

# JBoss Community

# 'POLY-FRAMEWORK' WEB APPLICATIONS WITH JAVA EE

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JAX 2013 - Santa Clara  
2013-06-05

# THE PLAN

Web applications implemented with

- multiple web frameworks
- preserving a consistent experience



# WHO AM I?

Senior Software Engineer at Red Hat  
RichFaces Project Lead



# THE PROBLEM...

We want to mix web frameworks so we can:

- modernize a legacy application
- accomodate teams with disparate expertise
- use the best tool for the job

**... use the shiny new technology**

# DEMO

<https://polyglotwidgets-richfaces.rhcloud.com/>

# GENERAL CONSIDERATIONS

## Client-side

- Consistent L&F
- Consistent behaviour

## Server-side

- Shared state
- Programming model

# USE A CSS FRAMEWORK



- Web-framework independent
- Re-usable accross frameworks



# CSS FRAMEWORKS

Bootstrap: <http://twitter.github.com/bootstrap>

Foundation: <http://foundation.zurb.com/>

GroundWorkCSS: <http://groundwork.sidereel.com>

Ink: <http://ink.sapo.pt/>

Gumby: <http://gumbyframework.com/>

Maxmertkit: <http://www.maxmert.com/>

Responsive Grid System:

<http://www.responsivegridsystem.com/>

Base: <http://matthewhartman.github.com/base/>

Home Get started Scaffolding Base CSS Components JavaScript Customize Bootstrap

# Bootstrap

Sleek, intuitive, and powerful front-end framework for faster and easier web development.

Download Bootstrap

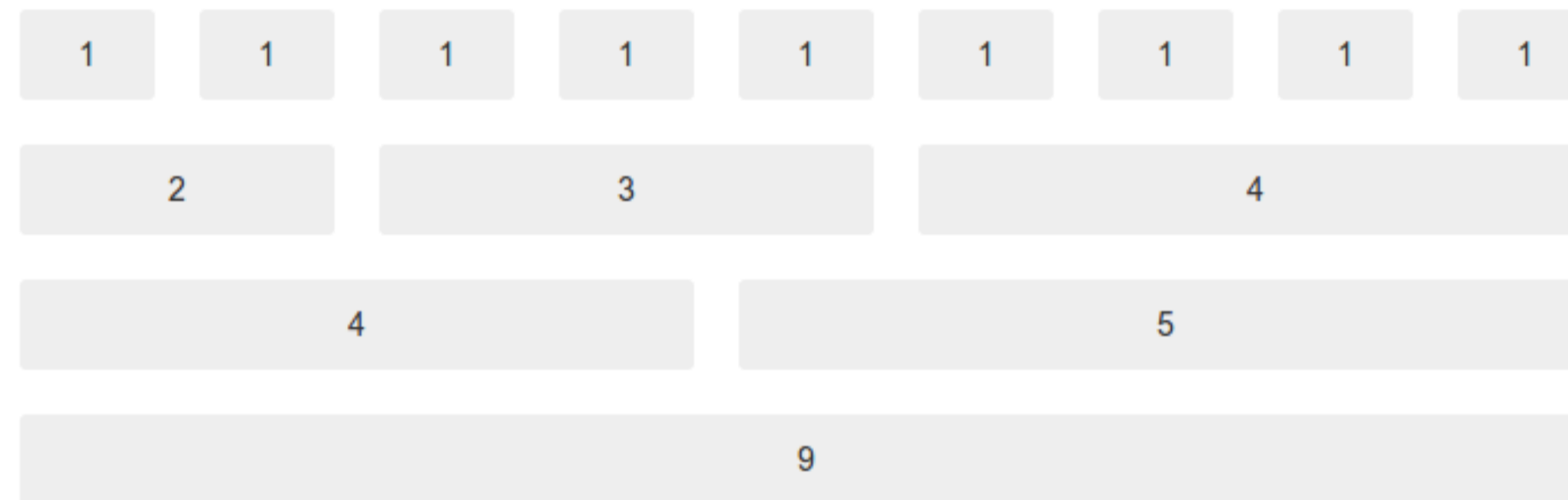
GitHub project Examples Extend Version 2.3.2

Star 50,848 Fork 16,006 Follow @twbootstrap 65K followers Tweet 18.3K

# BOOTSTRAP | SCAFFOLDING

## Live grid example

The default Bootstrap grid system utilizes **12 columns**, making for a 940px wide container without [responsive features](#) enabled. With the responsive CSS file added, the grid adapts to be 724px and 1170px wide depending on your viewport. Below 767px viewports, the columns become fluid and stack vertically.



