Hands-on DWR

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TS-6410

Goal of the Talk

The plan for the next 60 minutes

Learn how to use DWR from some cool worked examples

Agenda

Overview of DWR
Installation first steps
The first application
Explaining the feature set
Writing the game
Integration with other Ajax libraries
Summary

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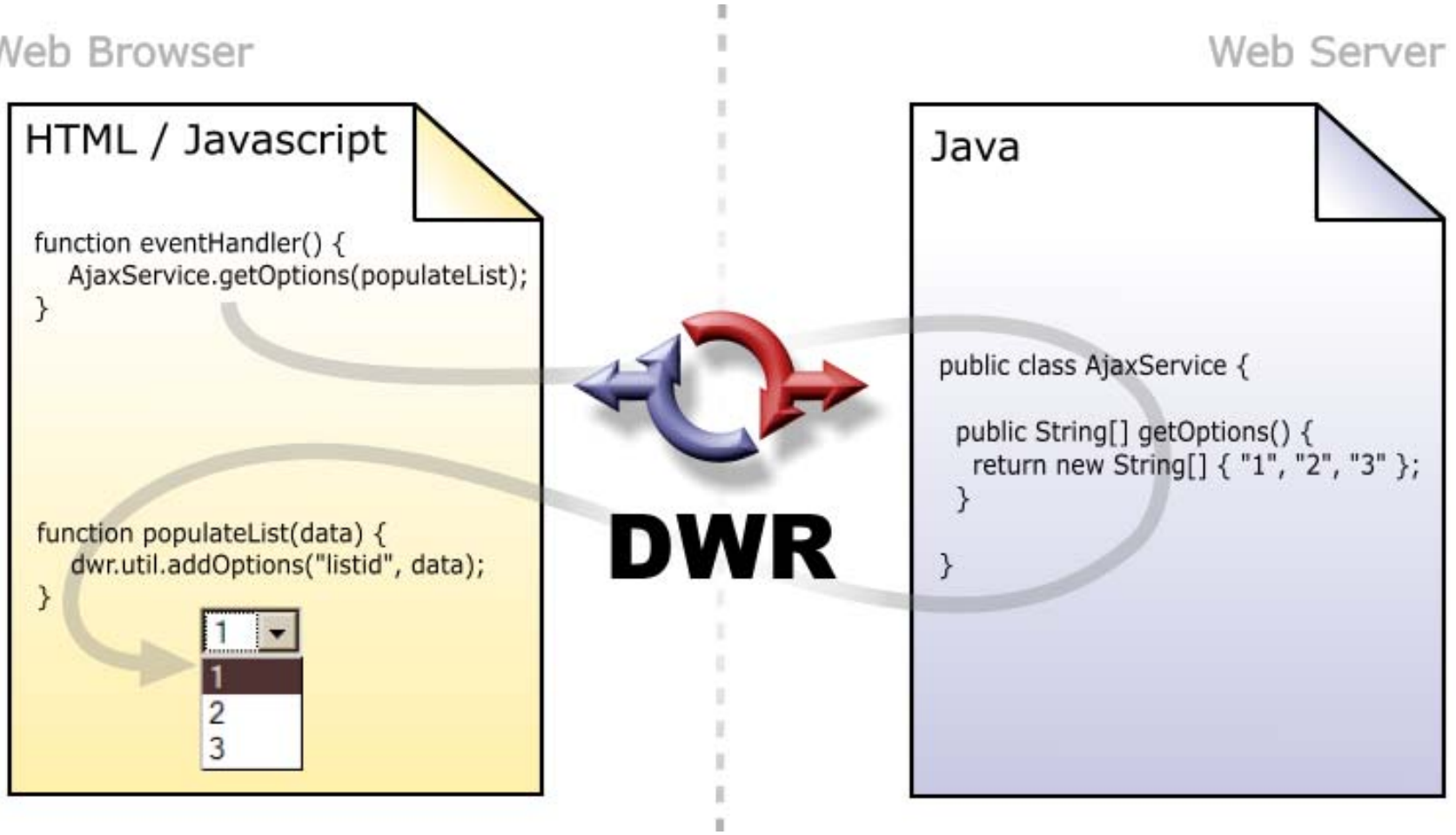
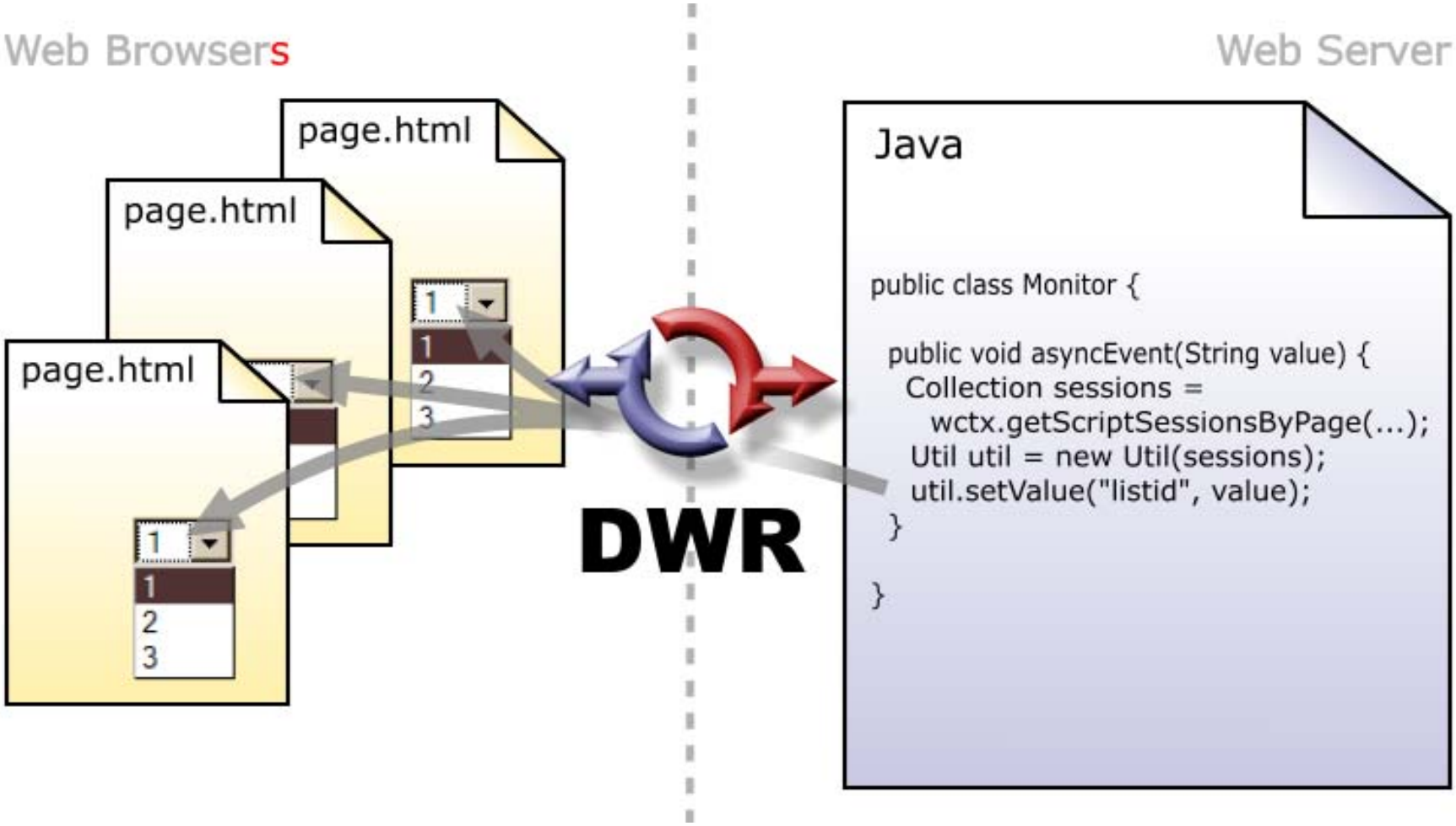

