍 employeesEmploy
/EmployeesEdit.xhtml /Employees.xhtml	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$
/Employees.xhtml /EmployeesList.xhtml =	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$
	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$
employeesFrom:	
employeesEmployeenumber: #{employeesHome.employeesEmployeenumber}	Image:
	🕨 🔶 javax.persistence.Ent 💌
Graphical Tree Source	

Figure 7.4. Outline view: Tree mode

7.3. Seam Components Editor

When editing components.xml a structured tree editor is available in addition to pure source editing. It has a graphical view (Tree tab) and source (Source tab).

components 🔷 👻	Seam Components 2.0 File	
 ▷ ● entityManager ▷ ● SeamprojEntityN ▷ ● securityRules ● org.jboss.seam.s ▷ ♠ org.jboss.seam.s 	Event Import Spring > Remoting > Framework > Security >	Add Bemove Edit
 Image: Second Sec	Persistence > ar Async >	⊇awn Add
	Drools > International > Pdf > Mail > Theme > JMS >	Edit
- E Typ		Down

Figure 7.5. component.xml Editor



Note:

You can view and edit components.xml and other xml files directly in the Project Explorer and Properties sheet without opening the components.xml editor.

Project Expl	orer 🛿		8	₫\$	~		٥
🗢 🎾 WE	B-INF						-
۵ 🖉	classes						
۵ 🖉	dev						
۵ 🖉	lib						
▽ 🕅	components.xml						
	횐 org.jboss.seam.core	.init					
	org.jboss.seam.core	.manager					Н
Þ	횐 entityManager						
Þ	된 seamEntityManagerF	actory					=
·	🛐 org.jboss.seam.core	.ejb					
Þ	securityRules						
	🄰 org.jboss.seam.secu	rity.identity					H
Þ	🔞 org.jboss.seam.notL	oggedin					
Þ	🚳 org.jboss.seam.post	Authenticate					
	횐 org.jboss.seam.mail.	mailSession					
	facar canfin uml				~	_	-
Properties	2				Ť	_	
1 items sele	cted						
Advanced	Property	Value					
	authenticate-metho	# {authenticator.au	ther	ntica	te}		
	auto-create	false					
	class					_	
	installed	true				•	
	jaas-config-name	true					
	name	false				Ŀ	-
	precedence						
	remember-me	true					
	scope						
	security-rules	#{securityRules}					

Figure 7.6. component.xml Editor

7.4. Main Features of Seam Editors

In this chapter you will know what Seam Editors features are and how to work with them.

7.4.1. Content Assist

Content Assist (Ctrl + Space) is available when using EL expressions in the following file formats:

- JSP
- XHTML
- XML
- JAVA

Notice, the code completion for the Seam components shows the proposals marked with Seam icon.

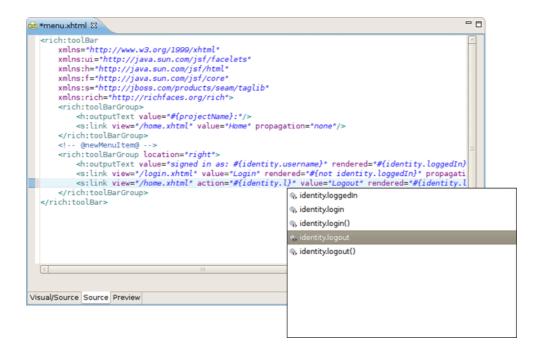


Figure 7.7. Content Assist



Note:

To get Code Assist available for an externally generated and imported project, don't forget to enable Seam features and configure Seam Settings in *Project Preferences*.

7.4.1.1. Content Assist for components.xml

While you are editing a *components.xml* file you can make use of the Content Assist for inserting needed elements.

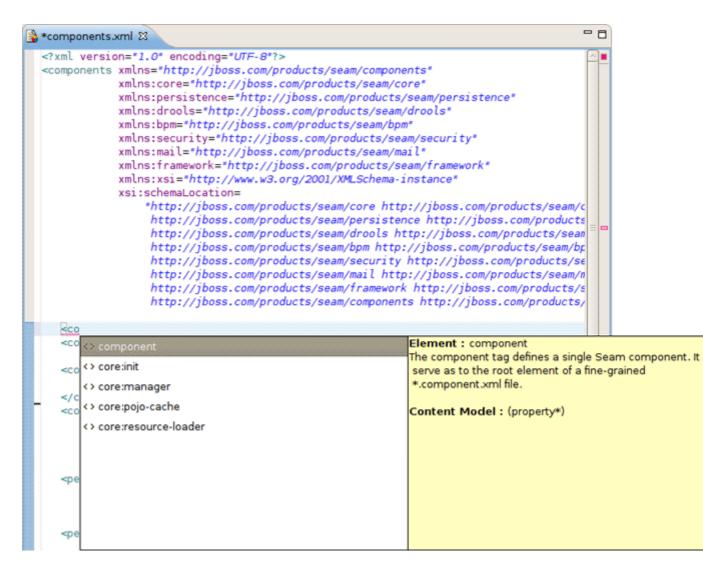


Figure 7.8. Content Assist in the component.xml Editor

The editor also makes code completion aware of methods/attributes for EntityQuery component.

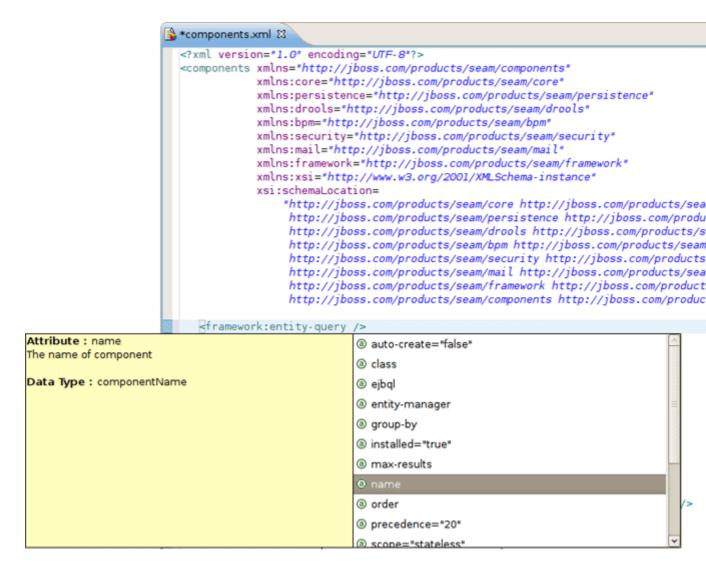


Figure 7.9. Content Assist for EntityQuery Component

7.4.2. OpenOn

OpenOn let's you easily navigate through your project without using the Package Explorer or Project Explorer. After pressing *Ctrl* + *left click* (or just F3) you will see a corresponding method or class.

*menu.xhtml 🖾	- 6
<pre><rich:toolbar xmlns="http://www.w3.org/1999/xhtml" xmlns:f="http://java.sun.com/jsf/core" xmlns:h="http://java.sun.com/jsf/facelets" xmlns:rich="http://ichfaces.ajax4jsf.org/rich" xmlns:s="http://jbos.com/products/seam/taglib" xmlns:ui="http://java.sun.com/jsf/facelets"> </rich:toolbar></pre>	

Figure 7.10. OpenOn

OpenOn is also supported in Page Descriptors(page.xml). You can Ctrl + left click on the bean to open navigate to the bean you clicked on.

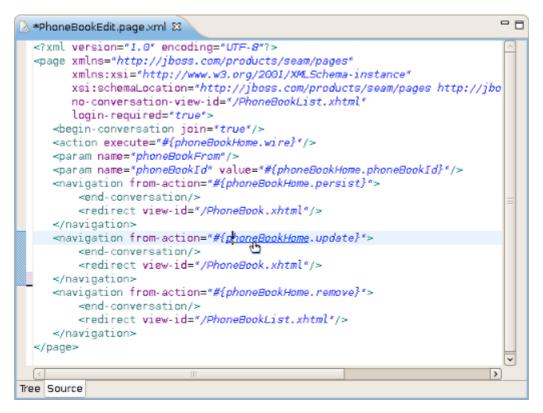


Figure 7.11. OpenOn in page.xml file

7.4.3. Seam Validation

Validation of various possible problematic definitions is implemented for Seam applications.

If an issue is found it will be shown in the standard Problems View.

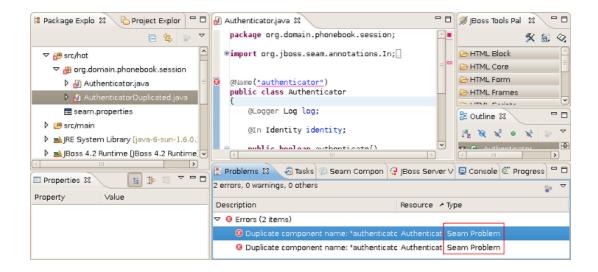


Figure 7.12. Seam Validation

In the preferences page for Seam Validator you can see and modify the validator behavior. Go to *Window > Preferences > JBoss Tools > Web > Seam > Validator* and select the severity level for the optional Seam Validator problem.