<http://twitter.github.io/bootstrap/scaffolding.html>

# BOOTSTRAP | BASE CSS

## Default styles

For basic styling—light padding and only horizontal dividers—add the base class `.table` to any `<table>`.

Example

#	First Name	Last Name	Username
1	Mark	Otto	@mdo
2	Jacob	Thornton	@fat
3	Larry	the Bird	@twitter

```
1. <table class="table">
2.   ...
3. </table>
```

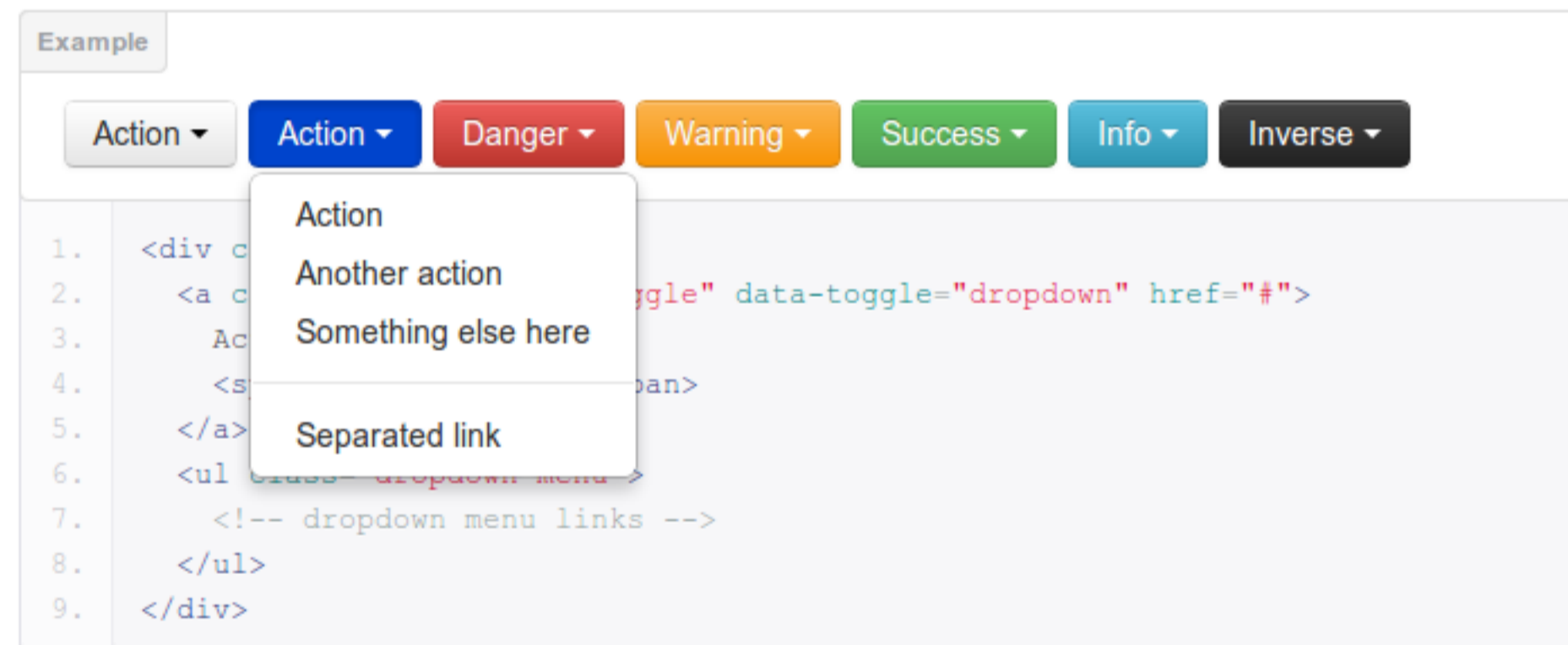
<http://twitter.github.io/bootstrap/base-css.html>

# BOOTSTRAP | COMPONENTS

## Overview and examples

Use any button to trigger a dropdown menu by placing it within a `.btn-group` and providing the proper menu markup.

