GISFaces User Manual

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Introduction

What is GISFaces?

GISFaces is an enterprise GIS mapping component for Java Server Faces (JSF). The underlying GIS mapping engine used is the ESRI® ArcGIS API For JavaScript. Any ArcGIS service layer available, local or online, can be used in the maps you build.

Why GISFaces?

GISFaces is the only GIS mapping component available for JSF. There are other JSF mapping components, such as Google Maps, but they are not GIS in the truest sense. This library adheres to the JSF principles including tight integration of AJAX events, avoiding direct use of JavaScript in your .xhtml pages, and mostly, reuse. Best of all, no GIS programmer or analyst experience is required to start integrating GIS maps into your applications.

Functionality

- Uses the ESRI® ArcGIS API For JavaScript mapping engine.
- Supports ESRI tiled, image, and dynamic map services.
- Supports KML, feature, and graphics layers.
- Graphics layers support SVG and image 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 visual filtering and extent zooming.
- 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”, “action”, “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.
- Supports custom map label symbol images to build custom legends.
- Supports ESRI® JSAPI proxy page for advanced functionality.
- Ability to use a locally hosted ESRI® JSAPI for environments behind a firewall or without Internet access.
- GISFaces fills the void for the deprecated ESRI® Java WebADF API.

Getting Started

Requirements

- Java 6 or greater.
- JavaServer Faces 2 or greater.
- Java web container such as Glassfish, Payara, 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.

Setup

- Download the latest GISFaces release from the website.
- The download .zip file contains the library, JavaDoc, examples, and user manual.
- Copy the gisfaces .jar file to your project's WEB-INF/lib directory.
- No other configuration or setup is required.

Usage

- Add the namespace xmlns:gis="http://gisfaces.com" to your JSF XHTML web page.
- Add a single <gis:map> component specifying an output panel.
- Add zero or more <gis:service> components to the <gis:map> component.
- Add zero or more <gis:layer> components to a <gis:service> component.
- Use <gis:symbol> anywhere in your page to reference layer symbology.

Run Examples

- Deploy the gisfaces examples .war file to your local Java container.
- Open a browser using an address similar to http://localhost:8080/gisfaces-examples-1.9.0

Components

Map

The map component specifies the GIS mapping engine configuration. The major mapping attributes are specified here. The only required attribute is the output panel for the rendered map.

Attributes

Name	Default	Type	Description
id		String	The identifier for this component.
rendered	true	Boolean	The rendered indicator for this component.
background		String	Map background layer. Valid values are "streets", "satellite", "satellite-vector", "satellite-navigation-vector", "satellite-night-vector", "satellite-relief-vector", "hybrid", "topo", "topo-vector", "oceans", "gray", "gray-vector", "dark-gray", "dark-gray-vector", "terrain", "national-geographic", and "osm".
latitude	39.828175	Double	Map latitude coordinate.
longitude	-98.5795	Double	Map longitude coordinate.
zoom	3	Integer	Map zoom level. Most ESRI background layers range from 0 to 16 or 23.
zoomFactor	4	Integer	Map zoom factor. The number of levels to zoom in when the popup dialog "Zoom To" link is clicked. This is only applicable for point features since line and polygon features use their bounding extent.
lods		Integer	Map maximum levels of detail (LODS). Most ESRI background layers range from 0 to 16 or 23. Lower/higher values restrict/add zoom levels available. Values above the maximum LOD level is permitted and is quite useful for some map services.
wkid	102100	String	The spatial reference wkid for the map. Defaults to web mercator.
showSlider	true	Boolean	Slider zoom buttons visibility. Consists of the +/- buttons typically in the upper left hand corner of the map panel.
showArrows	false	Boolean	Arrow navigation buttons visibility. Consists of 8 arrow buttons located in the corners and sides of the map used for panning.

Name	Default	Type	Description
showPopup	true	Boolean	Popup dialog visibility when the map is clicked.
showPopupExport	true	Boolean	Popup dialog export link visibility.
popupActions	Select	String	Popup dialog action links. Specified as a comma delimited list of strings. An example could be "Select,Edit,Delete" depending on application functionality. Action links are only visible if an “action” event listener is registered. The MapGraphicActionEvent event will return the clicked action and feature attributes.
popupWidth	400	Integer	Popup dialog width in pixels.
popupHeight	200	Integer	Popup dialog maximum height in pixels. Window height will shrink based on data present.
showScalebar	true	Boolean	Scalebar control visibility.
showLogo	false	Boolean	Logo visibility.
showAttribution	false	Boolean	Layer attribution text visibility.
mapPanel		String	Panel for map control.
legendPanel		String	Panel for legend control.
overviewPanel		String	Panel for overview control.
geocoderPanel		String	Panel for geocoder control.
coordinatesPanel		String	Panel for latitude/longitude coordinates display.
loadingPanel		String	Panel shown while map is loading or updating.
navigationPanel		String	Panel for map navigation tools.
measurementPanel		String	Panel for map measurement related tools. If specified, the measurement tool will be displayed in the navigation panel. May require proxy support depending on the number of vertices.
enableNavigation	true	Boolean	Enables all map navigation via mouse and keyboard, with the exception of the slider and pan arrow buttons.
jsapi	https://js.arcgis.com/3.20	String	URL for locally hosted ESRI JSAPI. Do not include the trailing slash.
proxyEnabled	false	Boolean	Enables ESRI JSAPI proxy page support required for server-based functionality. If enabled, a configuration file is required in your application’s classpath. A sample configuration file, /META-INF/resources/proxy/proxy.xml, is contained in the gisfaces .jar file. Copy this file to your application’s source package