•	Preferences	×
type filter text	Validator	⇔* ⇔*
		(p+ c)+
Plug-in Development Run/Debug		
Server Spring SQL Development	Restore Defaults	a Apply
0	ОК	Cancel

Figure 7.13. Seam Validator Preferences

On WTP projects validation are enabled by default and thus executed automatically, but on normal Java projects you will have to go and add the Validation builder of your project. It is available in the properties of your project under Validation. The validations can be run manually by clicking Validate via the context menu on your project which will execute all the active WTP validations.

Seam Views

8.1. Seam Components View

This chapter introduces you with Seam Components View.

The Seam Components View is available from Seam perspective. It provides a list of seam components found in a project.



Figure 8.1. Seam Components View

The Seam Components View can show a components default scope in two ways:

 as labels on each component (click on the triangular symbol at the top of the Seam Components View page and select Scope Presentation > Label)



Figure 8.2. As label

• as a node per scope where the components are grouped under a node representing its default scope.

🖹 Problems 🕢 Tasks 😥 Seam Components 🕴 🤃 JBoss Server View 🕷 Servers 🗳 Console	- 0	
8	🍇 ▽	
▼ 😓 seamproject		Seam Packages
Application	abel 📃	Scope Presentation
Business Process	lode 🚁	<u>C</u> ustomize View
Conversation	_	
Event		Link Editor
👂 🖓 Method		
Page		
Ression		
A Constant Stateless		
Inspecified	~	

Figure 8.3. As node

The Seam Packages can be presented in two ways:

Flat

😰 Problems 🖉 Tasks 😥 Seam Components 🛛 📿 JBoss Server View 🏶 Servers 🗳	Console	
	🖻 🕏	~
🗢 🎭 seamproject	 Flat 	Seam Packages
default package)	⊖Hierarchical	Scope Presentation
Gripboss.seam.core		≩ <u>C</u> ustomize View
 g.jboss.seam.mail g.jboss.seam.security 		Link Editor
▷ 🚓 seamproject-ejb		
Seamproject-test		

Figure 8.4. Flat Presentation of Seam Packages

• Hierarchical

🖹 Problems 🕢 Tasks 😥 Seam Components 🕴 🤤 JBoss Server View 🖧 Servers 🚍	Console -	
	😑 😫	▼
🗢 😓 seamproject	⊖ Flat	Seam Packages
👂 🌐 (default package)	Hierarchical	Scope Presentation
マ ⊕ org		<u>⊉</u> <u>C</u> ustomize View
マ ⊕ jboss		
🗢 🌐 seam		Link Editor
Þ 🌐 core		
Þ 🌐 mail		
👂 🌐 security		
👂 🗞 seamproject-ejb		
Seamproject-test		

Figure 8.5. Hierarchical Presentation of Seam Packages

The Seam Component View can be filtered by choosing Customize View.

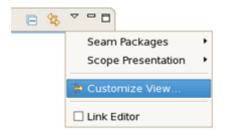


Figure 8.6. Customize View

Select the *Seam Components from Libraries* under the Filters tab. This will make the view ignore components defined in jars. This will hide the many built-in Seam components and leave only those that are actually defined in the project or have been actively configured via components.xml. Therefore, deselecting the filter will show you all available components.

Selecting the Seam Components from Referenced Projects will hide the components that dependent on other project.

Available Customizations
Filters 😫 Content
Select the filters to apply (matching items will be hidden):
enter name of filter
Seam Components from Libraries
Seam Components from Referenced Projects
OK Cancel

Figure 8.7. Available Custimozations

8.2. Project Explorer integration

If you don't like to have a view for every piece of information in Eclipse, the content of the Seam Components view is also available as a node in the built-in Project Explorer (not Package Explorer!) view in Eclipse.

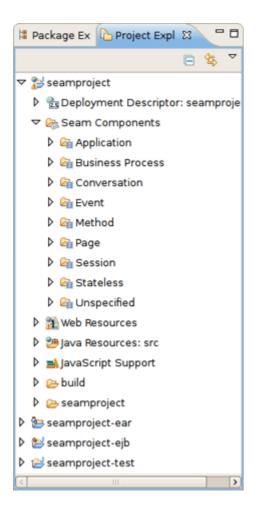


Figure 8.8. Seam Components in Project Explorer

Seam Preferences

In this chapter you get to know how Seam preferences can be modified during the development process.

9.1. General Preferences

Seam preferences can be set using the Seam preference page. Click on *Window > Preferences > JBoss Tools > Web > Seam*.

On this page you can manage the Seam Runtime. Use the appropriate buttons to Add more runtimes or to Remove those that are not needed.

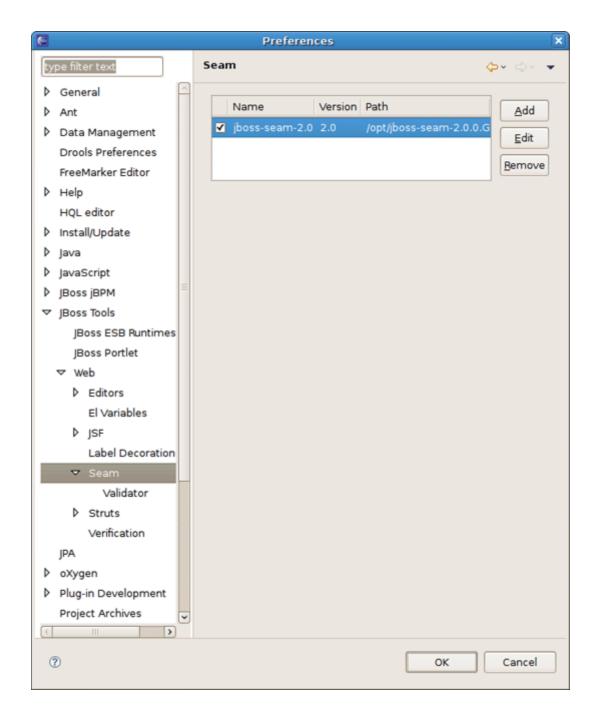


Figure 9.1. Seam Preferences Page

Clicking on Edit button you get the form where you can change the path of Seam runtime home folder, modify name and version. Press Finish to apply the changes.

E	Edit Seam Runti	ime 🗙
Edit Seam Ru Input new valu		
Home Folder: Name: Version:	/opt/jboss-seam-2.0.0.GA jboss-seam-2.0.0.GA 1.2 🗘	Browse
0		Einish Cancel

Figure 9.2. Edit Seam Runtime

9.1.1. Validator Preferences

Seam preference page includes a subsection Validator. See *Window > Preferences > JBoss Tools* > *Web > Seam > Validator.*

On this page you can choose a severity level for the various Seam validator problems. For example, if you want to ignore the case when component name is duplicated expand the Components node and select Ignore next to Duplicate component name. After that you won't see the error.

Vype filter text Validator > General Configure Project Specific. > Ant Select the severity level for the following optional Seam Validator problems: > Connectivity FreeMarker Editor > Help Duplicate component name: HQL editor Stateful component does not contain @Remove method: > Install/Update Stateful component does not contain @Destroy method: > Java Stateful component has wrong scope: > JBoss JBPM Component class name cannot be resolved to a type: > JBoss Tools Component life-cycle methods: > JBoss Servers Selattors > JSF Label Decorations Validator Staterols > Struts Verification > XDoclet JFA P Run/Debug Validator	8	Preferences	×
 Ant Select the severity level for the following optional Seam Validator problems: Connectivity FreeMarker Editor Help HQL editor Install/Update Stateful component name: Stateful component does not contain @Remove method: Stateful component does not contain @Destroy method: Stateful component has wrong scope: Error € Java JBoss JBPM Component class name cannot be resolved to a type: Error € Component life-cycle methods: Factories Bijections Context variables Expression language 	type filter text	Validator	⇔ • ⇔•
	 ♦ General ♦ Ant ♦ Connectivity FreeMarker Editor ♦ Help HQL editor ♦ Install/Update ♦ Internet ♦ JBoss jBPM ♥ JBoss Tools ♦ JBoss Tools ♦ JBoss Servers Packaging Archives ♥ Web ♦ Editors ♦ JSF Label Decorations ♥ Seam 	Configure Project Sp Select the severity level for the following optional Seam Validator problems: Components Duplicate component name: Stateful component does not contain @Remove method: Stateful component does not contain @Destroy method: Stateful component has wrong scope: Component class name cannot be resolved to a type: Component class does not contain setter for property: Entities Component life-cycle methods: Factories Bijections Context variables	Error Warning Ignore Error \$ Error \$ Error \$

Figure 9.3. Seam Validator Preference Page

Notice, that in the *Expression language* section there is now a preference for setting severity of EL Syntax. You can select whether the Seam validator displays an error, a warning or just ignore the EL Syntax error.