Example



The screenshot displays a row of seven buttons: a grey 'Action' button, a blue 'Action' button, a red 'Danger' button, an orange 'Warning' button, a green 'Success' button, a cyan 'Info' button, and a dark grey 'Inverse' button. The blue 'Action' button is active, showing a dropdown menu with four items: 'Action', 'Another action', 'Something else here', and 'Separated link'. Below the buttons is a code editor showing the HTML markup for the button group and dropdown menu.

```
1. <div class="btn-group">
2.   <a class="btn btn-primary" data-toggle="dropdown" data-togggle="dropdown" href="#">
3.     Action
4.   </a>
5.   <span class="dropdown-menu">
6.     <!-- dropdown menu links -->
7.   </span>
8. </div>
```

<http://twitter.github.io/bootstrap/components.html>

# BOOTSTRAP | CUSTOMIZABLE

## 3. Customize variables

Reset to defaults

### Scaffolding

@bodyBackground

@white

@textColor

@grayDark

### Links

@linkColor

#08c

### Typography

@sansFontFamily

'Helvetica Neue', Helvetica, I

@serifFontFamily

Georgia, 'Times New Roman', T:

@monoFontFamily

Menlo, Monaco, 'Courier New',

@baseFontSize

14px

### Form states & alerts

@warningText

#c09853

@warningBackground

#fcf8e3

@errorText

#b94a48

@errorBackground

<http://twitter.github.io/bootstrap/customize.html#variables>

# <http://lesscss.org/>

```
@base: #f938ab;

.box-shadow(@style, @c) when (iscolor(@c)) {
  box-shadow:          @style @c;
  -webkit-box-shadow: @style @c;
  -moz-box-shadow:     @style @c;
}

.box-shadow(@style, @alpha: 50%) when (isnumber(@alpha)) {
  .box-shadow(@style, rgba(0, 0, 0, @alpha));
}

.box {
  color: saturate(@base, 5%);
  border-color: lighten(@base, 30%);
  div { .box-shadow(0 0 5px, 30%) }
}
```

# LESS | VARIABLES

```
@nice-blue: #5B83AD;  
@light-blue: (@nice-blue + #111);  
  
#header { color: @light-blue; }
```

css output:

```
#header { color: #6c94be; }
```

<http://lesscss.org/#-variables>



# LESS | MIXINS

```
.bordered {  
  border-top: dotted 1px black;  
  border-bottom: solid 2px black;  
}
```

mix in:

```
#menu a {  
  color: #111;  
  .bordered;  
}  
.post a {  
  color: red;  
  .bordered;  
}
```

<http://lesscss.org/#-mixins>

# LESS | PARAMETRIC MIXINS

```
.border-radius (@radius) {  
  border-radius: @radius;  
  -moz-border-radius: @radius;  
  -webkit-border-radius: @radius;  
}
```

mix in:

```
#header {  
  .border-radius(4px);  
}  
.button {  
  .border-radius(6px);  
}
```

<http://lesscss.org/#-parametric-mixins>

# LESS | NESTING

```
#header {  
  color: black;  
}  
#header .navigation {  
  font-size: 12px;  
}  
#header .logo {  
  width: 300px;  
}  
#header .logo:hover {  
  text-decoration: none;  
}
```

```
#header {  
  color: black;  
  
  .navigation {  
    font-size: 12px;  
  }  
  
  .logo {  
    width: 300px;  
    &:hover {text-decoration: none}  
  }  
}
```

<http://lesscss.org/#-nested-rules>

# LESS | OPERATIONS

```
@base: 5%;  
@filler: (@base * 2);  
@other: (@base + @filler);  
  
color: (#888 / 4);  
background-color: (@base-color + #111);  
height: (100% / 2 + @filler);
```

<http://lesscss.org/#-operations>

# LESS | BUILT-IN FUNCTIONS

```
@base: #f04615;  
@width: 0.5;  
  
.class {  
  width: percentage(0.5); // returns `50%`  
  color: saturate(@base, 5%);  
  background-color: spin(lighten(@base, 25%), 8);  
}
```

<http://lesscss.org/#-functions>

# COMPILING LESS

Javascript:

- less.js

Java (less.js via rhino):

- lesscss-java
- wro4j

#### Overview:

RichFaces is a component library for JSF and an advanced framework for easily integrating AJAX capabilities into business applications.