Web Browser
Web Server
HTML / Javascript
function eventHandler() {
AjaxService.getOptions(populateList);
}
function populateList(data) {
dwr.util.addOptions("listid", data);
}
1
1
2
3
DWR
Java
public class AjaxService {
public String[] getOptions() {
return new String[] { "1", "2", "3" };
}
}


Web Browsers
Web Server
page.html
page.html
page.html
1
1
2
3
1
1
2
3
DWR
Java
public class Monitor {
public void asyncEvent(String value) {
Collection sessions =
wctx.getScriptSessionsByPage(...);
Util util = new Util(sessions);
util.setValue("listid", value);
}
}

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Getting Started

Installation in 4 steps

- Copy dwr.jar into WEB-INF/lib
  - `http://directwebremoting.org/`
- Add the DWR servlet to WEB-INF/web.xml
- Create dwr.xml to give DWR permission to call your code
- Browse the automatically generated test pages
  - `http://localhost:8080/WEBAPP/dwr/`

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DEMO

Your first DWR page

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DWR Can Marshall:

(in short, basically anything ...)

- Primitive types, and their Object counterparts
  - int, boolean, long, float, double, etc
- Obvious classes
  - String, Date, BigDecimal, BigInteger, Enums, etc
- Arrays and Collections
  - Map, List, Set, Iterator, ...
- JavaBeans™ and Objects
- XML objects
  - DOM, XOM, JDom, Dom4J

JavaBeans = A component based on Java Beans™ component architecture

Security

- DWR does not call anything without your permission
- Use method level access control over exported classes and objects
- Use standard role-based security to declare roles that can access methods

Accessibililty

- dwr.util supports pluggable notifiers
  - .focus() for screen readers
  - Yellow fade for partially sighted
- New notifiers can be easily added
  - e.g. To make a sound on a change

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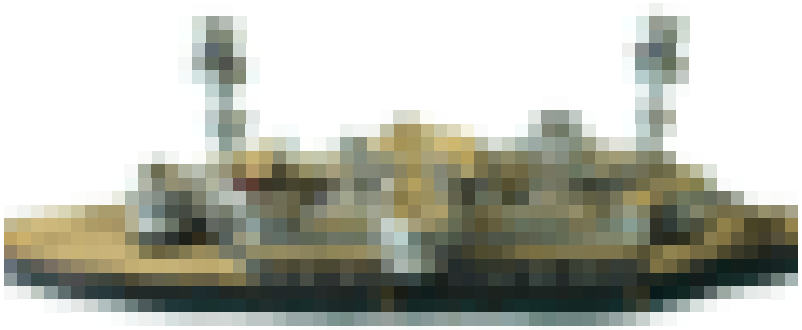
The Game

- We're starting from scratch (nearly)
- It's going to be really dull if we really start from scratch
- So here's a few things we made earlier...