	Preferences	X
type filter text	Validator	⇔ < ⇔ < ▼
 ▶ General ▶ Ant ▶ Data Management ▶ Drools ▶ Drools Task ▶ Ecore Diagram ▶ Exadel E7 Diagram ▶ FreeMarker Editor Guvnor ▶ Help HQL editor ▶ Install/Update ▶ Java ▶ JavaScript ▶ JBoss jBPM ♥ JBoss Tools JBoss FSB Runtim JBoss Portlet ♥ Web ▶ Editors El Variables ▶ JSF Label Decoratic ♥ Struts ∨erification 	Validator Select the severity level for the following optional Seam Validator problems: Components Entities Component life-cycle methods: Factories Bijections Context variables EL Syntax Error Context variable cannot be resolved: Property cannot be resolved: Unpaired Getter/Setter: ☑ Recognize "var" attributes Project Settings	Configure Project Specific Settings Error Warning Ignore Otherwise
JPA Model Validation		Restore Defaults Apply
0		OK Cancel

Figure 9.4. Severity Preference for EL Syntax

In the upper right corner of the page there is a Configure Project Specific Settings link. Clicking on it you get the form where you can choose a project for specific setting. Project specific configuration allows you to have different validator settings for each project. Check the Show only projects with project specific settings if you want to see the projects that have been already set. Click on Ok.

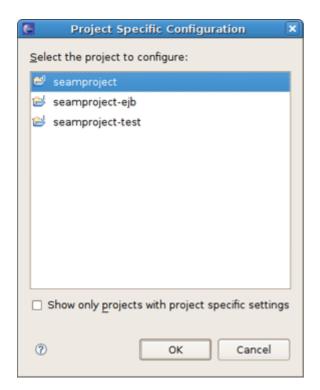


Figure 9.5. Project Specific Configuration

You get the validator properties page for chosen project. Check the Enable project specific settings to be able to change the settings.



6		Properties for seamProject (Filtered)	×
type filter text	R	Seam Validator	⇔* ⇔*
Seam Validator		Enable project specific settings	
		Select the severity level for the following optional Seam Validator problems:	
		- Components	
		Duplicate component name:	Error
		Stateful component does not contain @Remove method:	Error
		Stateful component does not contain @Destroy method:	Error 🖨
		Stateful component has wrong scope:	Error
		Component class name cannot be resolved to a type:	Error 🖨
		Component class does not contain setter for property:	Error
		Entitles	
		Component life-cycle methods:	
		Factories	
		Bijections	
		Context variables	
		Expression language	
(Þ	Restore Defaults	Apply
0		ОК	Cancel

Figure 9.6. Validator Properties Page for Chosen Project

9.2. Project Preferences

Once Seam project is created you can modify its settings. Right click on Seam project in Project Explorer and select *Properties > Seam Settings*.

This project properties page allows you to have a flexible project layout. It means that you are not restricted with a specific project structure. You can use the Seam wizards (New Action, Form, Entity, etc.) on Maven, command line seam-gen or your own project structure.

8	Properties for seamproject
type filter text	Seam Settings $(a \lor c) \lor \checkmark$
Resource Beaninfo Path	Seam support:
Builders	Seam Runtime: jboss-seam-2.1.1.GA 🗘 Add
Drools	Main Seam Project: seamproject Browse
FreeMarker Context	Connection profile: New HSQLDB 3 Edit New
Guvnor	
Hibernate Settings	Deployment
Java Build Path	Deploy type
Java Code Style	Seam EJB Project: seamproject Browse
Java Compiler	
Java Editor	View
Java EE Module Dependenc	View Folder: /seamproject/WebContent Browse
Javadoc Location	Model
JavaScript	Source Folder: /seamproject/src/main Browse
JSP Fragment	Package: org.domain.seamproject.entity Browse
Project Archives	Package: org.domain.seamproject.entity Browse
Project Facets	Action / Form / Conversation
Project References	Source Folder: /seamproject/src/hot Browse
Run/Debug Settings	Package: org.domain.seamproject.session Browse
Seam Settings	
Seam Validator	_Test
Server	Create Test:
Service Policies	Test Project: seamproject-test Browse
Targeted Runtimes Task Repository	Source Folder: /seamproject-test/test-src Browse
Task Tags	Package: org.domain.seamproject.test Browse
Validation	
Web Content Settings	
Web Project Settings	
XDoclet	
< III >	Restore Defaults Apply
0	OK Cancel

Figure 9.7. Properties for Seam Project



Tip:

The wizard doesn't allow the renaming of the artifacts listed in the Seam Settings. It's possible to do in the Package Explorer. See <u>Renaming the Projects and</u> <u>Folders</u>.

Also notice, you are not required to use the New Seam Project wizard to benefit from Seam artifact wizards. You can just enable Seam on your existing project by checking Seam Support and targeting to Seam Runtime, and then configure the folders as you want.

vpe filter text	💧 Seam runtime	e is not selected	⇔ < ⇒ <
Resource	Coom sumoot.	7	
Beaninfo Path	Seam support:		
Builders	Seam Runtime:	L	Add
Drools	Main Seam Proj	ject: seamproject	Browse.
FreeMarker Context	Connection pro	file: New HSOLDB	C Edit New
Guvnor			
Hibernate Settings	Deployment		
Java Build Path	Deploy type	WAR O EAR	
Java Code Style	Seam EJB Proje	ct; seamproject	Browse,
Java Compiler			
Java Editor	-		
Java EE Module Deper	View Folder: [/s	eamproject/WebContent	Browse.
Javadoc Location	(Model		
JavaScript	Source Folder:	/seamproject/src/main	Browse,
JSP Fragment Project Archives	Package:	org.domain.seamproject.entity	Browse.
Project Facets			
Project References	Action / Form /	P	
Run/Debug Settings	Source Folder:	/seamproject/src/hot	Browse
Seam Settings	Package:	org.domain.seamproject.session	Browse.
Seam Validator			
Server	Create Test:	Ø	
Service Policies	Test Project:	seamproject-test	Browse
Targeted Runtimes			
Task Repository	Source Folder:	/seamproject-test/test-src	Browse,,
Task Tags	Package:	org.domain.seamproject.test	Browse,
Validation	L		
Web Content Settings			
Web Project Settings			
XDoclet		B	estore Defaults Apply
111	>		

Figure 9.8. Properties for Seam Project



In Seam Wizards (New Action, Form, Entity, Conversation, Generate Entities) you can get a quick access to project settings using the Settings link in the upper right corner of each wizard.

e	New Seam Action
Seam Action Create a new Seam action	
Seam Project:	seamproject Browse Settings
Seam component name:	Action
Local interface:	Action
Bean name:	ActionBean
Method name:	action
Page name:	action
Package name:	org.domain.seamproject.session Browse
0	<u>Finish</u> Cancel

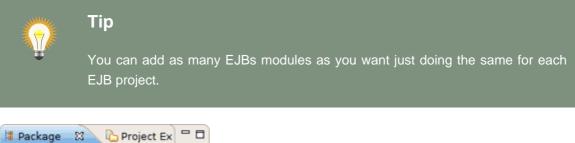
Figure 9.9. Settings Link

Adding Seam support to EAR project

From this chapter you will find out how to add Seam support to EAR project

For example you have several WTP projects:

- seamproject-ear (You can create WTP EAR project using New -> Project -> Java EE -> Enterprise Application Project wizard)
- seamproject-ejb (You can create WTP EJB project using New -> Project -> EJB -> EJB Project wizard)
- seamproject-war (You can create WTP WEB project using New -> Project -> Web -> Dynamic Web Project wizard)



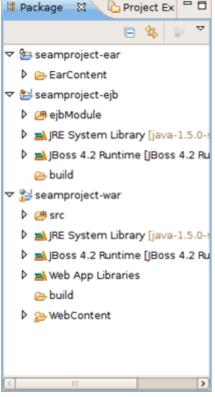


Figure 10.1. WTP Projects

Make sure EJB and WAR are included in EAR as modules (Properties for seamproject-ear -> Java EE Module Dependencies)

vpe filter text	Java EE Module Dep	pendencies		$\varphi \circ \varphi \circ \bullet$
Resource Builders	This property page let Available Java EE mod	ts you setup the module de	ependencies in a	n Enterprise Application.
FreeMarker Context	JAR/Module	Project	In Lib Dir	Select <u>A</u> ll
Guvnor Java EE Module Dependenc	.5	utils.ja seamproject-ear		D <u>e</u> select All
Project Archives Project Facets	-	ter.jar seamproject-ear ug.jar seamproject-ear		Add JARs
Project References		el.jar seamproject-ear		Add External JARs
Run/Debug Settings Server	 ✓ jboss-seam-ioc.ji ✓ jboss-seam-mail 			Add Variable
Targeted Runtimes	✓ jboss-seam-pdf.j			Change Library Directory.
Task Repository Task Tags	 ✓ jboss-seam-rem ✓ jboss-seam-ui.ja 	oting seamproject-ear r seamproject-ear		
Validation	✓ jsf-facelets.jar	seamproject-ear		
XDoclet	 ✓ jxl.jar ✓ richfaces-impl.ja 	seamproject-ear r seamproject-ear		
	 ✓ richfaces-ui.jar 	seamproject-ear		
	✓ jboss-seam.jar	seamproject-ear		
	 seamproject-ejb seamproject-war 	.jar seamproject-ejb r.war seamproject-war		
	(<	III	>	
			Resto	ore Defaults Apply
9				OK Cancel

Figure 10.2. Java EE Module Dependencies

Make sure there is jboss-seam.jar in application.xml as well:

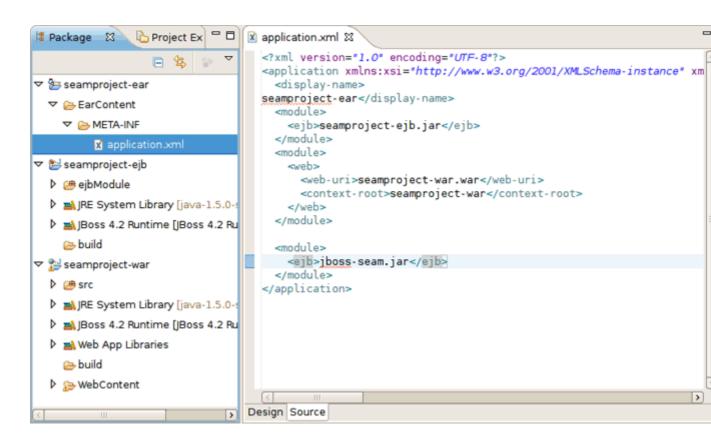


Figure 10.3. Java EE Module Dependencies

Then include libs from EAR to EJB Manifest Class-Path (Properties for seamproject-ejb -> Java EE Module Dependencies)

6	Properties for seamproject-ejb
type filter text	Java EE Module Dependencies 🔅 -> -> ->
Resource BeanInfo Path Builders Drools	This property page lets you add Manifest classpath dependencies to other Java EE modules or JARs contained within the same Enterprise Application. It also supports the selection of class folders whose contents will be added to the root of this module.
FreeMarker Context Guvnor Hibernate Settings Java Build Path	Enterprise application project name: seamproject-ear
 Java Code Style Java Compiler 	JAR/Module Project
 ▶ Java Editor Java EE Module Dependencies Javadoc Location Project Archives Project Facets Project References Run/Debug Settings Seam Settings Server Service Policies Targeted Runtimes ▶ Task Repository 	✓ i jboss-seam-debug.jar seamproject-ear ✓ i jboss-seam-excel.jar seamproject-ear ✓ i jboss-seam-mail.jar seamproject-ear ✓ i jboss-seam-mail.jar seamproject-ear ✓ i jboss-seam-mail.jar seamproject-ear ✓ i jboss-seam-remoting.ja seamproject-ear ✓ i jboss-seam-remoting.ja seamproject-ear ✓ i jboss-seam-ui.jar seamproject-ear ✓ i jboss-seam.jar seamproject-ear ✓ i jsf-facelets.jar seamproject-ear ✓ i jxl.jar seamproject-ear ✓ i richfaces-impl.jar seamproject-ear ✓ i richfaces-ui.jar seamproject-ear
Task Tags ▷ Validation ▷ XDoclet	Manifest Class-Path (does not include contributions from classpath entries): commons-beanutils.jar commons-digester.jar jboss-seam-debug.jar jboss- seam-excel.jar jboss-seam-ioc.jar jboss-seam-mail.jar jboss-seam-pdf.jar jboss-seam-remoting.jar jboss-seam-ui.jar jboss-seam.jar jsf-facelets.jar jxl.jar richfaces-impl.jar richfaces-ui.jar
0	OK Cancel

Figure 10.4. Including Libs from EAR to EJB Manifest Class-Path

Include libs from EAR and seamproject-ejb.jar to WAR Manifest Class-Path (Properties for seamproject-war -> Java EE Module Dependencies)

ype filter text	Java EE Module Dependencies	
Resource BeanInfo Path Builders		lanifest classpath dependencies to other Java EE
Drools FreeMarker Context Guvnor Hibernate Settings		the same Enterprise Application. It also supports se contents will be added to the root of this mod ne: seamproject-ear
Java Build Path Java Code Style	References to EJB JARs with EJB C O Use EJB JARs O Use EJB clie	ent JARs Allow both
 Java Compiler Java Editor Java Editor Java EE Module Dependencies Javadoc Location JavaScript JSP Fragment Project Archives Project Facets Project References Run/Debug Settings Seam Settings Seam Validator Server 	JAR/Module ♥ jboss-seam-ioc.jar ♥ jboss-seam-mail.jar ♥ jboss-seam-pdf.jar ♥ jboss-seam-remoting.jar ♥ jboss-seam-ui.jar ♥ jboss-seam-ui.jar ♥ jsf-facelets.jar ♥ jsl.jar ♥ richfaces-impl.jar ♥ richfaces-ui.jar ♥ seamproject-ejb.jar	Project seamproject-ear
Server Service Policies Targeted Runtimes Task Repository Task Tags Validation Web Content Settings Web Project Settings XDoclet	commons-beanutils.jar commons excel.jar jboss-seam-ioc.jar jboss-	ude contributions from classpath entries): -digester.jar jboss-seam-debug.jar jboss-seam- -seam-mail.jar jboss-seam-pdf.jar jboss-seam- -ses-seam.jar jsf-facelets.jar jxl.jar richfaces- ect-ejb.jar Restore Defaults

Figure 10.5. Including Libs from EAR and seamproject-ejb.jar to WAR Manifest Class-Path

Thus we have set our WTP EAR/EJB/WAR projects and now we are ready to add Seam support to them:

First you have to add Seam support to WAR project: Properties for seamproject-war -> Seam Settings

	Properties for	seamproject-war	×
type filter text	Seam Settings	<	⊳ - ⇔ - →
Resource All All All All All All All All All Al	Seam support:		
Builders	Seam Runtime:	jboss-seam-2.1.1.GA	Add
Drools	Main Seam Pro	ject: seamproject-war	Browse
FreeMarker Context Guvnor	Connection pro	file: New HSQLDB	New
Hibernate Settings	Deployment-		
Java Build Path	Deploy type	○ WAR	
 Java Code Style Java Compiler 	Seam EJB Proje	ect: seamproject-ejb	Browse
 Java Compiler Java Editor 	View		
Java EE Module Dependenci	View Folder: /s	eamproject-war/WebContent	Browse
Javadoc Location	Model		
▶ JavaScript	Source Folder:	/seamproject-ejb/ejbModule	Browse
JSP Fragment			
Project Archives	Package:	org.domain.seamprojectwar.entity	Browse
Project Facets	Action / Form /	Conversation	
Project References	Source Folder:	/seamproject-ejb/ejbModule	Browse
Run/Debug Settings	Package:	org.domain.seamprojectwar.session	Browse
Seam Settings Seam Validator			
Server	Test		
Service Policies	Create Test:		
Targeted Runtimes	Test Project:	seamproject-war	Browse
Task Repository	Source Folder:	/seamproject-war	Browse
Task Tags	Package:	org.domain.seamprojectwar.test	Browse
Validation			
Web Content Settings		Restore <u>D</u> efaults	Apply
(\tilde{D})		ок	Cancel

Figure 10.6. Adding Seam Support to WAR Project

Set seamproject-war as Main Seam project. All other settings mostly are used by New Seam Entity/Action/Form/Conversation/... Wizards. Thus you can set them as you wish.

Then you can add Seam support to EJB project: Properties for seamproject-war -> Seam Settings

type filter text	Properties for so Seam Settings) • • • •
Resource	Seam support:	✓	
Beaninfo Path Builders	Seam Buntime:	jboss-seam-2.1.1.GA	Add
Drools			
FreeMarker Context	Main Seam Proj	iect: seamproject-war	Browse
Guvnor	Connection prof	file: New HSQLDB	New
Hibernate Settings	Deployment-		
Java Build Path	Deploy type	○ WAR ● EAR	
▶ Java Code Style	Seam FIB Proje	ct: seamproject-ejb	Browse
Java Compiler			
Java Editor	View		
Java EE Module Dependencies	View Folder: /s	eamproject-war/WebContent	Browse
Javadoc Location	Model		
Project Archives	Source Folder:	/seamproject-ejb/ejbModule	Browse
Project Facets	Package:	org.domain.seamprojectejb.entity	Browse
Project References Run/Debug Settings			Diowsein
Seam Settings	Action / Form /		
Server	Source Folder:	/seamproject-ejb/ejbModule	Browse
Service Policies	Package:	org.domain.seamprojectejb.session	Browse
Targeted Runtimes	Test		
Task Repository	Create Test:		
Task Tags	Test Project:	seamproject-ejb	Browse
Validation			
XDoclet	Source Folder:	/seamproject-ejb/ejbModule	Browse
	Package:	org.domain.seamprojectejb.test	Browse
		Restore <u>D</u> efaults	Apply
0		ок	Cancel

Figure 10.7. Adding Seam Support to EJB Project

It&s important to set seamproject-war project as main Seam project there.

It will allow Seam Tools to use one common Seam model for seamproject-ejb and seamproject-war projects.

The last step is to clean/build the projects

That is all. You have added Seam support to your EAR project.

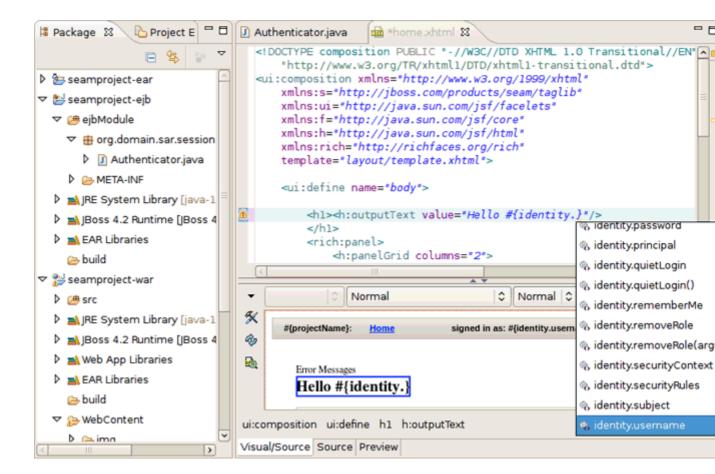


Figure 10.8. Added Seam Support to EAR Project

Generate a CRUD Database Application

11.1. What is CRUD?

CRUD is an acronym for the four basic types of SQL commands: *Create*, *Read*, *Update*, *Delete*. Most applications have some kind of CRUD functionality, and we can assume that every programmer had to deal with CRUD at some point. A CRUD application is one that uses forms to get data into and out of a database.

