



Rich HTML5 Web Apps: Introduction to Errai 3



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Another Java Web Framework?



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Web Design vs. Web Development



InDesign
HTML
CSS
PhotoShop



IDE
Compiler
Text editor
Build tools

PROBLEM

```
<html>
<head>
    <ttitle>First JSP</title>
    <link href="stylesheet" href="number-styles.css">
</head>
<body>
    <%
        double num = Math.random();
        if (num > 0.95) {
    %>
        <h2 class="response">Today is a lucky day!</h2>
        <p class="number lucky">(num %)</p>
    <%
        } else {
    %>
        <h2 class="response">Well, life goes on...</h2>
        <p class="number unlucky">(<%= num %>)
    <%
        }
    %>
    <a href="#"><%= request.getRequestURI() %></a><h3>Try Again</h3>
</body>
</html>
```

```
<!DOCTYPE html>
<html id="todoapp">
<head id="header">
<h1>_{{todo.title}}
```

Errai UI - HTML5

```
<!DOCTYPE html>
<link href="css/bootstrap.css" rel="stylesheet">

<form id="login">
  <legend>Log in to your account</legend>

  <label for="username">Username</label>
  <input id="username" type="text" placeholder="Username">

  <label for="pass">Password</label>
  <input id="pass" type="password" placeholder="Password">

  <button id="submit">Log in</button>
  <button>Cancel</button>
</form>
```



Errai UI - HTML5

```
@Templated @Page
public class LoginForm extends Composite {

    @Inject @DataField
    private TextBox username;

    @Inject @DataField("pass")
    private PasswordTextBox password;

    @DataField
    private Button submit = new Button();

    @EventHandler("submit")
    private void onLogin(ClickEvent e) {
        // send login request
    }
}
```



Collaboration Within Large Teams



PROBLEM

SHORPY

Shared Data Model

```
@Bindable  
@Entity  
@NamedQuery(  
    name = "allComplaints",  
    query = "SELECT c FROM UserComplaint c ORDER BY c.id")  
public class UserComplaint {  
    @Id  
    @GeneratedValue(strategy = GenerationType.AUTO)  
    private Long id;  
  
    @Version  
    private Long version;  
  
    private String name;  
    private String email;  
    private String text;  
  
    private boolean done;  
  
    @Lob  
    private String image;  
}
```



JPA in the browser

```
@Templated @Page
public class ComplaintForm extends Composite {

    @Inject
    private EntityManager em;

    @EventHandler("submit")
    private void onSubmit(ClickEvent e) {
        em.persist(complaint);
        em.flush();
    }
}
```



Errai UI - Data Binding

```
@Templated @Page
public class ComplaintForm extends Composite {

    @Inject @Bound @DataField
    private TextBox email;

    @Inject @Bound @DataField("name")
    private TextBox username;

    @Inject @Bound @DataField
    private TextArea text;

    @Inject @Model
    private UserComplaint complaint;

    @EventHandler("submit")
    private void onSubmit(ClickEvent e) {
        sendToServer(complaint);
    }
}
```



A scenic landscape featuring a range of mountains with patches of snow and green forests. In the foreground, a calm lake reflects the surrounding peaks. A red stamp with the word "PROBLEM" is overlaid in the bottom right corner.

Vertical Repetition: Code duplication between the client and the server

Shared Data Model with Validation

```
@Bindable  
@Entity  
@NamedQuery(  
    name = "allComplaints",  
    query = "SELECT c FROM UserComplaint c ORDER BY c.id")  
public class UserComplaint {  
    @Id  
    @NotNull  
    @GeneratedValue(strategy = GenerationType.AUTO)  
    private Long id;  
  
    @Size(min=3, max=20)  
    private String name;  
  
    @Email  
    private String email;  
  
    private String text;  
    private boolean done;  
    ...  
}
```



Shared Validation Logic

```
@Inject  
private Validator validator;  
  
...  
  
Set<ConstraintViolations<UserComplaint>> violations =  
validator.validate(complaint);
```