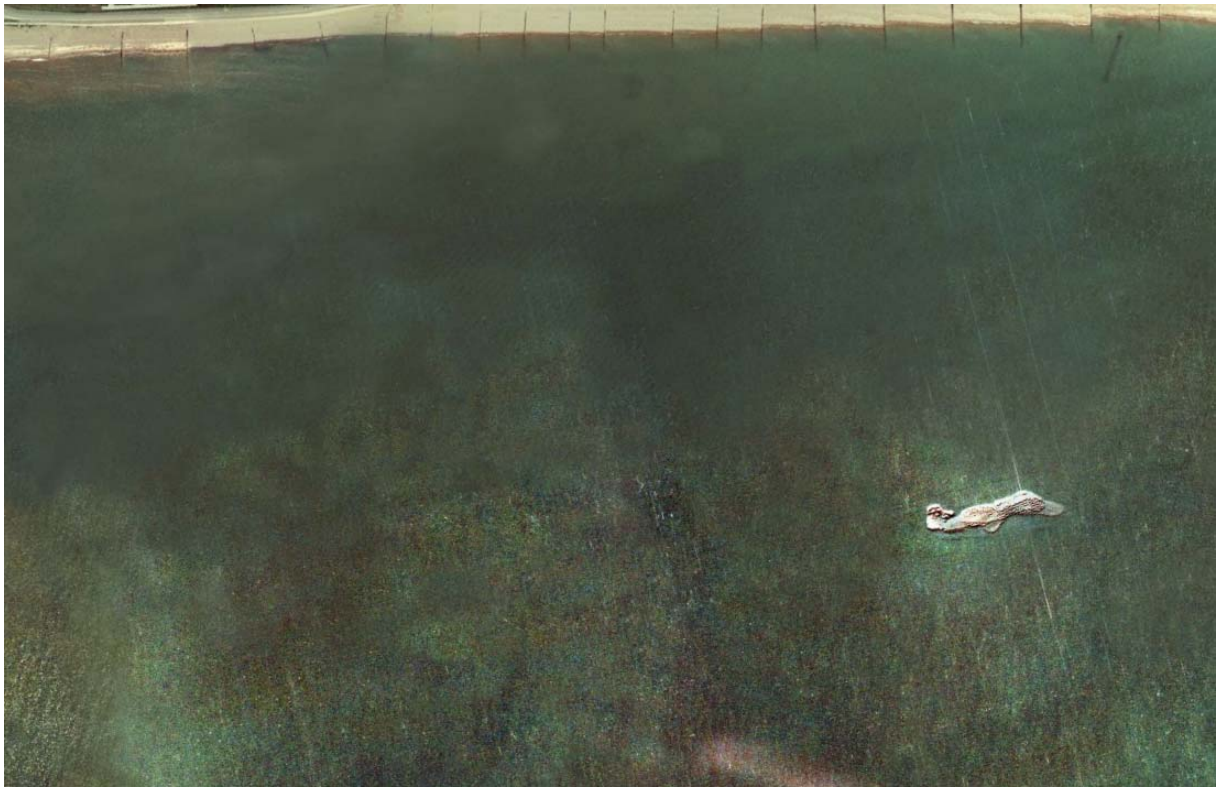
What We Start with: `boat.gif`



What We Start with: `title.png`

What We Start with:

`seamap.png`



What We Start with:

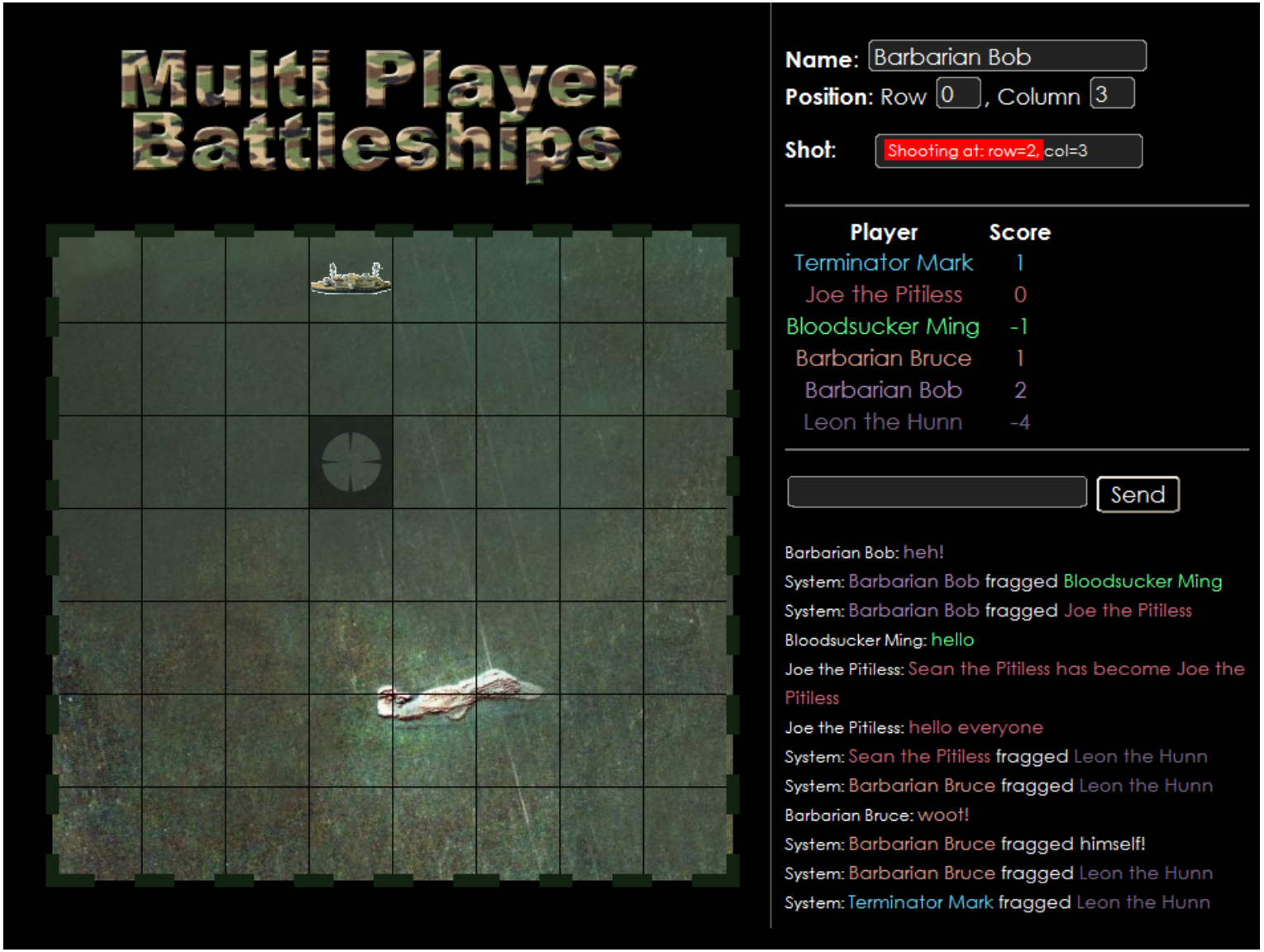
`crosshair.png`

What We Start with: `index.html`

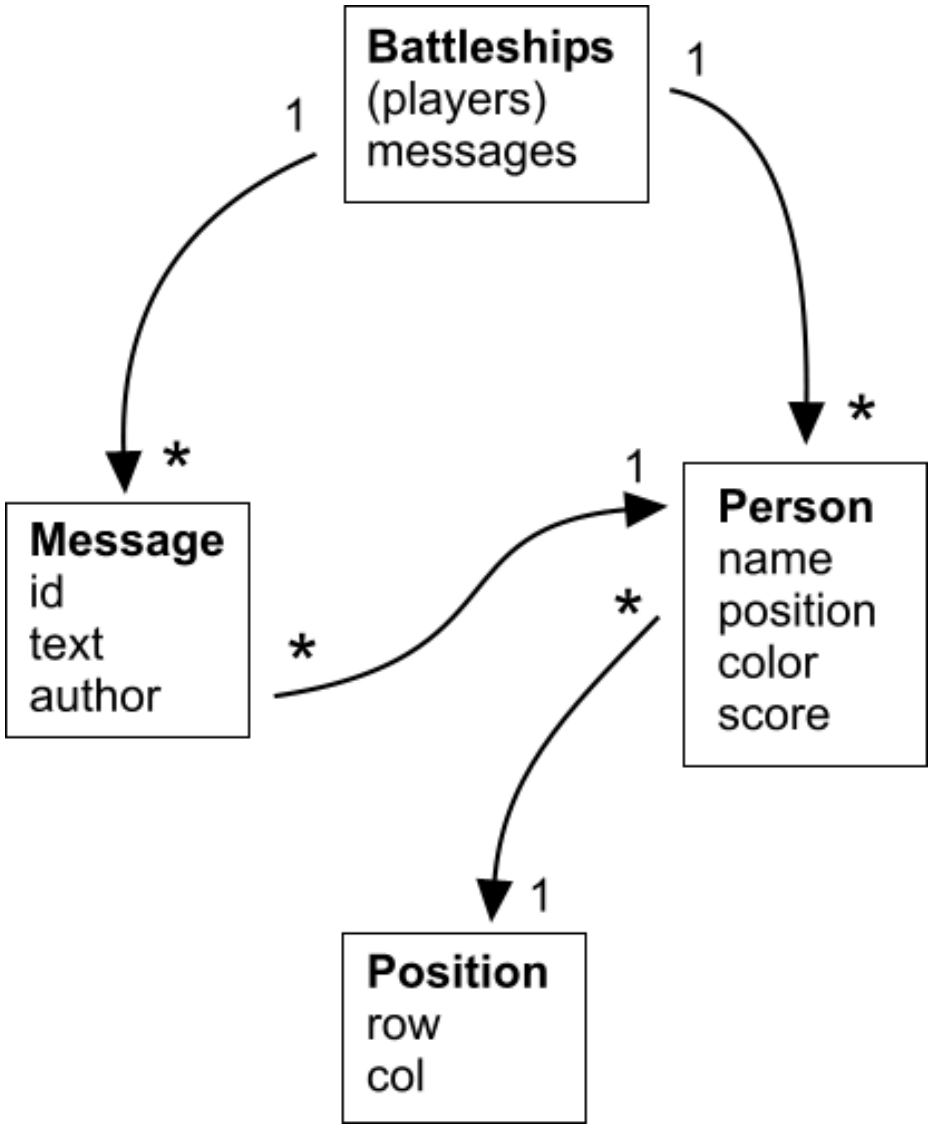
```
<body onload="init();">
<img src="title.png" title="Multi Player Battleships"/>
<table id="map"></table>
<div id="sidebar">
  <p>
    <b>Name</b>: <input type="text" size="23"/><br/>
    <b>Position</b>:
    Row <input type="text" size="1" onchange="move()"/>,
    Column <input type="text" size="1" onchange="move()"/>
  </p>
  <table>
    <tr>
      <th>Player</th>
      <th>Score</th>
    </tr>
  </table>
  <p>
    <input type="text" size="25"/>
    <input type="button" value="Send"/>
  </p>
  <ul id="chatlog"></ul>
</div>
</body>
```

