



# Java Enterprise Solutions Using ArcGIS API For Javascript

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# Overview

- **Java developers have had issues with how to effectively integrate GIS maps and data into their web applications for many years.**
- **In addition, most Java developers are not as attuned to graphic and user interface (UI) design as graphic artists and UI specialists.**
- **To solve this problem on the user presentation side, Java Server Faces (JSF) was developed and several third-party component libraries, such as PrimeFaces, OpenFaces, ICEFaces, were developed to help solve this problem.**
- **The same is true for map integration into Java web applications and that is why GISFaces was created.**
- **This discussion explains how these tools are combined to provide incredible enterprise applications for clients.**

# Topics for Discussion

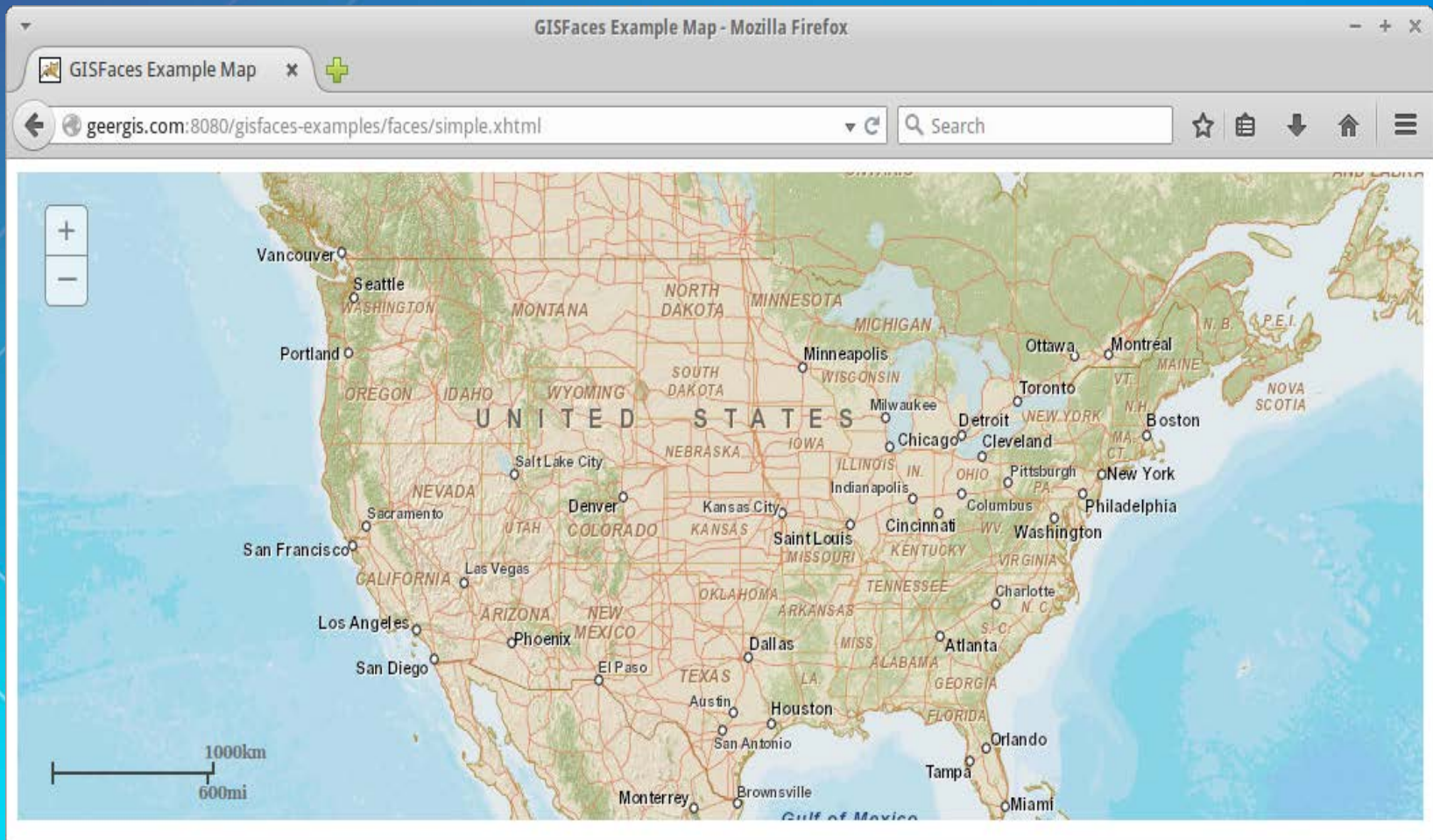
- **What is GISFaces?**
- **Simple Example**
- **Why the need?**
- **What are the features?**
- **Why use the ESRI ArcGIS API for JavaScript?**
- **Why use JavaServer Faces?**
- **Advanced Example**
- **What are the requirements?**
- **What is next?**
- **How to get more information about GISFaces?**
- **Questions**