Name	Default	Type	Description
			com/gisfaces/proxy/proxy.xml. The default configuration will work without further configuration. Advanced settings are documented inside.
proxyAllRequests	false	Boolean	Force all requests to go through the proxy. This attribute is used only if the proxy is enabled.
proxyUrl	false	String	Fully qualified URL to a custom proxy to override the proxy contained GISFaces. See "https://github.com/Esri/resource-proxy/releases" for downloads. The proxy contained in GISFaces uses version 1.1.1-beta. Note: if this attribute is used, you are completely responsible for the proxy jsp and the proxy xml configuration file.

Events

Name	Listener Parameter	Description
click	com.gisfaces.event.MapClickEvent	Fired on every map click. The latitude and longitude are included in the event.
view	com.gisfaces.event.MapGraphicViewEvent	Fired when a feature is viewed in the popup window. Scrolling through the features using the left and right icons repeatedly fires the event.
action	com.gisfaces.event.MapGraphicActionEvent	Fired when any action link is clicked in the popup window footer. Action links are defines in the “popupActions” attribute which takes a comma-delimited set of action strings. Action links are only displayed if a listener is registered for this event. The attributes of the viewed feature are included in the event. The default action is “Select”.
extent	com.gisfaces.event.MapExtentEvent	Fired when the map is zoomed or panned. The latitude, longitude, and zoom level are included in the event.
drag	com.gisfaces.event.MapGraphicDragEvent	Fired when a graphic is dragged.
geolocation	com.gisfaces.event.MapGeoLocationEvent	Fired when a geo-location event is fired. The latitude and longitude are included in the event.

The javax.faces.event.AjaxBehaviorEvent event passed to the event listener must be cast to one of the

previously mentioned event classes. Using the casted class, you may access the properties for the appropriate event. See the JavaDoc .jar file included in the download .zip file.

Example

```
<gis:map id="map1" mapPanel="panel1" background="#{mapBean.background}">
    <f:ajax event="click" listener="#{mapBean.doMapClickListener}" render="growl1"></f:ajax>
</gis:map>
```

Service

The service component specifies a service to be used in the map. This service may be any ESRI® ArcGIS service, KML or KMZ , or custom graphics model. The type attribute is required. Either the url or model attribute will be required depending on the type attribute.

Attributes

Name	Default	Type	Description
id		String	The identifier for this component.
rendered	true	Boolean	The rendered indicator for this component.
type		String	Service type. Valid values are "tiled", "image", "dynamic", "kml", "feature", and "graphics".
url		String	Service URL. Required for "tiled", "image", "dynamic", "kml", and "feature" services. ESRI layers may be found at http://www.arcgis.com.
visible	true	Boolean	Service visibility.
opacity	1.0	Double	Service opacity. Valid values range from 0.0 to 1.0, inclusive. The legend widget honors the service's opacity value and is updated automatically.
refreshInterval	0	Integer	Map service refresh interval in minutes. A value of "0" means no refresh interval.
minScale			Map service minimum visible scale. If the map is zoomed out beyond this scale, the layer will not be visible. A value of "0" means no minimum scale.
maxScale	0	Integer	Map service maximum visible scale. If the map is zoomed in beyond this scale, the layer will not be visible. A value of "0" means no maximum scale.
showPopup	true	Boolean	Popup dialog visibility when this map service is clicked. Only applicable for service types "dynamic", "feature", and "graphics".
model		String	Graphics model. Required if the service type is "graphics".

Example

```
<gis:map id="map1" mapPanel="panel1" background="#{mapBean.background}">
    <gis:service type="dynamic" url="http://localhost/arcgis/rest/services/Earthquakes/MapServer">
    </gis:service>
</gis:map>
```

Layer

The layer component optionally specifies the layers of a dynamic service component. If all service layers are to be displayed as defined in the ArcGIS service, the layer components may be omitted. When specifying the layer attributes, the number attribute must match the ArcGIS service layernumbering.