In the next section we will create <u>Seam</u> Web application, connect it to the <u>HSQL</u> [http:// www.hsqldb.org/] database and add CRUD support.

11.2. How to create the CRUD Database Application with Seam

- First, you should <u>download</u> [http://docs.jboss.org/tools/resources/] a database and start it by running ./runDBServer.sh or runDBServer.bat from the database directory.
- Create a new Seam Web Project using New Seam Project wizard or main menu File > New > Seam Web Project.

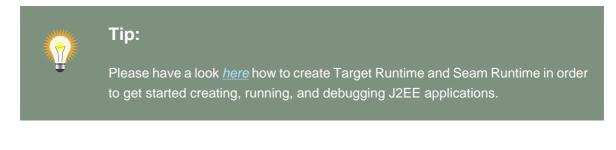
•	New	×
Select a wizard		
Create a Seam Web Project		
<u>W</u> izards:		
type filter text		
🝥 Seam Components File		A
🧐 Seam Conversation		
🧐 Seam Entity		
🧐 Seam Form		
🥬 Seam Generate Entities		
Seam Page Flow		=
🚳 Seam Web Project		
👂 🗁 Server		-
		0
()	<u>N</u> ext > Einish	Cancel

Figure 11.1. Seam Web Project Creation

• Name your project as *crudapp*, specify Target Runtime, Server and Seam Runtime configuration. Then press *Next* and follow the next wizard steps keeping default settings.

Seam Project
Seam Web Project
Create standalone Seam Web Project
Project name: crudapp
Project contents:
☑ Use <u>d</u> efault
Directory: /opt/workspace/crudapp Browse
Target Runtime
JBoss 4.2 Runtime
Dynamic Web Module version
2.5
Target Server
JBoss 4.2 Server
Configuration
Dynamic Web Project with Seam 2.0
Configures a Dynamic Web application to use Seam v2.0
Image: Second

Figure 11.2. New Seam Project Wizard



• On *Seam Facet* page click *New...* next to the Connection profile section to create a new Connection profile.

6	New Seam Pro	ject 🗙	
Seam Facet is not select	ted		
General Seam Runtime: jboss-seam-2	0.2.00	Add]	
Deploy as:		V Add	
Database			
Database Type:	(HSQL	
Connection profile:	(Edit New	
Database Schema Name:	(
Database Catalog Name:	Database Catalog Name:		
DB Tables already exists in data	abase: (
Recreate database tables and	data on deploy: [
Code Generation			
Session Bean Package Name:	org.domain.crud	app.session	
Entity Bean Package Name:	org.domain.crud	app.entity	
Test Package Name:	org.domain.crud	lapp.test	
⑦	Back Next	> Einish Cancel	

Figure 11.3. Seam Facet page

• On New Connection Profile dialog select the *HSQLDB* connection profile type, name it *cruddb* and click *Next*.

New Connection Profile	ĸ
Connection Profile	
Create an HSQLDB connection profile.	
Connection Profile Types:	
type filter text	
BB2 for Linux, UNIX, and Windows	
😫 DB2 for i5/OS	
😫 DB2 for z/OS	
😫 Derby	
Generic JDBC	
😫 HSQLDB	
😫 Informix	
li MaxDB	
I MySQL	
😫 Oracle	
😫 PostgreSQL	
😫 SQL Server	
😫 Sybase ASA	
😫 Sybase ASE	
Na <u>m</u> e:	
cruddb	
Description (optional):	
(?) < <u>Back</u> <u>Next</u> > Enish Cancel	

Figure 11.4. New JDBC Connection Profile

• On the next page click the round icon next to the *Drivers* field to select a database driver.

New Connection Profile	×
Specify a Driver and Connection Details	
Select a driver from the drop-down and provide login details the connection.	for
Drivers:	
Properties	
✓ Connect when the wizard completes	Test Connection
Connect every time the workbench is started	
(?) < Back	Cancel

Figure 11.5. New JDBC Connection Profile Database Driver

• Now you should see the New Driver Definition dialog. On the first tab select the HSQLDB JBDC Driver. Underneath in the Driver name field you can change its name if you need.

How to create the CRUD Database Application

with Seam

	New Driver Definition	×
pecify a Driver Template a	and Definition Name	
Unable to locate JAR/zip in fi hsqldb.jar.	le system as specified by the dri	ver definition:
Name/Type Jar List Propertie	s	
Available driver templates:		
Name	Vendor	Version
▽ Database		
HSQLDB JDBC Driver	HSQLDB	1.0
noqeoo joee onter	nsqLDB	1.8
Driver <u>n</u> ame: HSQLDB JDBC Driver	hourd	1.0
Driver <u>n</u> ame:		1.0
Driver <u>n</u> ame: HSQLDB JDBC Driver		

Figure 11.6. Database Driver Type

• You may notice the note on the previous figure. It prompts that you should specify the driver of the type you pointed. Set the location of the driver by switching to the next tab and press *Add JAR/Zip* button.

New Driver Definition	×
Specify a Driver Template and Definition Name	
Specify a driver template, then modify details in the fields below t unique name, a list of required jars, and set any available and ap	
Name/Type Jar List Properties	
Driver <u>fi</u> les:	
/opt/hsqldb.jar	Add JAR/Zip Edit JAR/Zip Bemove JAR/Zip Clear All
0	OK Cancel

Figure 11.7. Driver Definition

• On the Properties tab set the Connection URL, Database Name and User ID and click OK.

How to	create	the (CRUD	Databa	se Ap	plication
					:.	

with Seam

Ne Ne	ew Driver Definition
Specify a Driver Template and	Definition Name
	odify details in the fields below to provide a s, and set any available and applicable
Name/Type Jar List Properties	
Properties:	
Property	Value
▽ General	
Connection URL	jdbc:hsqldb:hsql://localhost:1701
Database Name	employee
User ID	sa
0	OK Cancel

Figure 11.8. Driver Definitions Properties

• After clicking *OK* to submit the newly created driver you can observe and if you need edit all specified connection details.

6	New Connection Profile		
Specify a Driver and	d Connection Details		
Select a driver from the the connection.	ne drop-down and provide login details for		
Drivers: HSQLDB JDB	C Driver ≎ € Δ		
Properties			
General Optional			
Database:	employee		
Database location:	hsql://localhost:1701 V Browse		
User name	sa		
Password:			
Save Password			
URL	jdbc:hsqldb:hsql://localhost:1701		
Connect when the v	vizard completes Iest Connection		
Connect every time the workbench is started			
0	< Back Next > Finish Cancel		

Figure 11.9. Driver and Connection Details

• Now click *Test Connection* to be sure that connection can be established.

6	Success	×
5	Ping succeeded!	
		ОК

Figure 11.10. JDBC Connection is OK

• Validate JDBC Connection profile settings and press Finish or Back if something is wrong.

Property	Value
Name	cruddb
Description	
Auto connect at startup	false
Auto connect on finish	true
Driver name	HSQLDB JDBC Driver
Database	employee
Database location	hsql://localhost:1701
User name	sa
URL	jdbc:hsqldb:hsql://localhost:1701
Save password	true
Connection properties	

Figure 11.11. Validate JDBC Connection settings

• After clicking *Finish* two projects *crudapp* and *crudapp-test* will be created.

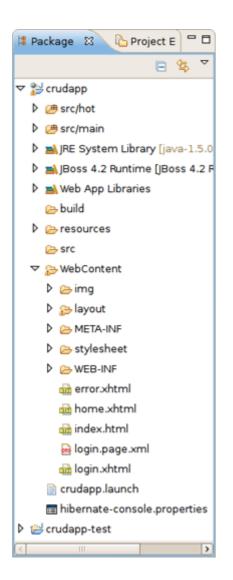


Figure 11.12. CRUDAPP Seam Project

• Have a look at the created projects. You can expand WEB_CONTENT folder and open home.xhtml or login.xhtml with JBoss Visual Editor.

How to create the CRUD Database Application with Seam

n login.xhtml 🛙	-	٥
<pre><ui:composition template="layout/template.xhtml" xmlns="http://www.w3.org/1999/xhtml" xmlns:f="http://java.sun.com/jsf/core" xmlns:h="http://java.sun.com/jsf/html" xmlns:rich="http://richfaces.org/rich" xmlns:s="http://jboss.com/products/seam/taglib" xmlns:ui="http://java.sun.com/jsf/facelets"></ui:composition></pre>	=	
<pre><ui:define name="body"></ui:define></pre>		
<pre>ch:messages styleClass="message"/></pre>		
<h:form id="login"></h:form>		
<rich:panel></rich:panel>	~	
		<u></u>
▼ ○ Normal ○ Normal ○ B I U / A		
×		~
C Error Messages		
Please login using any username and password		
Usemame #{identity.username}		-
Password		
Remember me 🔽		
Login		~
	>	
ui:composition ui:define h:messages	1	×
Visual/Source Source Preview		_

Figure 11.13. login.xhtml in VPE

• Switch to Database Development perspective with *Window->Open Perspective->Other...* and connect to the *cruddb* database.