- 100+ AJAX enabled components in two libraries
- a4j: page centric AJAX controls
- rich: self contained, ready to use components
- Whole set of JSF benefits while working with AJAX
- Dynamic resources handling
- Testing facilities for components, actions, listeners, and pages
- Large and active community



#### JSF 2 and RichFaces 4:

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#### JSF 2 and RichFaces 4:

```
@import "lib/bootstrap/less/variables.less";
@import "lib/bootstrap/less/mixins.less";

.skin {

  .rf-ac, .rf-ac-itm-hdr, .rf-ac-itm-cnt, .rf-ac-itm-hdr {
    font-size: @baseFontSize;
    font-family: @baseFontFamily;
    line-height: @baseLineHeight;
    border-color: @navbarBorder;
    background-color: @white;
    border: none;
  }

  .rf-ac {
    border: 1px solid @navbarBorder;
    border-top: none;
    .border-radius(@baseBorderRadius);
    overflow: hidden;
  }

  .rf-ac-itm-hdr {
    border-top: 1px solid @navbarBorder;
    background-image: none;
    padding: 5px 15px;
    color: @linkColor;
  }

  .rf-ac-itm-cnt {
    border-top: 1px solid @navbarBorder;
    padding: 10px 16px;
  }
}
```



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@import "lib/bootstrap/less/variables.less";  
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```

```
.skin {  
  
  .rf-ac, .rf-ac-itm-hdr, .rf-ac-itm-cnt, .rf-ac-itm-hdr {  
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    font-family: @baseFontFamily;  
    line-height: @baseLineHeight;  
    border-color: @navbarBorder;  
    background-color: @white;  
    border: none;  
  }  
  
  .rf-ac {  
    border: 1px solid @navbarBorder;  
    border-top: none;  
    .border-radius(@baseBorderRadius);  
    overflow: hidden;  
  }  
  
  .rf-ac-itm-hdr {  
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    background-color: @white;
    border: none;
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  }

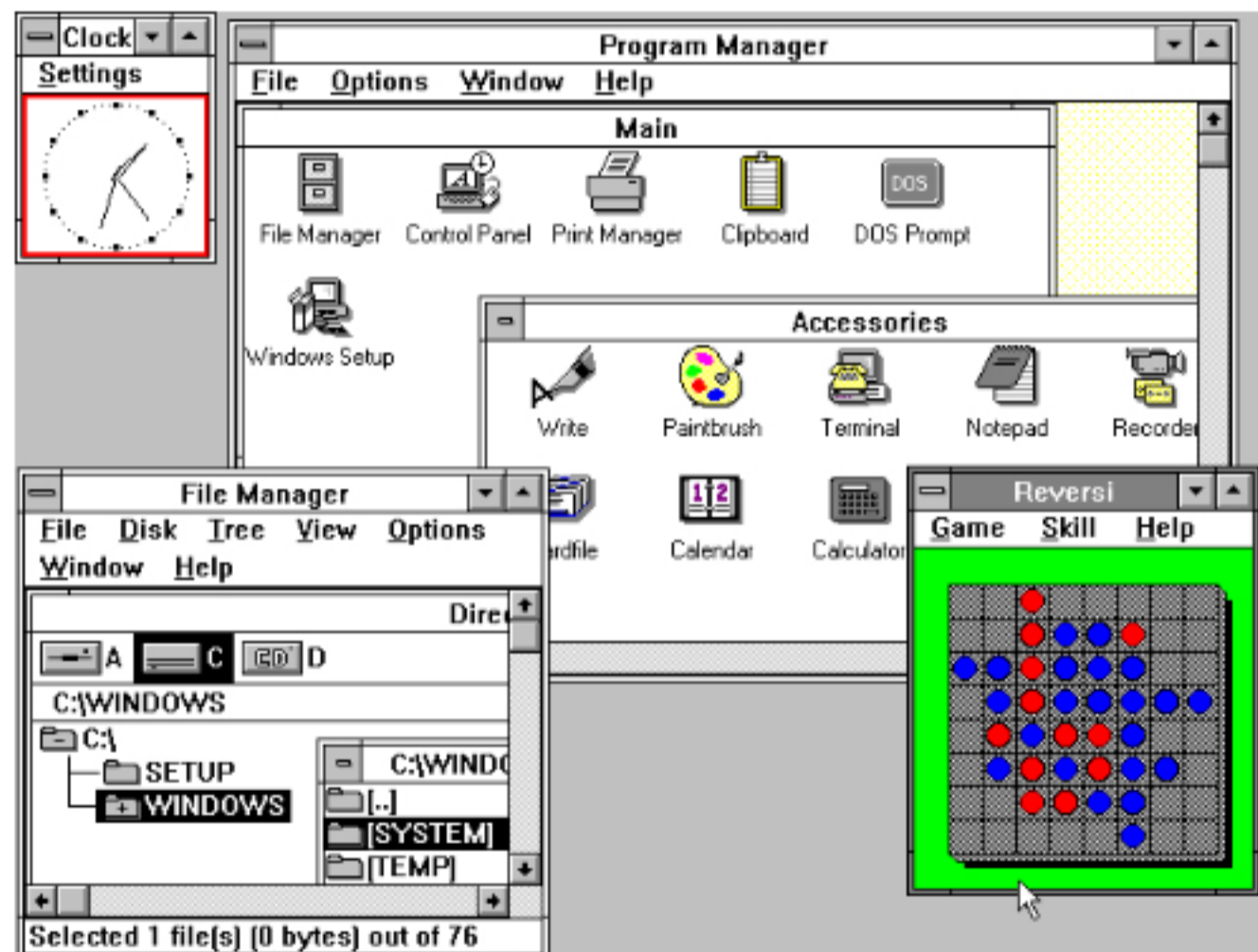
  .rf-ac-itm-cnt {
    border-top: 1px solid @navbarBorder;
    padding: 10px 16px;
  }
}
}