# What is GISFaces?

- **Java Enterprise Edition (EE) component library for GIS mapping.**
- **Core technologies used are the ESRI ArcGIS API for JavaScript and JavaServer Faces.**
- **Library includes reusable components which hide low level details of web mapping.**
- **Provides tight coupling between Java and GIS in a web environment.**
- **JSF web pages are created using a declarative xhtml markup.**

# Simple Example - Map



# Simple Example - Code

```
http://geergis.com:8080/gisfaces-examples/simple.xhtml - Mozilla Firefox
http://geergis.com:8080/gi... x
view-source:http://geergis.com:8080/gisfaces-examples/simple.xhtml Search
1 <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
2
3 <html xmlns="http://www.w3.org/1999/xhtml"
4     xmlns:f="http://java.sun.com/jsf/core"
5     xmlns:h="http://java.sun.com/jsf/html"
6     xmlns:gis="http://gisfaces.com">
7
8 <h:head>
9     <title>GISFaces Example Map</title>
10 </h:head>
11
12 <h:body>
13     <h:form>
14         <h:panelGroup id="panel1" layout="block" styleClass="gisfacesMapPanel"></h:panelGroup>
15         <gis:map mapPanel="panel1" background="streets" latitude="39.828175" longitude="-98.5795" zoom="4"></gis:map>
16     </h:form>
17 </h:body>
18
19 </html>
20
```



## Why the need for GISFaces?

- **No product currently exists that leverages these technologies.**
- **The ESRI Java Web ADF is deprecated.**
- **Reusable library that hides the complexity of the interaction between JSF and the ESRI ArcGIS API for JavaScript.**
- **Allows any page author or developer to easily create a GIS map in a web page.**
- **No need to be a Java, JavaScript, ESRI JSAPI, or GIS expert.**



## What are the features of GISFaces?

- Uses the ESRI ArcGIS API For JavaScript mapping engine.
- Supports ESRI tiled, image, and dynamic map services.
- Supports KML, feature, and graphics layers.
- Supports the 10 standard ESRI tiled backgrounds.
- Graphics layers support marker, polyline, polygon, circle, and text graphics.
- Graphics layer markers support drag and drop functionality.
- Ability to add multiple services and set opacity, refresh interval, and min/max scales per service.
- Dynamic map services support layer visibility and definition expressions for filtering.

## What are the features of GISFaces? (Continued)

- Support for legend, overview, navigation, and geocoder widgets in separate panels.
- Options to show a scalebar, logo, attribution, latitude/longitude coordinates, and a progress bar in separate panels.
- Supports <f:ajax> events “click”, “extent”, “view”, “select”, “drag”, and “geolocation”.
- Supports feature identification, highlight, and attribute table via <f:ajax> listener.
- Supports custom map LOD (level of detail) levels and layer min/max scale ranges.
- Supports automatic map layer refreshes at specified intervals.
- Ability to use a locally hosted ESRI JSAPI for environments behind a firewall or without Internet access.

