Index

A	ICEfaces, 199
<a4j:include> component, 220</a4j:include>	auto-complete text input example, 202_205
<a4j:include> component, 220 <a4j:log> component, 220 <a4j:mediaoutput> component, 220 <a4j:outputpanel> component, 213–214 <a4j:poll> component, 220 <a4j:region> container tag, 220 <a4j:status> component, 220 access control declarative access control, 280–283 rule-based access control, 283–288 accessing private fields, 296 Seam components from JavaScript, 234–236 with JSF EL, 304–307 with Seam API calls, 307–309 actors (jBPM), assigning to web users, 245–249 ADF Faces, 208–209 AJAX, 7, 197–198 Ajax4jsf, 211–223</a4j:status></a4j:region></a4j:poll></a4j:outputpanel></a4j:mediaoutput></a4j:log></a4j:include>	•
components in, 220 configuring, 221–223 container tags, 219–220 programmatic AJAX, 214–217 validation example, 212–214 Dojo toolkit integration, 236–242	ronments, 343–344 alternative display output tags, 41 annotations, 11 @ApplicationException annotation, 130 @Begin annotation, 108–109 @BeginTask annotation, 257–258

@Conversational annotation, 111	application context, 84
@Create annotation, 93, 165–166	Application Development Framework
@DataModel annotation, 109,	Faces. See ADF Faces
150–151, 154–155	@ApplicationException annotation, 130
@DataModelSelection annotation,	applications
152, 154–155	CRUD applications, generating in
@Destroy annotation, 94	Seam Gen, 71–74
@End annotation, 111–114	deploying, 369–370
@EndTask annotation, 258	EJB3 applications, as templates,
exception annotations, 186-187	371–377
@Factory annotation, 94–95, 164–165	Hello World sample application, 11-17
@IfInvalid annotation, 144	configuration files, 23–30
@In annotation, 16, 160	data models, creating, 13–14
@Out annotation, 16, 95, 160	data models, mapping to web
performance and, 351–352	forms, 14–15
@Remove annotation, 94	Facelets, 34–35
@RequestParameter annotation, 163	packaging, 23–30
@Restrict annotation, 283–285	testing, 20
@Rollback annotation, 131–132	web events, handling, 15–17
@Scope annotation, 91	Hotel Booking example application
@Stateful annotation, 91	conversations across workspaces,
@Test annotation, 294	123–124
@Transactional annotation, 129	customizing conversation IDs,
@TransactionAttribute annotation,	124–126
129, 134	defining data sources, 347–348
@Valid annotation, 144	installing JDBC drivers, 347
validation annotations, 139-141	installing production databases,
@WebRemote annotation, 227	345–347
XML files replaced by, 9	long running conversations,
Ant, 370	103–116
ANTLR (ANother Tool for Language	persistence engine configuration, 348–349
Recognition), 54	rolling back transactions, 130–132
Apache MyFaces Tomahawk project, 208	workspace switcher, 120–123
Appache Tomcat Connector, 362	workspaces, 117–120
API calls, accessing Seam components, 307–309	1 "/ "

Seam applications, deploying, 369–370	scope, 255–256
Seam POJO applications, as templates,	boilerplate code, reduction of, 84–86
378–383	bookmarkable web pages, 157-167
stateful applications, 5-6	Java solution to, 162–167
stateful example application, 87-98	page parameters, 158–162
page navigation in, 95–98	when to use, 158
stateful components in, 88–95	bookmarks, 116
Ticketing example application	bootstrapping JBoss MicroContainer, 339,
assigning jBPM actors to web	342
users, 245–249	browser navigation support
binding data objects, 255–256	in state management, 81–82
creating business process	Hotel Booking example applica-
instances, 254–255	tion, 107
defining business processes,	stateful navigation rules and, 274
252–254	built-in components, 19–20
task management, 257–263	bundling
Tomcat applications, as templates,	ICEfaces JAR files, 205–208
383–384	JAR files for Tomcat, 335–336,
Web 2.0 applications, 7	340–341
associating business processes with web	business process context, 84
pages, 270–274	binding data objects, 255–256
Asynchronous JavaScript and XML. See AJAX	business process management tags, 40
atomic conversations, 132–134	business processes
authentication, 277–280	associating with web pages, 270–274
auto-complete text input example,	jBPM, 245–249
202–205	actors, assigning to web users,
202 200	249–251
	binding data objects, 255–256
В	configuring, 263–265, 275–276
Back button. See browser navigation sup-	creating business process instances, 254–255
port	defining business processes,
@Begin annotation, 108–109	252–254
@BeginTask annotation, 257–258	task management, 257–263
bijection. See dependency bijection	tasa management, 257 200