```

# DEMO

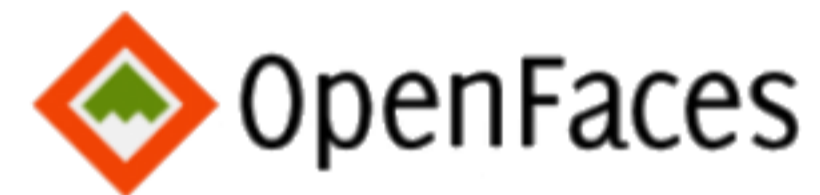
<http://localhost:8000/accordion.html#!watch>

# ... AND FEEL



- Behaviour
- "Moving" parts

# JSF COMPONENTS



# GWT LIBRARIES



GWT built-in components

Sencha GXT

GWT Components Library

GWT-EXT

Rocket GWT

Tatami

SmartGWT

Vaadin



# HTML 5 WIDGETS



jQuery UI

Kendo UI

jQuery Widgets

YUI

jQuery TOOLS

Sencha Ext JS

# JQUERY UI

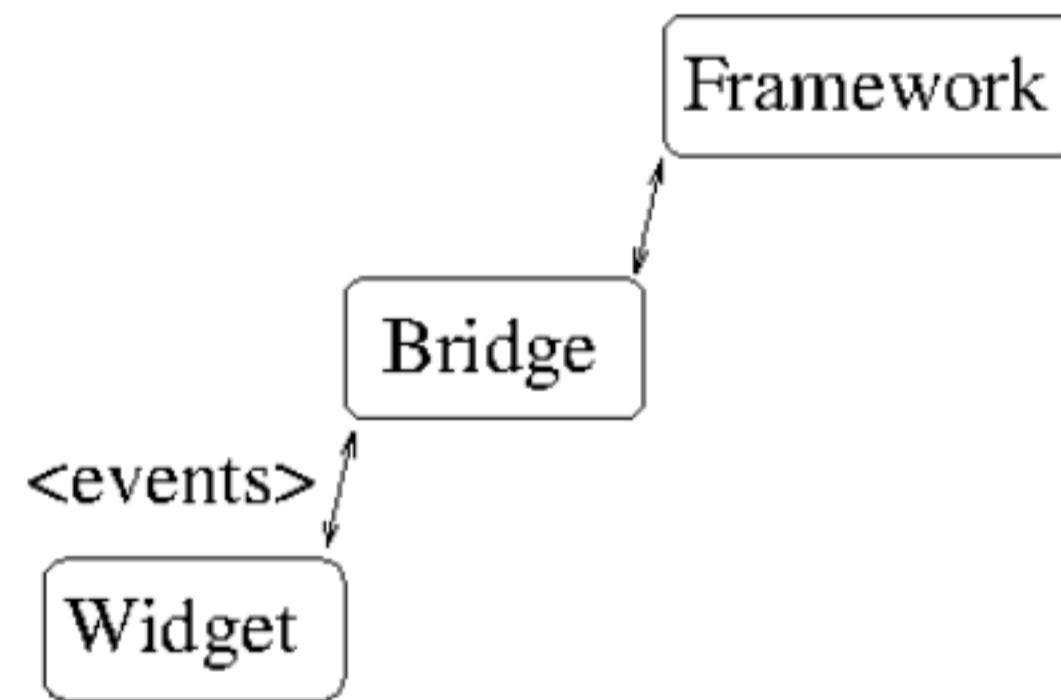
# RICHFACES WIDGETS



- Standalone javascript widgets
- Framework independent
- <http://www.w3.org/TR/NOTE-HTMLComponents>
- Used in RichFaces 5