# Why use the ESRI ArcGIS API for JavaScript?

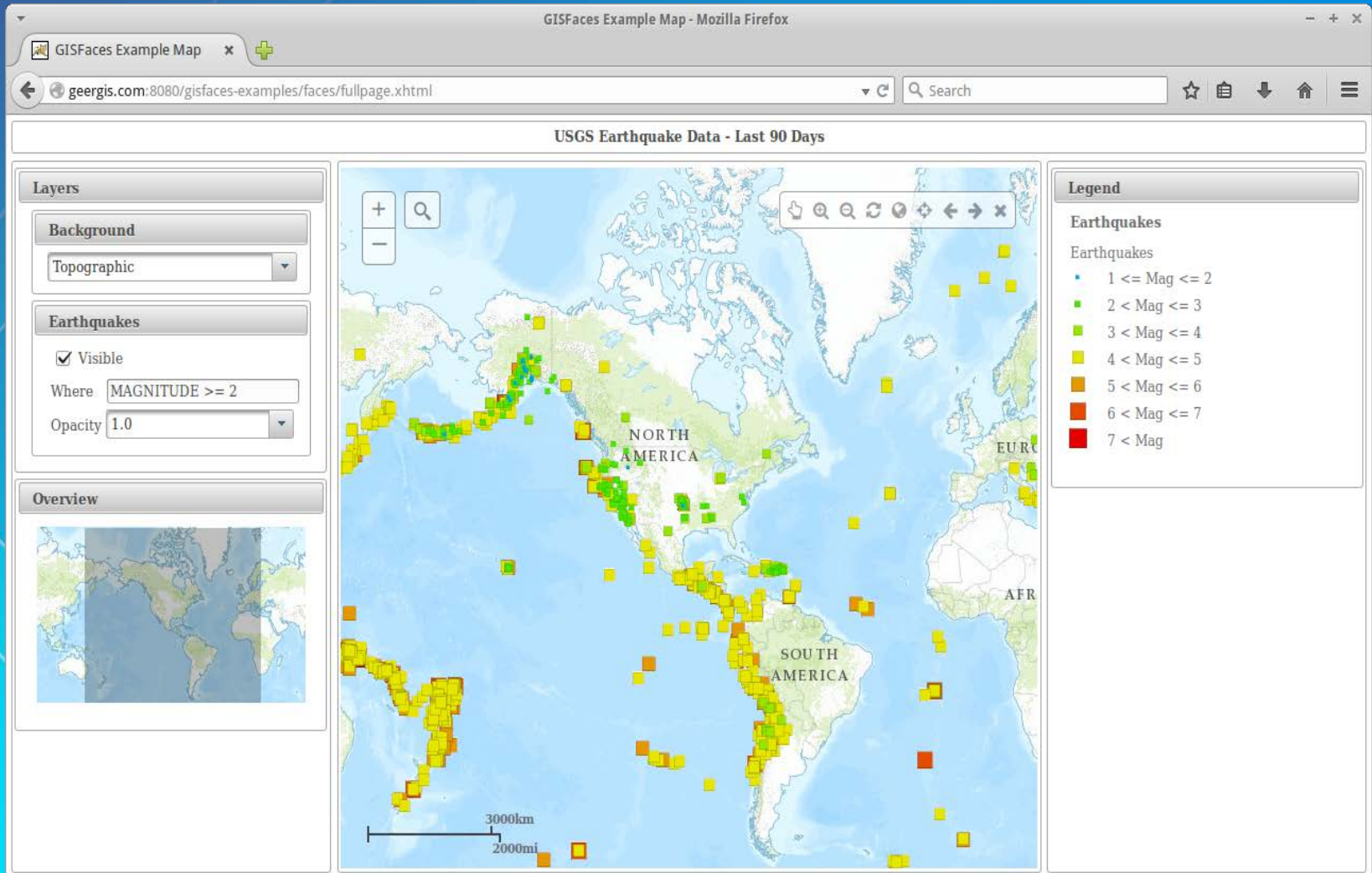
- The ESRI ArcGIS API for JavaScript is a feature-rich, browser-based mapping engine.
- Based on JavaScript, not third-party plugins, which are issues within some organizations and governments.
- It is a fast, lightweight, and simple library.
- Uses Open Standards such as JavaScript, REST, and JSON.
- Has a broad target audience in terms of device and browser support.
- The website is <https://developers.arcgis.com/javascript/>.



# Why use JavaServer Faces?

- JSF technology greatly simplifies building web pages.
- Is the de facto standard in Java web development.
- Component-based framework.
- Event driven programming model with AJAX built in.
- Contains a feature rich, reusable set of high and low level components.
- Component model which allows third party development of custom components, like **GISFaces**.
- Many third party libraries are freely available and include **PrimeFaces**, **RichFaces**, **IceFaces**, **OpenFaces**, **MyFaces**.
- The website is <https://javaserverfaces.java.net/>.