long running conversations versus, 261	configuring
page navigation and stateful	Ajax4jsf, 221–223
conversations, 274–275	JBoss Rules, 287–288
business rules, security framework,	jBPM, 263–265, 275–276
277–288	persistence engine, 348–349
declarative access control, 280-283	connections, detecting, 201-202
rule-based access control, 283-288	container tags, AJAX, 219-220
user authentication/roles, 277-280	contexts, 6
buttons, AJAX-enabled, 217–219	default conversation scope, 100-103
	stateful contexts, 83–84
•	conversation context, 84
C	conversation IDs, 123-124
caches. See database caches	customizing, 124-126
Call by Value, avoiding, 352–353	conversation management tags, 40
calls. See AJAX calls	@Conversational annotation, 111
chatty web applications, 80	conversations, 99–100
checked exceptions, rolling back transac-	across workspaces, 123-124
tions, 130–131	atomic conversations, 132-134
clickable data tables, 149–155 data-binding framework, 154–155	concurrent conversations, workspace
displaying, 150–152	switcher, 120–123
event handlers, injecting selected	default conversation scope, 100–103
objects into, 152–153	ending, 111–114
Seam JSF EL in, 153–154	HTTP GET requests and, 101
client-side state saving, server-side state	interrupted conversations, resuming, 120
saving versus, 356–357	JSF messages, displaying, 102–103
clustering, 361–364	links in, 114–116
concurrent conversations, workspace	long running conversations, 80,
switcher, 120–123	103–116
configuration by exception, 8	business processes versus, 261
configuration files	stateful navigation rules and,
for advanced application templates,	274–275
385	POJO components and, 101
in clustering, 363	redirection and, 101
Hello World sample application, 23–30	starting, 108–109
JBoss Embeddable EJB3, 341–342 JBoss MicroContainer, 337–339	workspaces and, 119–120
12000 Initial Communicity 557 557	

@Create annotation, 93, 165–166	data sources. See also production data-
Create, Retrieve, Update, and Delete	bases
applications. See CRUD applications	alternative data sources in Tomcat
CRUD application framework, 169–182	environments, 343-344
DAOs, 169–170	defining, 347–348
declarative Seam DAO components,	data tables. See clickable data tables
171–176	data validation. See validation
POJOs versus session beans, 170-171	database access with EntityManager, 23
queries, 176–182	database caches
CRUD applications	application state and, 6
generating in Seam Gen, 71-74	performance tuning, 358–360
Seam CRUD application framework,	database services, unit testing, 297–299
169–182	database updates, manually flushing,
DAOs, 169–170	132–133
declarative Seam DAO compo-	databases, generating CRUD applications
nents, 171–176	from, 71–74
POJOs versus session beans,	@DataModel annotation, 109, 150–151,
170–171	154–155
queries, 176–182	@DataModelSelection annotation, 152,
CSS, 38	154–155
customizing conversation IDs, 124–126	debug information page, 190–193
	debug page, 192–193
D	debugging in NetBeans IDE, 67–69
	debugging mode, JBoss AS in, 68–69
DAOs, 169–170	declarative access control, 280–283
declarative Seam DAO components, 171–176	declarative Seam DAO components, 171–176
Data Access Objects. See DAOs	declarative state management. See state
data-binding framework, 154–155	management
data list components in Facelets, 39–40	decorators, 145–147
data models	decoupling Seam components, 92–93
creating, Hello World sample applica-	default conversation scope, 100–103
tion, 13–14	dependency bijection, 7–8, 16
mapping to web forms, Hello World	avoiding, 21–22
sample application, 14-15	in bookmarkable web pages, 160
data objects, binding in business process	unit testing, 295–296
scope, 255–256	via getter/setter methods, 20–21