CDI in the browser

Injecting and firing events

```
@Inject @Updated  
private Event<Document> updatedDocEvent;
```

```
....  
button.addClickHandler(new ClickHandler() {  
    public void onClick(ClickEvent event) {  
        updatedDocEvent.fire(document);  
    }  
});
```



CDI in the browser

Observing events

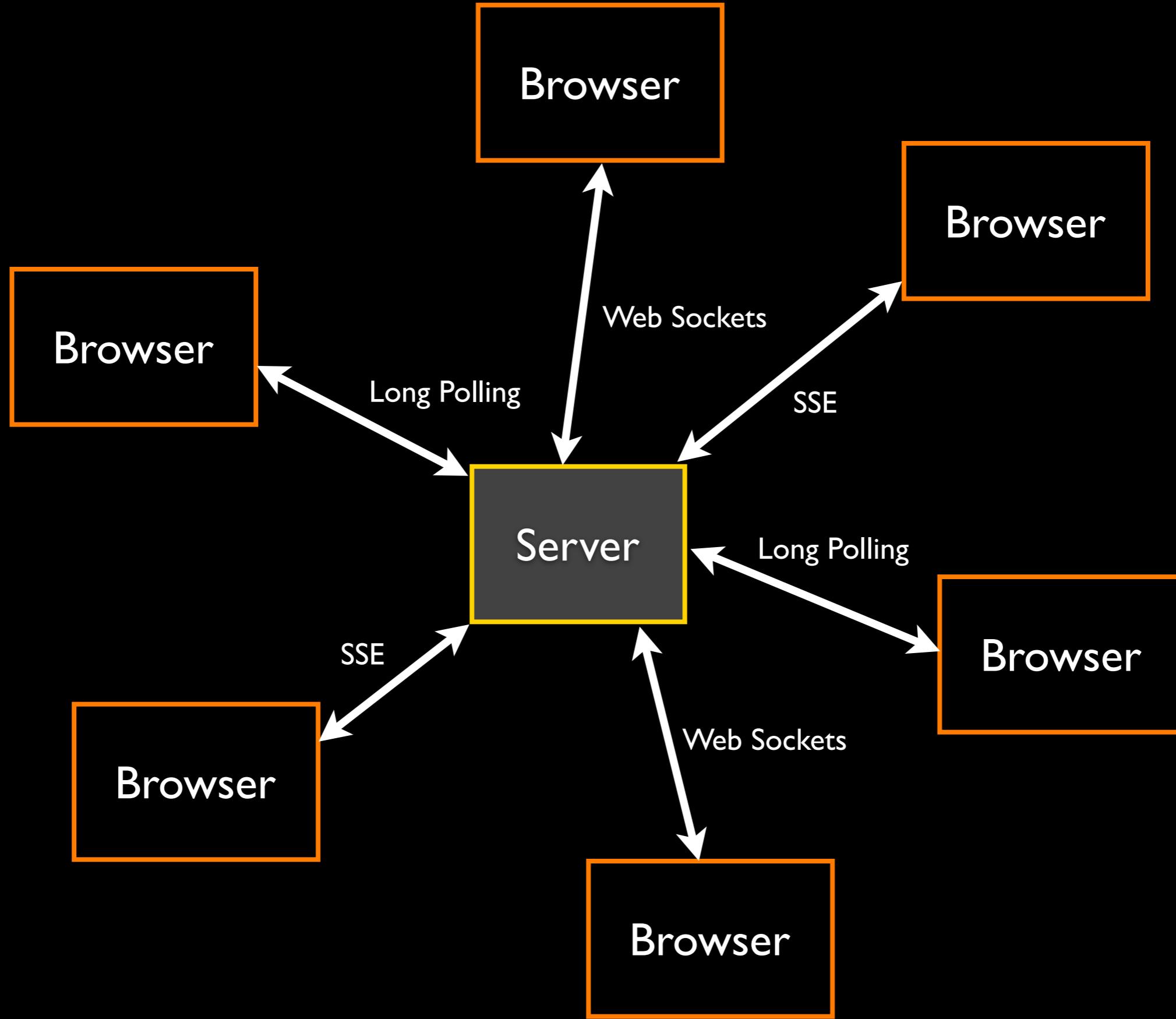
```
public void onUpdatedDocument(@Observes @Updated Document doc) {  
    // received updated document  
}
```