# Advanced Example - Map



# Advanced Example - Code

```
http://geogis.com:8080/gisfaces-examples/fullpage.xhtml - Mozilla Firefox
http://geogis.com:8080/gi... x
view-source:http://geogis.com:8080/gisfaces-examples/fullpage.xhtml
67     </h:panelGroup>
68     </p:panel>
69     </p:layoutUnit>
70
71     <p:layoutUnit position="east" size="300">
72         <p:panel header="Legend">
73             <h:panelGroup styleClass="gisfacesLegendPanel" layout="block">
74                 <h:panelGroup id="legend" layout="block"></h:panelGroup>
75             </h:panelGroup>
76         </p:panel>
77     </p:layoutUnit>
78
79     <p:layoutUnit position="center">
80         <h:panelGroup id="mymapdiv" styleClass="gisfacesMapPanel" layout="block">
81             <h:panelGroup id="navbar" layout="block" styleClass="gisfacesNavbarPanel"></h:panelGroup>
82             <h:panelGroup id="loading" styleClass="gisfacesLoadingPanel" layout="block">
83                 <h:panelGroup styleClass="fa fa-refresh fa-spin"></h:panelGroup>
84             </h:panelGroup>
85             <h:panelGroup styleClass="gisfacesGeocoderPanel" layout="block">
86                 <h:panelGroup id="geocoder" layout="block"></h:panelGroup>
87             </h:panelGroup>
88             <h:panelGroup id="coordinates" styleClass="gisfacesCoordinatesPanel" layout="block"></h:panelGroup>
89         </h:panelGroup>
90     </p:layoutUnit>
91
92 </p:layout>
93
94 <gis:map id="mymap" mapPanel="mymapdiv" overviewPanel="overview" geocoderPanel="geocoder" legendPanel="legend" coordinatesPanel="coordinates" loadingPanel="loading" na
95 <gis:service type="dynamic" url="http://tmservices1.esri.com/arcgis/rest/services/LiveFeeds/Earthquakes/MapServer" opacity="{mapBean.opacity}">
96     <gis:layer number="0" visible="{mapBean.visible}" where="{mapBean.where}"></gis:layer>
97 </gis:service>
98 <f:ajax event="click" render="growl1" listener="{mapBean.doMapClickListener}"></f:ajax>
99 <f:ajax event="extent" render="growl1" listener="{mapBean.doMapExtentListener}"></f:ajax>
100 <f:ajax event="view" render="growl1" listener="{mapBean.doMapGraphicViewListener}"></f:ajax>
101 <f:ajax event="select" render="growl1" listener="{mapBean.doMapGraphicSelectListener}"></f:ajax>
102 <f:ajax event="geolocation" render="growl1" listener="{mapBean.doMapGeoLocationListener}"></f:ajax>
103 </gis:map>
104
105 </h:form>
106 </h:body>
107
108 </html>
```

# What are the requirements to use GISFaces?

- **Java 8 or greater.**
- **JavaServer Faces 2 or greater.**
- **Java web container such as Glassfish, WildFly, Tomcat, or WebSphere.**
- **Access to the ESRI ArcGIS API For JavaScript API via Internet or local hosting.**
- **Some options may require map services hosted on ESRI ArcGIS Server 10 or greater.**

## What is next for GISFaces?

- Support graphics layer geometry edits including drag, scale, rotate, and vertices editing for polygons.
- Convert to a dynamic map model defining services and layers instead of declarative XHTML markup.
- Allow custom popup content using a template or JavaScript callback function.
- Considering support for the ESRI/Leaflet mapping engine.

# Example Applications

Home Maps Company Facility Maritime Administration Logout User: Pat Geer

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Facility / Berth Detail Map

Background: Hybrid Company Name: Enter Company Name Facility Name: Chesapeake Berth Name: Enter Berth Name Search Reset

**Selected Map Feature**

Chesapeake - Buckeye

<b>Address</b>	<b>Agent</b>	<b>Contact</b>
4020 Buell Street Chesapeake, Virginia 23224	T. Parker Host (757) 627-6286	(757) 543-2061
<b>Permit Type</b>	<b>Permit Expiration</b>	<b>Last Dredge Date</b>
		10/01/1989
<b>Survey Frequency</b>	<b>Last Survey Date</b>	<b>Next Survey Date</b>
24 Months	05/01/2013	05/01/2015

**Attachments** **Comments**

**Barge Berth**

**Ship Berth**

<b>Length</b>	<b>Minimum Vessel Length</b>	<b>Maximum Vessel Length</b>
267	275	750
<b>Beam</b>	<b>BCM Restriction</b>	<b>DWT</b>
145	375	70000
<b>Deck Level</b>	<b>Mooring Points</b>	<b>Draft Restriction</b>
12.8	4 bollards, 2 barge cleats, 8 quick release hooks	33
<b>Tug Requirement</b>	<b>Line Boats</b>	<b>Pilotage Hours</b>



# Example Applications

Home Map Facility Asset Administration Logout Username: mark Roles: [user, admin]