deploying	EJB3 session beans, 11
in Java EE 5.0 environments, 313-317	EL. See Seam JSF EL
Seam applications, 369–370	@Email annotation, 141
Seam Gen applications, 63-64	email messages, template-based, 50-53
Seam POJO applications, 319-331	email support tags, 50-53
Hibernate API example, 327–331	Embeddable EJB3, 339–344
JPA example, 320–327	enabling Facelets debug page, 190-191
in Tomcat environments, 333-344	@End annotation, 111–114
EJB3 applications, 339–344	ending conversations, 111–114
Seam POJO applications, 335–339	@EndTask annotation, 258
design patterns, 11	enhancements. See JSF enhancements
@Destroy annotation, 94	Enterprise Application aRchive. See EAR
detecting server connections, 201–202	files
development tools. See Seam Gen	Enterprise JavaBeans. See EJB 3.0
directory structure	entity beans
for example projects, 13	creating JavaScript objects for, 230
in Seam Gen, 60–61	stateful entity beans, 91
disabling transaction manager, 133–134	validation annotations, 139–141
Dojo toolkit integration, 236–242	entity objects, 11
dynamic queries, 177–179	initializing, 175
	mapping, 173–174
E	retrieving, 174–175
	EntityManager
eager loading, lazy loading versus, 77–79	database access with, 23
EAR files	manually flushing, 132–133
Hello World sample application, 24	error handling, 183–193
Seam Gen applications, 63–64	debug information page, 190–193
Eclipse IDE, Seam Gen in, 69–71	exception annotations, 186–187
EJB 3.0, integration with JSF, 3–5	exception filters, 185
EJB3 applications	servlet error pages, 184–185
deployment in Tomcat environments, 339–344	system exceptions, 188–190
as templates, 371–377	transactions, 128–129
EJB3 components, POJO components	error messages
versus, 17–19, 170–171, 319. <i>See also</i>	JSF error messages, displaying,
session beans	102–103
Section Commo	validation error messages, displaying, 145–147
	145-147

event context, 84	G
event handlers, injecting selected objects into, 152–153 Exadel, 208 exception annotations, 186–187 exception filters, 185 exceptions, system, 188–190 exploded JARs, 64 expression language. See Seam JSF EL	Garret, Jesse James, 197 getter/setter methods dependency bijection via, 20–21 in integration testing, 309 GlassFish, deployment in, 315–317 Google Maps, 197 Google Suggest, 197
_	н
Facelets, 32–40 adding support for, 44–47 configuring Ajax4jsf, 221–223 data list components, 39–40 Hello World sample application, 34–35 JSP versus, 32–33 NetBeans support module, 66 as template engine, 35–39 Facelets debug page, enabling, 190–191 @Factory annotation, 94–95, 164–165 factory methods, 94–95, 164–165 fail tolerance of clustering, 361 failover architectures, 363–364 filters	handling web events, Hello World sample application, 15–17 <h:datatable> UI tag, 150–151 Hello World sample application, 11–17 configuration files, 23–30 data models creating, 13–14 mapping to web forms, 14–15 Facelets, 34–35 packaging, 23–30 testing, 20 web events, handling, 15–17 Hibernate API, Seam POJO application example, 327–331 Hibernate validators, 141</h:datatable>
exception filters, 185	hidden fields, 166–167
Seam filter, 44	hiding span element, 228–229
flushing database updates manually, 132–133	Hotel Booking example application conversations across workspaces,
forced transaction rollbacks, 130-132	123–124
form validation. See validation	customizing conversation IDs,
formatted text, 53–54	124–126
formatted text tags, 53–54 @Future annotation, 141	long running conversations, 103–116