🎁 Data Source Ex	plorer 🛛 🗖 🗖	
	~	
🖻 😫 🖬 🚳	21 4 B	
🗢 🗁 Databases		
🧊 cruddb	Connect	
🗢 🗁 ODA Data So		
🕞 Flat File D	Ping	
😕 Web Servi	Work Offline	
😂 XML Data	Save Offline	
	Re <u>n</u> ame	F2
	D <u>e</u> lete	Delete
	Du <u>p</u> licate	
	Ref <u>r</u> esh	F5
	Open SQL Scrapboo <u>k</u>	
	Properties	Alt+Enter

Figure 11.14. Connecting to the CRUDDB database

• Expand *cruddb* nodes to view its *Schemas, Tables, Columns* etc.

🛍 Data Source Explorer 🕱 🗧 🗖	٥
🗆 🖕 🗉 📽 🖄 🖪	~
▽ 🗁 Databases	A
🗢 😴 cruddb (HSQL Database Engine v. 1.	
▽ 📋 employee	
🗀 Authorization IDs	
🗢 🧰 Schemas	
INFORMATION_SCHEMA	
V 💀 PUBLIC	
Dependencies	
Sequences	
🗢 🧰 Tables	
CUSTOMERS	Ξ
EMPLOYEES	
OFFICES	
CRDERDETAILS	
D morders	
PAYMENTS	
PRODUCTLINES	
PRODUCTS	
User-Defined Functions	
Views	
🗢 🗁 ODA Data Sources	
😂 Flat File Data Source	-
<	9

Figure 11.15. CRUDDB Database

 Switch back to the Seam perspective. From the toolbar select New->Seam Generate Entities to create a set of CRUD Seam components and web pages based on existing tables in the database. On the first page of *Generate Seam Entities* wizard keep everything by default and press *Next*.

G	ienerate Seam Entities	×
Generate Seam Entities		
Seam Project: Hibernate Console Configuration Generation Mode	n: crudapp \$	<u>Settings</u>
0	< <u>Back</u> <u>N</u> ext > <u>Finish</u>	Cancel

Figure 11.16. Generate Seam Entities

• Click *Refresh* to display all the tables from the database.

Generate Seam Entities								
Generate Seam Ent Select Tables	tities			Ø				
Database schema:	Include Exclude Up Down Remove Remove All	Table filters:	Schema	Table				
0	<	<u>B</u> ack <u>N</u> ext	> <u>F</u> inish	Can	cel			

Figure 11.17. Dialog for Selecting Tables

• Now you can filter the tables. Use the *Include* button to include only necessary ones.

How to create the CRUD Database Application with Seam

	Gen	erate Seam En	tities		
enerate Seam Entities Select Tables					
Database schema:	1	Table filters:			
	Include	! Catalog	Schema	Table	
V 💀 PUBLIC	melode	.*	PUBLIC	CUSTOMERS	
III CUSTOMERS	Exclude	.*	PUBLIC	ORDERS	
EMPLOYEES		.*	PUBLIC	EMPLOYEES	
III OFFICES			PUBLIC	PAYMENTS	
III ORDERDETAILS	Up				
III ORDERS	Down				
PAYMENTS	Remove				
PRODUCTLINES					
PRODUCTS	Remove All				
Refresh					
		< <u>B</u> a	ck Next >	Einish	Cancel

Figure 11.18. Selecting Tables

• Under *WebContent* folder you can find all generated xhtml files:

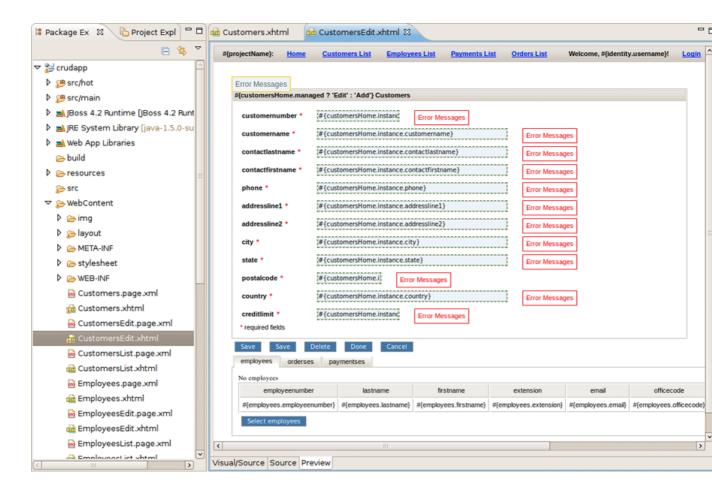


Figure 11.19. Entities Web Pages

• And under src folder java classes are created.

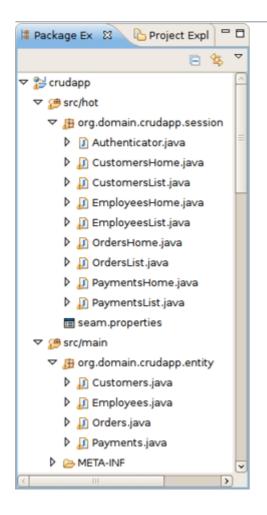


Figure 11.20. Entities Java Classes

• Switch to Hibernate perspective with *Window->Open Perspective->Other...* On Hibernate Configurations view expand the *crudapp* configuration. Right click on Customers and select *Open Mapping Diagram* from the popup menu.

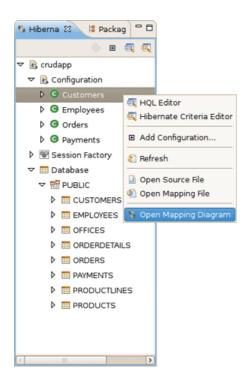


Figure 11.21. Hibernate Configurations View

• Observe the Mapping Diagram opened in the editor. Here you can see the relations between models and database tables. For better navigating on the diagram use the Outline view.

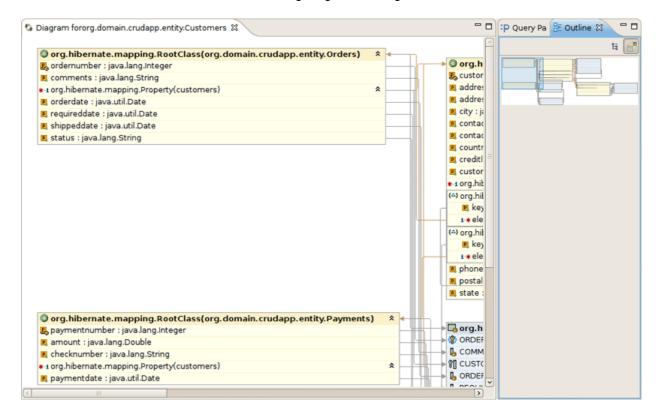


Figure 11.22. Mapping Diagram

- with Seam
- For example, select Customers entity, right click and select *Open Source File*. This will open the Customers.java file in the java editor. You can also do this by right-clicking on the same entity on the Mapping Diagram.

🕼 Hiberna 🕴 🛤 Packag 📟 🗖 🚱 Diagram	fororg.domain.crudapp.entity.Customers 🕼 Customers.java 🛿	- 8
✓	tomers generated by hbm2java y (name = "CUSTOMERS", schema = "PUBLIC")	
G Employ G Orders O Paymer Add Configuration Session E	<pre>class Customers implements java.io.Serializable { ivate int customernumber; ivate Employees employees; ivate String customername; ivate String contactlastname; ivate String contactfirstname;</pre>	
✓	<pre>ivate String phone; ivate String addressline1; ivate String addressline2; ivate String city; ivate String state;</pre>	
OFFICES Pri ORDERDETAILS Pri ORDERS Pri ORDERS Pri	<pre>ivate String country; ivate Double creditlimit; ivate Set<orders> orderses = new HashSet<orders>(0); ivate Set<payments> paymentses = new HashSet<payments>(0); blic Customers() {</payments></payments></orders></orders></pre>	
	blic Customers(int customernumber, String customername, String contactlastname. String contactfirstname. String bhone.	~

Figure 11.23. Entity class from Mapping Diagram

So far, you are ready to deploy your application to JBoss Application Server. This is described in the next chapter.

The CRUD Application Walkthrough

After you familiarized oneself with example of creating the CRUD Database Application with Seam, you can read this charter.

12.1. Using CRUD Application

To run your CRUD Application you should do the following steps:

• Run a project on the Server.

On Package Explorer View right click on the crudapp project, select Run As > Run on Server.