<https://github.com/richfaces/richfaces-widgets>

# RICHFACES WIDGETS



- Event based architecture
- Loosely coupled to backend framework

# EXAMPLE

PickList Widget:

The image shows a 'PickList Widget' with two rectangular containers. The left container contains a list of city names: Vancouver, Toronto, New York, Santa Clara, London, Paris, Moscow, and Tokyo. The right container contains the name 'Sydney'. Between the two containers is a vertical bar with four navigation arrows: a double left arrow at the top, a single left arrow, a single right arrow, and a double right arrow at the bottom. On the right side of the 'Sydney' container is another vertical bar with four navigation arrows: a single up arrow at the top, a single up arrow, a single down arrow, and a single down arrow at the bottom.

# SERVER-SIDE



- Shared server state
- Consistent programming model
- Front-end independent

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## CDI

# CDI | DEPENDENCY INJECTION

Retrieve a contextual instance of a Bean

```
public class CapitalsObserver {  
    @Inject  
    CapitalsBean capitalsBean;  
  
    @Inject @Push(topic = "capitalsSelected")  
    private Event jsfEvent;  
  
    ....  
}
```



# CDI | CONTEXTS

Scope:

- determines lifecycle of instances
- maps clients to instances

Context:

- implements the scope

@SessionScoped @RequestScoped @DependentScoped  
@ConversationScoped @ApplicationScoped

# CDI | CONTEXTS

```
...
@SessionScoped
public class CapitalsBean {
    ...
    @PostConstruct
    public void init() {
        selectedCapitals = new ArrayList();
        selectedCapitals.add(capitals.get(0));
    }
    ...
}
```

# CDI | EVENTS

Event producer:

```
public class CapitalsBean {
    @Inject @Server
    private Event serverEvent;
    ...
    public void setSelectedCapitals(List selected) {
        this.selectedCapitals = selected;
        serverEvent.fire(new CapitalsSelected(selected));
    }
}
```

# CDI | EVENTS

Event observer:

```
public class CapitalsObserver {  
  
    public void observeClientEvent(  
        @Observes @Client  
        CapitalsSelected capitalsSelected) {  
        ...  
    }  
  
    public void observeServerEvent(  
        @Observes @Server  
        CapitalsSelected capitalsSelected) {  
        ...  
    }  
}
```

# SERVER SENT EVENTS

## **RichFaces**

*RichFaces Push*

## **Errai**

*Errai RPC*

## **HTML 5/Javascript**

*Atmosphere Framework*

# CREDITS

<http://openclipart.org/detail/22860/money-bag-icon-by-chovynz>

<http://openclipart.org/detail/29356/bug-by-ddoo>

<http://openclipart.org/detail/171299/indecisive-silhouette.svg-by-tulvur-171299>

<http://openclipart.org/detail/89245>

[http://commons.wikimedia.org/wiki/File:Windows\\_3.1x\\_Captura.jpg](http://commons.wikimedia.org/wiki/File:Windows_3.1x_Captura.jpg)



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Based on a work at [github.com](https://github.com).

Permissions beyond the scope of this license may be available at <https://github.com/bleathem/talks/tree/master/2013-JAX>.

# FURTHER READING

## **Blog**

<http://www.bleathem.ca/blog/2012/11/polyglot-widgets.html>

## **Source**

<https://github.com/bleathem/polyglot-widgets>

## **richfaces-widgets**

<https://github.com/richfaces/richfaces-widgets>

# STAY IN THE LOOP

Project:	<a href="http://richfaces.org/">http://richfaces.org/</a>
Twitter (me):	@bleathem
Google+:	+RichFaces
Forums:	RichFaces User Forum
IRC	#richfaces
Slides:	<a href="http://www.bleathem.ca/talks/2013-JAX">http://www.bleathem.ca/talks/2013-JAX</a>