production databases	@In annotation, 16, 160
defining data sources, 347–348	initializing
installation and setup, 345–347	entity objects, 175
JDBC driver installation, 347	Seam components, 164-166
persistence engine configuration, 348–349	input widgets, Dojo toolkit integration example, 238–242
rolling back transactions, 130-132	installing
workspace switcher, 120-123	JBoss AS, 12, 366–369
workspaces, 117-120	JDBC drivers, 347
HTTP GET requests	production databases, 345-347
conversations and, 101	instantiating DAOs, 172
query parameters in, 163	integration testing, 9, 303–309
HTTP keepalive connections, 355–356	getter/setter methods, 309
HTTP POST requests, 157 HTTP sessions, 81. <i>See also</i> state manage-	Seam component access with JSF EL example, 304–307
ment	Seam component access with Seam
memory leaks, 82–83	API calls example, 307–309
state management versus, 99	interceptable Java beans, business
workspaces and, 117-119	processes and, 256
HTTP thread pool, 355–356	interrupted conversations, resuming, 120
@HttpError annotation, 187	
_	J
1	JAR files
ICEfaces, 199	for advanced application templates,
auto-complete text input example,	385
202–205	bundling for Tomcat, 335–336,
bundling JAR files for Seam, 205–208	340–341
page parameters, 208	bundling ICEfaces JAR files, 205–208
partial form submission example,	exploded JARs, 64
199–202	Hello World sample application, 28–30
IDEs	Java EE 5.0 environments, deployment
Eclipse IDE, Seam Gen in, 69–71	in, 313–317
NetBeans IDE, Seam Gen in, 65–69	Java for bookmarkable web pages,
@IfInvalid annotation, 144	162–167
ILOG JView JSF components, 209	Java Persistence API (JPA), 23

JavaBeans, creating JavaScript objects	integration with, 6
for, 230	task management, 257–263
JavaScript, accessing Seam components, 234–236. <i>See also</i> AJAX	jBPM Pageflow Definition Language. See jPDL
JavaScript events, triggering, 228–229	JDBC drivers, installing, 347
JavaScript objects, creating for entity	JDK 5.0, 365–366
beans/JavaBeans, 230	JEMS (JBoss Enterprise Middleware
JavaServer Faces. See JSF	Suite) installer, 12, 366
JavaServer Pages. See JSP	JPA (Java Persistence API), 23
JBoss AS	Seam POJO application example,
in debugging mode, 68-69	320–327
deploying into, 63-64	jPDL, 98
installing, 12, 366–369	JSF
requirements, 365-366	benefits/limitations, 31
Tomcat versus, 334	integration with EJB 3.0, 3-5
JBoss AS 4.0.5, deployment in, 313	JSP conflicts with, 33
JBoss AS 4.2.x/5.x, deployment in,	page navigation in, 22-23
314–315	JSF component libraries
JBoss Embeddable EJB3, 339–344	Ajax4jsf. See Ajax4jsf
JBoss Enterprise Middleware Suite	ICEfaces. See ICEfaces
(JEMS) installer, 12, 366	list of, 208–209
JBoss MicroContainer, 333	JSF custom validators, 147–148
bootstrapping, 339, 342	JSF enhancements, 31
configuration files, 337–339	Facelets, 32–40
JBoss Rules, 277. See also security frame-	adding support for, 44–47
work	data list components, 39–40
configuring, 287–288	Hello World sample application,
JBoss Seam. See Seam	34–35
jBPM, 245–249	JSP versus, 32–33
actors, assigning to web users,	as template engine, 35–39
245–249	Seam email support tags, 50-53
binding data objects, 255–256	Seam filter, 44
configuring, 263–265, 275–276	Seam formatted text tags, 53–54
creating business process instances,	Seam JSF EL, 42–43
254–255	in clickable data tables, 153–154
defining business processes, 252–254	Seam PDF tags, 48–50