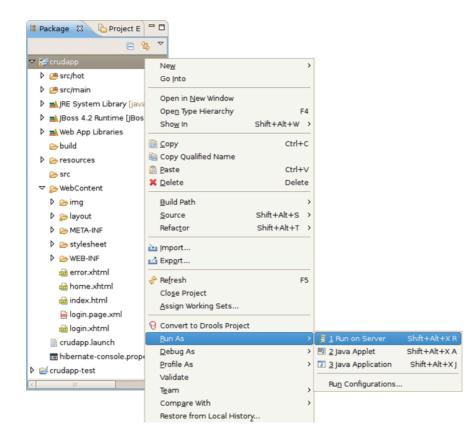


Figure 12.1. Run Project on Server

Select a Server and click Finish

Run On Server	×
Define a New Server	
Choose the type of server to create	
How do you want to select the server?	
Ochoose an existing server	
O Manually define a new server	
Select the server that you want to use:	
type filter text	
▽ 🗁 localhost	
👹 JBoss Application Server 4.2	
JBoss Application Server 4.2	
Always use this server when running this project	
Image: Second	ancel

Figure 12.2. Select a Server

Home page of the *crudapp* project should appear in *Web Browser*.

i crudap	px							- 6
	http://localhost:8080/crudapp/home.seam							
crudapp:	Home	Customers List	Employees List	Payments List	Orders List			Login
This	Welcome! This empty shell application includes: Ant build script Deployment to JBoss AS (EAR or WAR) Development and production profiles Integration testing using TestNG and Embedded JBoss JavaBean or EJB 3.0 Seam components JPA entity classes A configurable DataSource and JPA EntityManager Templated Facelets views RichFaces panels and tables Default CSS sylesheet Internationalization support							
			Powe	red by <u>Seam</u> . Gener	rated by seam-g	en.		

Figure 12.3. Home page

After that you can use CRUD application with "employee" database.

You can use internal JBDS Web Browser or your external Web Browser with the same link (<u>http://localhost:8080/crudapp/home.seam</u>).

Click on the *Employees List* link and observe that data from *employee* database is displayed.

				rudapp - Mozilla Firefox				
e <u>E</u> dit <u>V</u> iew Hi <u>s</u> to	ry <u>B</u> ookm	arks <u>T</u> ool	ls <u>H</u> elp					
i 🕨 ~ 🔗 🖸) 🏫 🔇	http://lo	calhost:80	80/crudapp/EmployeesList.sea	m;jsessioni	d=2317 🔮	7 🗸 🔽 Googl	e
the state of the s				and a state of the				
-				g Started 🔊 Latest Headlines	*			
udapp: <u>Home</u> <u>Cus</u>	tomers List	Employee	<u>es List</u> Pa	yments List Orders List				
Employees search pa	rameters							
lastname								
6								
firstname								
extension								
email								
officecode								
jobtitle								
jobtitle								
jobtitle Search								
-	sults							
Search	sults lastname	firstname	extension	email	officecode	reportsto	jobtitle	act
Search Employees search res		<u>firstname</u> Diane	extension x5800	<u>email</u> dmurphy@classicmodelcars.com	officecode	reportsto	jobtitle President	
Search Employees search res employeenumber	lastname					reports to 1002		Sel
Search Employees search res employeenumber 1002	<u>lastname</u> Murphy	Diane	×5800	dmurphy@classicmodelcars.com	1		President	Sel Sel
Search Employees search res employeenumber 1002 1056	lastname Murphy Patterson	Diane Mary	x5800 x4611	dmurphy@classicmodelcars.com mpatterso@classicmodelcars.com	1	1002	President VP Sales	Sel Sel
Search Employees search res employeenumber 1002 1056 1076	Lastname Murphy Patterson Firrelli	Diane Mary Jeff	x5800 x4611 x9273	dmurphy@classicmodelcars.com mpatterso@classicmodelcars.com jfirrelli@classicmodelcars.com	1 1 1	1002	President VP Sales VP Marketing	Sel Sel Sel
Search Employees search res employeenumber 1002 1056 1076 1088	Lastname Murphy Patterson Firrelli Patterson	Diane Mary Jeff William	x5800 x4611 x9273 x4871	dmurphy@classicmodelcars.com mpatterso@classicmodelcars.com jfirrelli@classicmodelcars.com wpatterson@classicmodelcars.com	1 1 1 6	1002 1002 1056	President VP Sales VP Marketing Sales Manager (APAC)	Active series of the series of
Search Employees search res employeenumber 1002 1056 1076 1088 1102	Lastname Murphy Patterson Firrelli Patterson Bondur	Diane Mary Jeff William Gerard	x5800 x4611 x9273 x4871 x5408	dmurphy@classicmodelcars.com mpatterso@classicmodelcars.com jfirreli@classicmodelcars.com wpatterson@classicmodelcars.com gbondur@classicmodelcars.com	1 1 1 6 4	1002 1002 1056 1056	President VP Sales VP Marketing Sales Manager (APAC) Sale Manager (EMEA)	Sel Sel Sel Sel Sel
Search Employees search res employeenumber 1002 1056 1076 1088 1102 1143	Lastname Murphy Patterson Firrelli Patterson Bondur Bow	Diane Mary Jeff William Gerard Anthony	x5800 x4611 x9273 x4871 x5408 x5428	dmurphy@classicmodelcars.com mpatterso@classicmodelcars.com jfirrelli@classicmodelcars.com wpatterson@classicmodelcars.com gbondur@classicmodelcars.com abow@classicmodelcars.com	1 1 1 6 4 1	1002 1002 1056 1056 1056	President VP Sales VP Marketing Sales Manager (APAC) Sale Manager (EMEA) Sales Manager (NA)	Sel Sel Sel Sel

Figure 12.4. Employees List

Use Employees search parameters fields to filter the selected list.

Press Select opposite one of employees.

2	crudapp - Mozilla Firefox
a 🕨 x 🗞 😒 🧉	http://localhost:8080/crudapp/Employees.seam?employeesEmploye 🏠 🗸 Google
🛅 Most Visited 🗸 📁 Smart	t Bookmarks 🛩 🌘 Getting Started 🕅 Latest Headlines 🛩
crudapp: <u>Home</u> <u>Customer</u>	s List Employees List Payments List Orders List
Employees	
employeenumber ¹⁰⁰	02
lastname Mur	rphy
firstname Dia	ne
extension x58	800
email dm	urphy@classicmodelcars.com
officecode 1	
reportsto	
jobtitle Pre	rsident
Edit Done	
customerses	
There are no customerses ass	sociated with this employees.
Add customers	
	Powered by <u>Seam</u> . Generated by seam-gen.
Done	

Figure 12.5. Employee details

Press Edit to edit employee fields.

Enter Login and Password to login. (Use "crudapp-user"/"secret" for example)

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Figure 12.6. Login page

	crudapp - Mozilla Firefox		
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	tomers List Employees List Payments List Orders List	Welcome, crudapp-user!	Logout
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Edit Employees			
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extension*	×5800		
email *			
dmurphy@classicmo	delcars.com		
officecode *	1		
reports to			
jobtitle *	President		
* required fields			
Save Delete	Done		
customerses			
There are no customer	es associated with this employees.		
Add customers			
one			*

Figure 12.7. Edit Employee

Fill in *firstname* and press Save.

Database will be updated.

Using TestNG project

With the help this chapter you will get to know with TestNG.

13.1. What is TestNG?

TestNG ("Testing, the Next Generation") is a Java unit testing framework that aims to overcome many limitations of JUnit. TestNG introduces some new functionalities that make it more powerful and easier to use, such as:

- JDK 5 Annotations (JDK 1.4 is also supported with JavaDoc annotations)
- Flexible test configuration
- Support for data-driven testing (with @DataProvider)
- Support for parameters
- · Allows distribution of tests on slave machines
- Powerful execution model (no more TestSuite)
- Supported by a variety of tools and plug-ins (Eclipse, IDEA, Maven, etc...)
- Embeds BeanShell for further flexibility
- Default JDK functions for runtime and logging (no dependencies)
- Dependent methods for application server testing

More information can be found on home page: <u>www.testng.org</u> [http://testng.org]

13.2. Other relevant resources on the topic

<u>Next-Generation Testing with TestNG (An Interview with Cedric Beust)</u> [http://www.artima.com/ lejava/articles/testng.html]

<u>TestNG: The next generation of unit testing</u> [http://www.javaworld.com/javaworld/jw-04-2005/jw-0404-testng.html]

<u>Test Categorization Techniques with Test/NG</u> [http://dev2dev.bea.com/pub/a/2006/09/testng-categorization.html]

<u>TestNG makes Java unit testing a breeze</u> [http://www-128.ibm.com/developerworks/java/library/ j-testng/]

<u>In pursuit of code quality: JUnit 4 vs. TestNG</u> [http://www-128.ibm.com/developerworks/java/ library/j-cq08296/index.html]

13.3. How to use the generated Seam-test project to run Seam tests?

- Create a new Seam Web Project with EAR deployment using the New Seam Project wizard.
- After a project is created you will have the generated Seam-test project that is setup to run TestNG directly against the proper libraries and server runtime libraries.

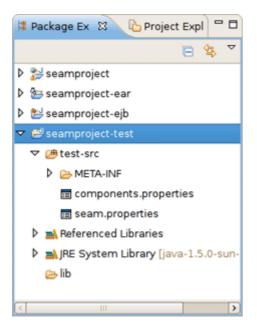


Figure 13.1. Seam-test Project

• Add Seam Action to your project via File > New > Seam Action.