What We Start with: battleships.css

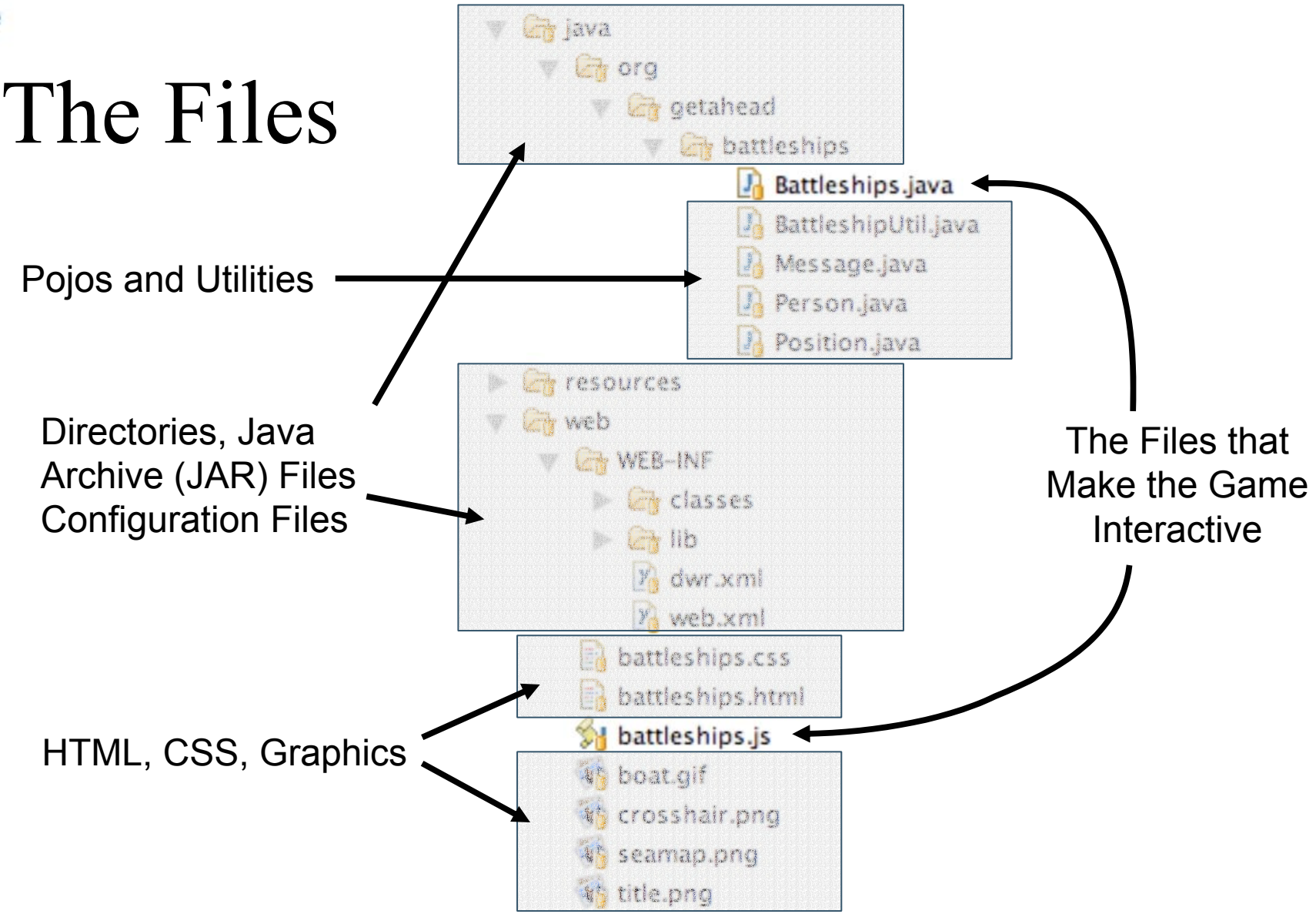
```
body { margin:0px 40px 0px 40px; color:#fff; background-color:#000;
  font-family:'Century Gothic', Helvetica, Arial, clean, sans-serif;
}

select, textarea, input[type='text'], input[type='password'] {
  font-family:'Century Gothic', Helvetica, Arial, clean, sans-serif;
  font-size:1em; padding:0px 3px; margin:2px; border:1px solid #999;
  background-color:#444; color:#fff;
}

button, input[type='button'], input[type='submit'], input[type='cancel'] {
  font-family:'Century Gothic', Helvetica, Arial, clean, sans-serif;
  font-size:1em; color:#fff; background-color:#000;
}

table { border-collapse:collapse; }

#map { background-image:url("seamap.png"); background-position:right;
  border:10px dashed #484; margin-top:10px; padding-bottom:10px;
}
#map td { width:60px; height:70px; border:1px solid #999;
  background-repeat:no-repeat; background-position:center;
}
#map td:hover { background-image:url("crosshair.png"); }
#map .home { background-image:url("boat.gif"); }

#chatlog { list-style-type:none; padding:0; margin:0; }
#chatlog .chatname { font-size:70%; }
#chatlog .chattext { font-size:80%; }

#sidebar { position:absolute; top:0; right:0; width:350px; padding:10px; border-left:1px solid #999; }

#shotouter { background-color:#112; float:right; border:1px solid #334;
  width:200px; height:24px; margin-right:80px;
}

#shotinner { width:0px; height:16px; margin:3px 6px; background-color:red;
  color:#fff; white-space:nowrap; font-size:70%;
}
```