Seam UI tags, 40-41	M
adding support for, 44–47	mapping
stateful JSF, 44	data models to web forms, Hello
JSF lifecycle phases, 305	World sample application, 14–15
JSF messages, displaying, 102–103,	entity objects, 173–174
175–176	@Max annotation, 141
JSF page navigation. See navigation	memory leaks, avoiding, 82-83
JSF replacement tags, 41	merging into persistence context, 152–153
JSF web pages, 11	messages, displaying JSF messages,
JSP	102–103, 175–176
error pages, 184–185	method-level access control, 282-283
Facelets versus, 32–33	MicroContainer. See JBoss
JSF conflicts with, 33	MicroContainer
JVM options, performance tuning,	@Min annotation, 141
353–354	multipage query results, displaying, 179–182
K	multiple transitions in tasks (jBPM), 258–259
keepalive connections, 355-356	MyFaces, server-side state saving in, 357
King, Gavin, 5, 77	,,
	N
L	navigation
lazy loading, 7	associating business processes with
eager loading versus, 77–79	web pages, 270–274
@Length annotation, 140	in JSF, 22–23
links in conversations, 114–116	in stateful example application, 95-98
load balancing sticky sessions, 362	stateful navigation rules
loading test infrastructure, 299–301	configuring, 275–276
logged-in users, checking for, 285	long running conversations and,
logging, reducing, 354	274–275
logout, 278	in pages.xml file, 267–270
long running conversations, 80, 103–116	navigation cases, 96
business processes versus, 261	navigation rules, 95–96
stateful navigation rules and, 274–275	

pages.xmi nie
handling system exceptions, 188-190
stateful navigation rules, 267-270
partial form submission example, 199-202
@Past annotation, 141
@Pattern annotation, 140, 141
patterns. See design patterns
PDF files, generating, 48–50
PDF tags, 48–50
per-instance access rules, 286–287
performance
annotations and, 351–352
JBoss AS versus Tomcat, 334
state management and, 80-81
tuning, 352–361
Call by Value, avoiding, 352–353
JVM options, 353–354
logging, reducing, 354
production databases, 357–358
second-level database caches,
358–360
server-side versus client-side state
saving, 356–357
thread pool, 355–356
transactions, 360–361
performance tags, 41
persistence context, merging into,
152–153
persistence engine, configuring, 348–349
Plain Old Java Objects. See POJO
POJO applications
deployment of, 319–331
Hibernate API example, 327–331
JPA example, 320–327
in Tomcat environments, 335–339
as templates, 378–383

POJO components	R
conversations and, 101	RAM, JVM options, 353-354
EJB3 components versus, 17–19,	@Range annotation, 141
170–171, 319	rapid application development tools. See
as stateful, 92	Seam Gen
POJO services with dependency bijection,	@Redirect annotation, 186
7–8	redirection, conversations and, 101
pooledTask component, 261–262	@Remove annotation, 94
pooledTaskInstanceList component, 261	@RequestParameter annotation, 163
prerequisites for Seam Gen, 55–56	requirements for JBoss AS, 365-366
private fields, accessing, 296	@Restrict annotation, 283-285
process definitions (jBPM), 246	resuming interrupted conversations, 120
creating, 247–248	retrieving entity objects, 174-175
process instances (jBPM), 246	return values, rolling back transactions,
creating, 254–255	131–132
production databases	roles, 277–280
data sources, defining, 347–348	@Rollback annotation, 131-132
installation and setup, 345–347	rolling back transactions, 130-132
JDBC driver installation, 347	rule-based access control, 283-288
performance tuning, 357–358	rules. See business rules
persistence engine configuration,	
348–349	S
production deployment. See deploying	
profiles in Seam Gen, 61–62	scalability
programmatic AJAX, 214–217	of clustering, 361
progress bar example (AJAX), 232–236	of state management, 80–81
	<s:conversationpropagation> UI compo-</s:conversationpropagation>
Q	nent, 116
queries, 176–182	scope. See contexts
dynamic queries, 177–179	@Scope annotation, 91
multipage results, displaying, 179–182	<s:decorate> UI tag, 146–147</s:decorate>
query parameters in HTTP GET requests,	Seam
163	bundling ICEfaces JAR files for,
200	205–208
	integration of EJB and JSF, 3–5