On the client

On the server

Or both (events are sent across the wire)

Uniform programming model on the client and server



Horizontal Repetition: Code duplication on the client



Remote Calls

Errai JAX-RS

```
@Path("complaints")
public interface ComplaintService {
    @POST
    @Consumes("application/json")
    @Produces("text/plain")
    public long createComplaint(UserComplaint complaint);
}
```

shared

```
@Inject
private Caller<ComplaintService> complaintService;
...
complaintService.call(
    resp -> Window.alert(resp)
).createComplaint(complaint);
```

client





Maintaining Large Projects

or, “When This Codebase is Fully Operational...”

PROBLEM

IDEs Are Useful!

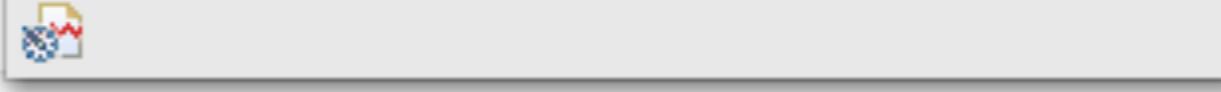
```
@Templated("#main")
@Path(path="share")
public class SharePage extends Composite {
    @Inject private @DataField Label overallErrorMessage;
    @Inject private @DataField TextBox email;
    @Inject private @DataField Button shareButton;
    @Inject private Caller<ShareService> shareService;
    @Inject private TransitionTo<TodoListPage> todoListPageLink;

    @PostConstruct
    private void init() {
        overallErrorMessage.setVisible(false);
    }
}
```

overallErrorMessage cannot be resolved

7 quick fixes available:

- ① [Create local variable 'overallErrorMessage'](#)
- ② [Create field 'overallErrorMessage'](#)
- ③ [Create parameter 'overallErrorMessage'](#)
- ④ [Create class 'overallErrorMessage'](#)
- ⑤ [Create constant 'overallErrorMessage'](#)
- ⑥ [Change to 'overallErrorMessage'](#)
- ⑦ [Fix project setup...](#)



Don't Reinvent the Wheel



Errai Security - UI

```
@Templated  
@Page  
@RestrictedAccess  
public class SecuredPage extends Composite {  
  
    @Inject @DataField  
@RestrictedAccess(roles="Admin")  
    private Anchor adminLink;  
  
    ...  
  
}
```



Errai Security - RPC

```
@Remote  
@RestrictedAccess  
public interface SecuredService {  
    public void securedMethod();  
  
    @RestrictedAccess(roles="Admin")  
    public void adminMethod();  
}
```

```
@Path("/securedService")  
@RestrictedAccess  
public interface SecuredService {  
    @GET  
    public void securedMethod();  
  
    @GET  
    @Path("/admin")  
    @RestrictedAccess(roles="Admin")  
    public void adminMethod();  
}
```



Errai Security - Login

```
@Templated @Page
public class LoginForm extends AbstractForm {

    @Inject
    private Caller<AuthenticationService> authService;

    @Inject @Bound @DataField
    private TextBox name;

    @Inject @Bound @DataField
    private PasswordTextBox pass;

    @Inject @Model
    private User user;

    @EventHandler("login")
    private void onLogin() {
        authService.call(new RemoteCallback<User>() {
            public void callback(User authenticatedUser) {
                // process successful login
            }
        }).login(user.getName(), user.getPass());
    }
}
```





The Times They Are a-Changin'

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最后收官
143²
9.5
卷之三

卷之三

PROBLEM

Integrate with Mobile hardware

Use native Android, iPhone, and BlackBerry features.

```
@Inject  
private Camera camera;
```

```
public void onBatteryLow(@Observes BatteryLowEvent e) {  
}
```



Get in touch!

Website: <http://erraiframework.org>

IRC: #errai on freenode

Twitter: [@jbosserrai](https://twitter.com/jbosserrai)



Photo by: CHIN.DENG
From: Flickr



<http://github.com/errai>