Multi Player Battleships
Name: Barbarian Bob
Position: Row 0 , Column 3
Shot: Shooting at: row=2, col=3
Player Score
Terminator Mark 1
Joe the Pitiless 0
Bloodsucker Ming -1
Barbarian Bruce 1
Barbarian Bob 2
Leon the Hunn -4
Send
Barbarian Bob: heh!
System: Barbarian Bob fragged Bloodsucker Ming
System: Barbarian Bob fragged Joe the Pitiless
Bloodsucker Ming: hello
Joe the Pitiless: Sean the Pitiless has become Joe the Pitiless
Joe the Pitiless: hello everyone
System: Sean the Pitiless fragged Leon the Hunn
System: Barbarian Bruce fragged Leon the Hunn
Barbarian Bruce: woot!
System: Barbarian Bruce fragged himself!
System: Barbarian Bruce fragged Leon the Hunn
System: Terminator Mark fragged Leon the Hunn

The Design


Battleships
(players)
messages
1
1
*
*
Message
id
text
author
*
1
Person
name
position
color
score
*
1
Position
row
col

The Files


java
org
getahead
battleships
Battleships.java
BattleshipUtil.java
Message.java
Person.java
Position.java
Pojos and Utilities
resources
web
WEB-INF
classes
lib
dwr.xml
web.xml
Directories, Java Archive (JAR) Files Configuration Files
battleships.css
battleships.html
battleships.js
boat.gif
crosshair.png
seamap.png
title.png
HTML, CSS, Graphics
The Files that Make the Game Interactive

The Messages

- Browser-to-Server
  - init()
  - sendMessage()
  - shoot()
- Server-to-Browser
  - serverUpdate()

DEMO

The Game

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Where Does DWR Fit?

In the tradition of good Unix® software tools,

DWR does one job and does it well.

As a result; DWR fits in a wide range of web applications

Where Does DWR Fit?