ORM and, 5 Seam JSF EL, 42-43 purpose of, 3 accessing Seam components, integra-Seam API calls, accessing Seam compotion testing example, 304–307 nents (integration testing example), in clickable data tables, 153–154 307-309 Seam remoting JavaScript library Seam applications. See applications AJAX progress bar example, 232–236 Seam components Dojo toolkit integration, 236–242 accessing from JavaScript, 234-236 validation example, 225–231 accessing with JSF EL, integration second-level database caches, performtesting example, 304–307 ance tuning, 358–360 accessing with Seam API calls, intesecurity framework, 277–288 gration testing example, 307–309 declarative access control, 280-283 AJAX progress bar example, 232–234 rule-based access control, 283–288 decoupling, 92-93 user authentication/roles, 277–280 initializing, 164–166 selecting tasks (jBPM), 260–263 lifecycle, 93-94 server connections, detecting, 201–202 Seam CRUD application framework. See server-side state saving, client-side state **CRUD** application framework saving versus, 356–357 Seam filter, 44 server-side validation, 139 Seam Gen, 10 Seam remoting JavaScript library application deployment phase, 63–64 example, 226-227 application development phase, 63 servlet error pages, 184–185 application testing phase, 64–65 session beans. See also EJB3 components CRUD application generation, 71-74 POJO components versus, 170–171 in Eclipse IDE, 69–71 stateful session beans, 91–93, 255 loading test infrastructure, 299 validation in, 144 in NetBeans IDE, 65-69 session context, 84 prerequisites, 55–56 setter methods. See getter/setter methods profiles, 61–62 <s:formattedText> UI component, 53–54 Seam POJO application deployment, @Size annotation, 141 322, 326 skeleton application, generating in Seam setup, 56-59 Gen, 60-61 skeleton application, generating, 60-61 <s:link> UI component, 115–116 Tomcat and, 334 <s:message> UI tag, 145–147 span element, hiding/viewing, 228–229

stack trace, displaying, 187	long running conversations and,
starting conversations, 108–109	274–275
state management	in pages.xml file, 267–270
benefits, 77–86	stateful session beans, 91–93, 255
boilerplate code, reduction of,	stateless context, 84
84–86	states (jBPM), 246
browser navigation support, 81–82	sticky sessions, load balancing, 362
memory leaks, avoiding, 82–83	success messages, displaying, 102-103,
ORM usage, 77–79	175–176
performance, 80–81	Sun blueprint catalog, 209
stateful contexts, 83–84	<s:validate></s:validate> UI tag, 142–143
conversations. See conversations	<s:validateall></s:validateall> UI tag, 143–144
HTTP sessions versus, 99	system exceptions, 188–190
POJO components and, 92	
scalability of, 80–81	т
server-side state saving, client-side	
state saving versus, 356–357	task IDs, 259–260
stateful example application, 87–98	taskInstanceList component, 262
page navigation in, 95–98	taskInstanceListByType component,
stateful components in, 88–95	262–263
state replication in clustering, 363	tasks (jBPM), 246
@Stateful annotation, 91	implementing business logic, 257–259
stateful applications, 5–6	selecting in UI, 260–263
stateful components in stateful example	specifying, 259–260
application, 88–95	template-based email, 50–53
stateful contexts, 83–84	template engine, Facelets as, 35–39
stateful entity beans, 91	templates
stateful example application, 87–98	configuration files for advanced appli-
page navigation in, 95–98	cation templates, 385
stateful components in, 88–95	EJB3 applications as, 371–377
stateful JSF, 44	Seam POJO applications as, 378–383
stateful navigation rules	Tomcat applications as, 383–384
browser navigation support, 274	@Test annotation, 294
configuring, 275–276	test infrastructure, loading, 299-301