### Control Panel

**Layers**

**Background**  
ESRI Satellite

**Building**

Show All Facilities  
 Show All Assets  
 Show Facility Boundaries

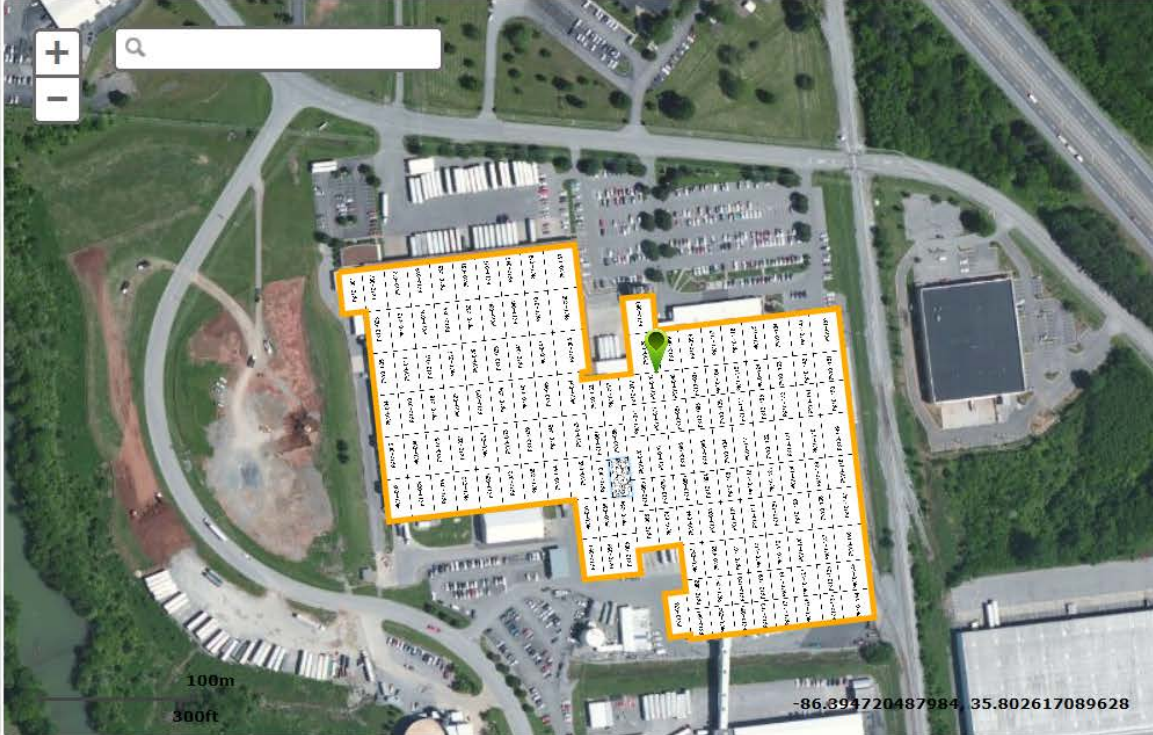
**Weather**  
Refresh Reset

**Legend**

**Operational Layers**

- Facility

**World Imagery**  
World Imagery



The main map area displays an aerial satellite view of a facility. A large, irregularly shaped area is outlined in orange, representing the facility's boundary. Overlaid on this boundary are several data tables. Each table contains columns for 'Name', 'ID', 'Type', 'Status', 'Location', and 'Description'. The tables are arranged in a grid-like pattern across the facility's footprint. A search bar is located at the top left of the map area, and a scale bar at the bottom left indicates 100m and 300ft. A coordinate string '-86.394720487984, 35.802617089628' is visible at the bottom right of the map.

# Example Applications

Home | Map | Facility | Asset | Administration | Logout Username: mark Roles: [user, admin]

### Control Panel

**Layers**

Background: ESRI Satellite

**Building**

- Show All Facilities
- Show All Assets
- Show Facility Boundaries

**Weather**

Refresh Reset

**Legend**

Operational Layers

- Facility
- Asset

No legend

### ControlLogix Eagle Wrapper - right hand

[ControlLogix Eagle Wrapper - right hand](#)

Asset ID	2153
Asset Name	ControlLogix Eagle Wrapper - right hand
Manufacturer	Eagle
Serial Number	987-654322
Drawing	<a href="#">Details</a>
Service Manual	<a href="#">Details</a>
User Manual	<a href="#">Details</a>

[Zoom to](#)

# How to get more information about GISFaces?

- Visit us at <http://www.gisfaces.com>.



- Download the .zip file which contains the binary .jar, javadoc .jar, and example .war files.
- Run live examples.
- Please give us your feedback!



**Questions**  
and  
**Thanks for your Attention!**



# “Bringing Enterprise GIS to Java Server Faces”

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