- For some Ajax magic with Struts 1.0
- With newer Spring, Webwork, JavaServer™ Faces technology or RIFE code
- By itself with dwr.util
- As the service layer to a Scriptaculous or Dojo application
- In the enterprise with TIBCO GI and a service-oriented architecture

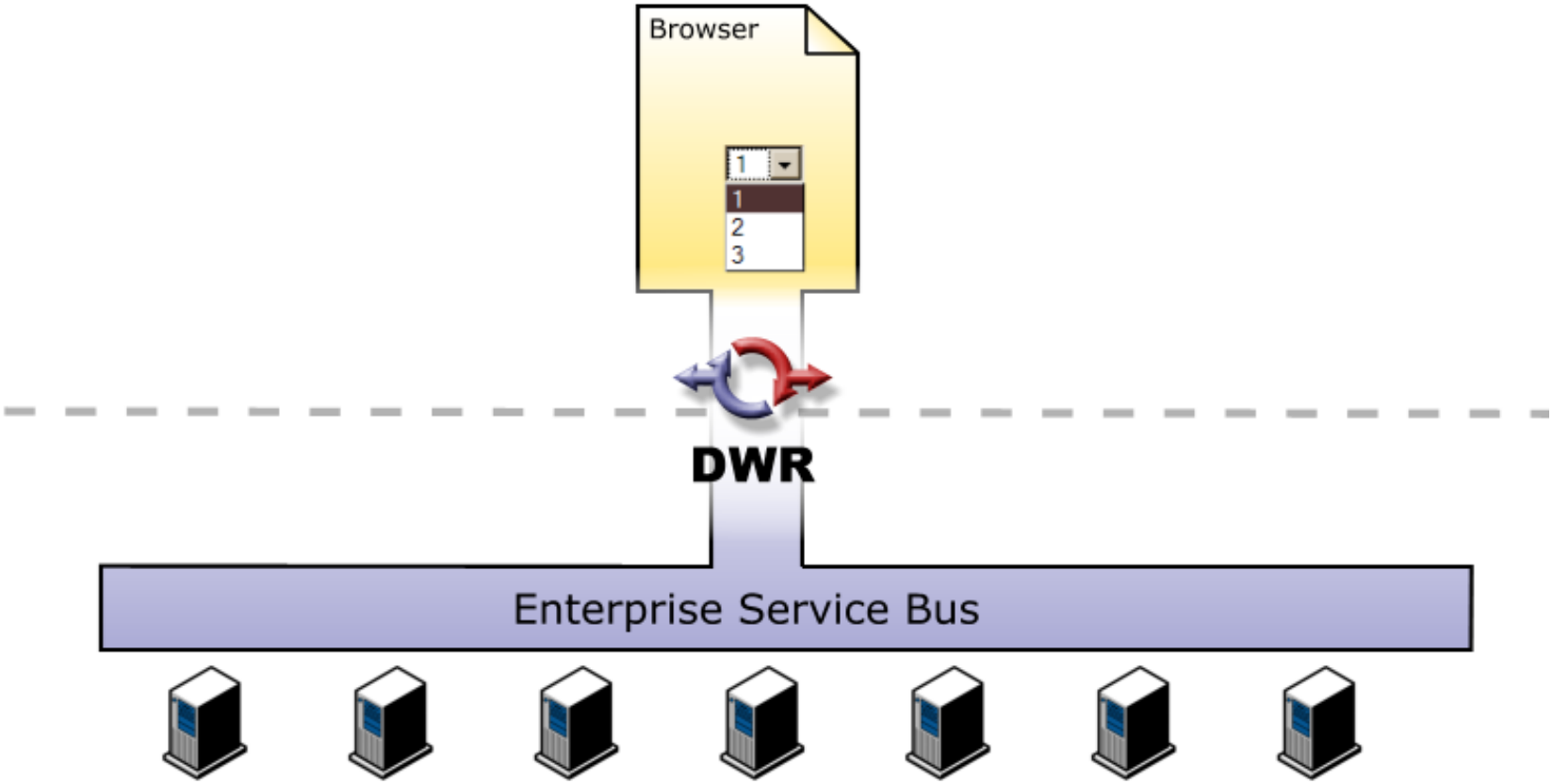
DEMO

Integrating with other Ajax libraries

DWR + OpenAjax + TIBCO GI

- Publish/Subscribe architecture
- No dependency between TIBCO GI and DWR
- Benefits of decoupling:
  - Easy to provide multiple implementations
  - Easy testing
  - Better forward compatibility

Extending the Enterprise



Summary

- It's dead easy to get going with DWR
- You can use it to create advanced applications without large amounts of code
- Reverse Ajax allows your applications to have high levels of user interactivity
- It fits in your current web application without requiring you to start from scratch

For More Information

- http://directwebremoting.org/
- http://getahead.org/blog/joe/
- http://www.tibco.com/devnet/gi/

Q&A

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