testing	Tomcat applications as templates,
Hello World sample application, 20	383–384
integration testing, 9, 303–309	tools support. See Seam Gen
getter/setter methods, 309	transaction manager, disabling, 133-134
Seam component access with JSF	@Transactional annotation, 129
EL example, 304–307	@TransactionAttribute annotation, 129,
Seam component access with Seam	134
API calls example, 307–309	transactions, 127–134
Seam Gen applications, 64–65	atomic conversations, 132–134
unit testing, 9, 291–301	error handling, 128–129
database services, 297–299	forced rollbacks, 130-132
dependency bijection, 295–296	performance tuning, 360–361
loading test infrastructure,	transitions, multiple transitions in tasks
299–301	(jBPM), 258–259
TestNG test case example, 293–295	triggering
TestNG, 293	JavaScript events, 228–229
test case example, 293–295	validation, 142–144
text input example, 202–205	tuning performance, 352–361
third-party JavaScript libraries, Dojo	Call by Value, avoiding, 352–353
toolkit integration example, 236–242	JVM options, 353–354
thread pool, 355–356	logging, reducing, 354
Ticketing example application	production databases, 357-358
assigning jBPM actors to web users,	second-level database caches, 358-360
245–249	server-side versus client-side state sav-
binding data objects, 255–256	ing, 356–357
creating business process instances,	thread pool, 355–356
254–255	transactions, 360–361
defining business processes, 252–254	
task management, 257–263	U
timeouts for conversations, 114	_
Tomcat	UI components, declarative access con-
Apache Tomcat Connector, 362	trol, 281–282
deployment in, 333–344	UI tags, 40–41
EJB3 applications, 339–344	adding support for, 44–47
Seam POJO applications, 335–339	triggering validation, 142–144
JBoss AS versus, 334	validation error messages, 145–147

unit testing, 9, 291–301	Web 2.0 applications, 7
database services, 297-299	Web Application aRchive. See WAR files
dependency bijection, 295-296	web events, handling (Hello World sam-
loading test infrastructure, 299–301	ple application), 15–17
TestNG test case example, 293–295	web forms, mapping data models to
URLs. See bookmarkable web pages	(Hello World sample application),
user authentication, 277–280	14–15
user roles, 277–280	web pages
	associating business processes with, 270–274
V	bookmarkable web pages. See book-
@Valid annotation, 141, 144	markable web pages
validation, 137–148	declarative access control, 280-281
Ajax4jsf example, 212–214	web transactions. See atomic conversa-
entity bean annotations, 139-141	tions
error messages, displaying, 145-147	@WebRemote annotation, 227
JSF custom validators, 147-148	Wikitext, 53–54
partial form submission example,	Woodstock project, 209
199–202	workspace switcher, 120–123
Seam remoting JavaScript library	workspaces, 117–120
example, 225–231	conversations across, 123-124
server-side validation, 139	customizing conversation IDs,
in session beans, 144	124–126
triggering, 142–144	workspace switcher, 120–123
validation tags, 40, 142-144	wrapper code, reduction of, 84-86
viewing span element, 228-229	
visual editors for navigation rules, 97	x
visual effects, Dojo toolkit integration	
example, 236–238	XHTML. See Facelets
	XML files, 8–9
w	Hello World sample application, 23–30
	
WAR files	

Hello World sample application, 26–28 Seam POJO application with JPA

example, 325-327