How to use the generated Seam-test project to

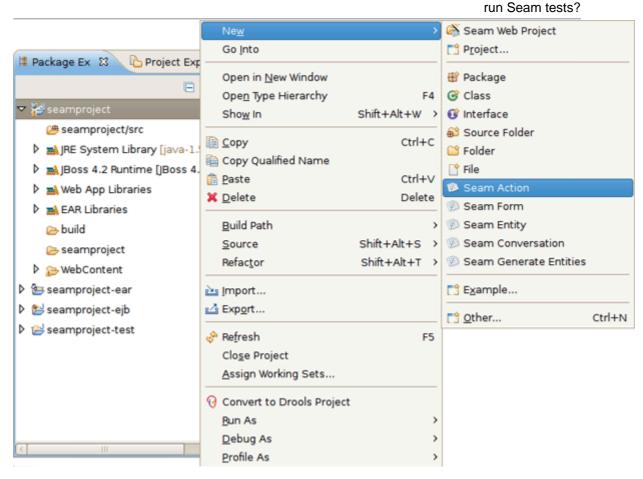


Figure 13.2. Seam Action Creation

• Fill out the wizard fields. New Seam Action wizard will create resources and place them in the appropriate folders dependent on EAR project structure.

6	New Seam Action
Seam Action Create a new Seam action	
Seam Project:	seamproject Browse Settings
Seam component name:	Action
Local interface:	ActionLocal
Bean name:	ActionBean
Method name:	actionMethod
Page name:	actionPage
Package name:	org.domain.seamproject.session Browse
0	<u>Einish</u> Cancel

Figure 13.3. New Seam Action Wizard

• When Action is created you will see actionPage.xhtml in Package Explorer view. ActionBean.java will be automatically opened in Java Editor.

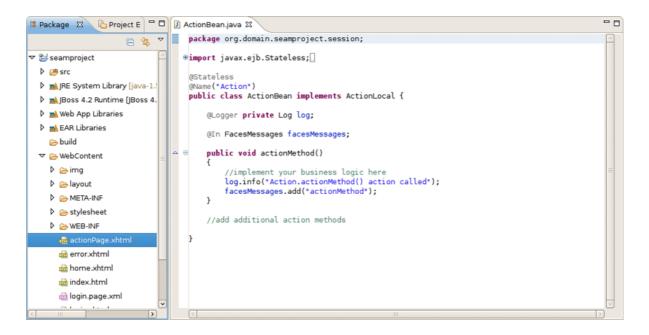


Figure 13.4. Created Action

How to use the generated Seam-test project to

run Seam tests?

 Select ActionLocalTest.xml in Seam-test project and run the test with right click Run As > TestNG Suite.

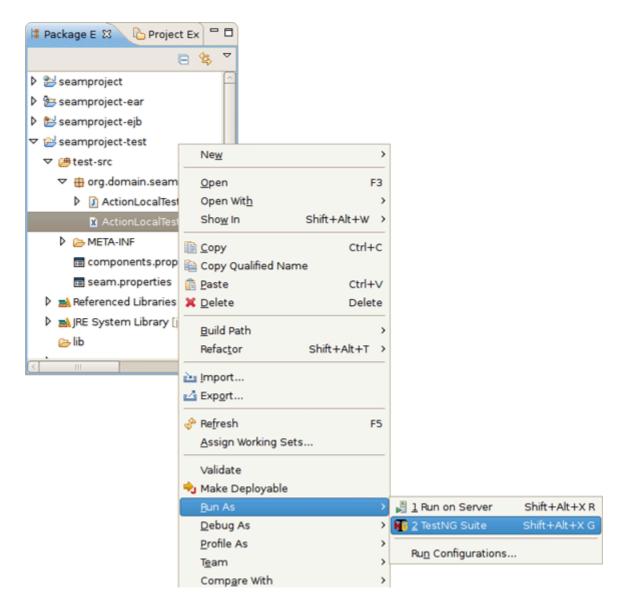


Figure 13.5. Running TestNG

The test process will start and its output will be written in Console View.

🖹 Problems 🕢 Tasks 🛞 Seam Components 😳 JBoss Server View 🍀 Servers 😰 TestNG 📮 Console 🛛	0			
<terminated> test-src.org.domain.seamProject.test.ActionLocalTest.xml [TestNG] /usr/java/jdk: 📄 🗱 🍇 🔛 🛃 🛃 🛃 🖉</terminated>	9 ▼			
01:14:42,614 INFO [Lifecycle] starting up: org.jboss.seam.ui.graphicImage.dynamicImageResource 01:14:42,615 INFO [Lifecycle] starting up: org.jboss.seam.debug.hotDeployFilter 01:14:42,616 INFO [Lifecycle] starting up: org.jboss.seam.servlet.multipartFilter 01:14:42,618 INFO [Lifecycle] starting up: org.jboss.seam.ui.resource.webResource 01:14:42,618 INFO [Lifecycle] starting up: org.jboss.seam.servlet.redirectFilter 01:14:42,620 INFO [Initialization] done initializing Seam 01:14:43,032 INFO [Initialization] done initializing Seam 01:14:43,058 INFO [IsitonBean] Action.actionMethod() action called 01:14:43,058 INFO [Ejb] stopping the embedded EJB container PASSED: test 				
ActionLocal Tests				
Total tests run: 1, Failures: 0, Skips: 0	H			
	111 1			
	ັ			

Figure 13.6. Test is Finished

• After running TestNG you will have the test results in *test-output* folder in Seam-test project (press F5 to refresh the Package Explorer view). Open index.html file with Web Browser or simply use the TestNG view.

The below view shows a successful run of the test.

🕢 Tasks 🛞 Seam Components 😯 JBoss Server View 廭 TestNG 🕴	🖳 Console			~ - 8
Tests: 1/1 Methods: 1/1 (15317 ms) 🛛 Pass	ed: 1	🛛 Failed: 0	Skipped: 0	
📲 All Tests 🖬 Failed Tests	🗮 Failure Excep	ption		67
🗢 💏 ActionLocal Tests (1/0/0/0)				
▽ 🛃 ActionLocal Test (1/0/0/0)				
🛃 org.domain.seamProject.test.ActionLocalTest.test				

Figure 13.7. Viewing the Test Results

You can see the test results in Web Browser.

How to use the generated Seam-test project to

run Seam tests?

🔮 Test results - Mozilla Firefox 📃 🗖 🗙					
Eile Edit View Higtory Bookmarks Tools Help					
In the second se					
🛅 Most Visited 🖌 🃁	Smart Bookmarks 🗸	Getting Started	🖾 Latest Headlir	nes 🗸	
Test results					
Suite		Passed	Failed	Skipped	testng.xml
То	otal	1	0	0	
ActionLocal Tests		1	0	0	Link

Figure 13.8. Test Results in Browser

After clicking on *ActionLocal Tests* link you will see the Results for ActionLocal Tests.

😻 Results for ActionLocal Tests - Mozilla Firefox 💷 🗈
Eile Edit ⊻iew History Bookmarks Iools Help
In the second se
🛅 Most Visited 🛩 📁 Smart Bookmarks 🛩 🌩 Getting Started 🔊 Latest Headlines 🛩
Results for ActionLocal Tests Select a result on the left-hand pane. 1 test 1 class 1 method: chronological alphabetical not run (0) Q reporter group output testng.xml ActionLocal Test (1/0/0) Results
Done *

Figure 13.9. Test Information

Select a result on the left-hand pane and its details will be displayed on the right-hand one.

👻 Results for Ad	ctionLocal Tests - Mozilla Firefox			
<u>F</u> ile <u>E</u> dit <u>V</u> iew Hi <u>s</u> tory <u>B</u> ookmarks <u>T</u> ools <u>H</u> elp				
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Most Visited ∽ 🏼 🗯 Smart Bookmarks ∽ 🐢 Getting S	itarted 🔝Latest Headlines 🛩			
Results for ActionLocal Tests	ActionLocal Test			
ActionEccu Tests	Tests passed/Failed/Skipped:	1/0/0		
1 test 1 class 1 method:	Started on:	Tue Dec 02 1	5:40:31 EE	
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alphabetical not run (0)	Included groups:			
0 group reporter output testng.xml	Excluded groups:			
ActionLocal Test (1/0/0) Results	(Hover the method name to see the test c	lass name)		
	PASSED TESTS			
	Test method	Time (seconds)	Exception	
	test_actionMethod	0		
file:///root/workspace/seamproject-test/test-output/Action	Local Tests/ActionLocal Test.html			

Figure 13.10. ActionLocal Test Details

Thus with Seam tooling you can easily take advantage of TestNG framework. As you can see, it generates its own TestNG project as a separate module within which you can easily monitor the tests execution and their output.

In conclusion, the main goal of this document is to get you know with a full featureset that JBoss Tools provides to support Seam development. Thus if you have some questions, comments or suggestions on the topic, please fell free to ask in the <u>JBoss Tools Forum</u> [http://www.jboss.com/ index.html?module=bb&op=viewforum&f=201]. You can also influence on how you want to see JBoss Tools docs in future leaving your vote on our page <u>here</u> [http://wiki.jboss.org/wiki/ JBossToolsDocsFuture].

A set of movies on Seam tooling is available *here* [http://docs.jboss.org/tools/movies].