Attributes

Name	Default	Type	Description
id		String	The identifier for this component.
rendered	true	Boolean	The rendered indicator for this component.
number		Integer	Layer number as defined in the map service.
visible	true	Boolean	Layer visibility.
where		String	Layer filter definition expression. If specified, this layer will be filtered by the features defined by this definition expression. Defaults to all features displayed.
extent		String	Layer extent definition expression. If specified, the map extent will be updated by the features defined by this definition expression. Only a single extent should be specified across all service layers at any given time. As long as this definition expression is specified, the map will automatically zoom during every map refresh. Use the extent ajax event to receive notifications when the map extent changes.
popupAttributes	*	String	Layer attributes displayed in popup window. Valid values include an "*", "", or a comma delimited, single quoted, list of attribute names or aliases. If empty string specified, the feature will not show up in the identify results at all. Defaults to "*" (all attributes displayed). All attributes are returned to the event handlers.

Example

```
<gis:map id="map1" mapPanel="panel1" background="#{mapBean.background}">
   <gis:service type="dynamic" url="http://localhost/arcgis/rest/services/Earthquakes/MapServer">
      <gis:layer number="0" visible="#{mapBean.visible}" where="#{mapBean.where}"></gis:layer>
   </gis:service>
</gis:map>
```

Symbol

The symbol component provides access to legend symbology for use outside of the map component. This allows the developer to place symbols throughout the application that would correlate back to the map. For example, a symbol may be placed next to a checkbox to set layer visibility or a textbox to set a layer's definition expression. See the classes in com.gisfaces.model.legend for retrieving the data for the legend and symbol.

Attributes

Name	Default	Type	Description
id		String	The identifier for this component.
rendered	true	Boolean	The rendered indicator for this component.
url		String	Map service URL.
layer		Integer	Layer number as defined in the map service.
label		String	Label for the requested symbol as defined by the map service attribute table alias name. Not required if the layer only has a single symbol.
height		Integer	Symbol height in pixels. Defaults to the symbol height specified in the map service.
width		Integer	Symbol width in pixels. Defaults to the symbol width specified in the map service.
title	label	String	Title text. Defaults to the symbol label specified in the map service.
alt	label	String	Alternate text. Defaults to the symbol label specified in the map service.

Example

```
<gis:symbol url="#{mapBean.serviceUrl}" layer="0" label="Some Label"></gis:symbol>
```

SVG

The SVG component provides generation of an SVG image using the specified path. This allows the developer to place SVG images throughout the application that would correlate back to the map graphics. For example, an SVG image may be placed next to a checkbox to set layer visibility or a custom legend image for a graphics layer. See https://www.w3.org/TR/SVG/paths.html#PathData for details.

Attributes

Name	Default	Type	Description
id		String	The identifier for this component.
rendered	true	Boolean	The rendered indicator for this component.
style		String	Inline CSS style.
styleClass		String	CSS style class.
height		String	Height of the SVG area.
width		String	Width of the SVG area.
title		String	Tooltip title.
path		String	SVG path. Required.
fillColor	#FFFFFF	String	SVG fill color.
fillOpacity	1.0	Double	SVG fill opacity. Valid values range from 0.0 to 1.0, inclusive.
strokeColor	#000000	String	SVG stroke color.
strokeOpacity	1.0	Double	SVG stroke opacity. Valid values range from 0.0 to 1.0, inclusive.
strokeWidth	1.0	Double	Stroke width.
message	SVG not supported.	String	Error message displayed if the browser does not support SVG images.

Example

```
<gis:svg title="Green Arrow" path="M 0,20 6,0 12,20 6,16 z" fillColor="green"></gis:svg>
```

Geolocation

The geolocation component provides access to the HTML5 GeoLocation API for use outside of the map component.

Attributes

Name	Default	Type	Description
id		String	The identifier for this component.
rendered	true	Boolean	The rendered indicator for this component.
watch	true	Boolean	Indicator to receive continuous geolocation events. If "false" a single geolocation event will be received.
accuracy	true	Boolean	Indicator which provides a hint that the application would like to receive the best possible results.
timeout	60000	Integer	Indicates the maximum length of time in milliseconds allowed to pass from the geolocation call until a successful result. Do not set this value too low or timeouts will occur.
maximumAge	0	Integer	Indicates the maximum age in milliseconds to accept a cached position. If set to 0, immediately attempt to acquire current position.

Example

```
<gis:geolocation id="geolocation1"
        watch="#{geoLocationBean.watch}" accuracy="#{geoLocationBean.accuracy}"
        timeout="#{geoLocationBean.timeout}" maximumAge="#{geoLocationBean.maximumAge}">
        <f:ajax listener="#{geoLocationBean.doGeoLocationListener}" render="grid1"></f:ajax>
</gis:geolocation>
```

Live Examples

The website http://examples.gisfaces.com hosts the examples included in the downloaded .zip file. Contained in the .zip file are the binary library .jar, examples .war, javadoc .jar, and the PDF documentation. The examples .war file contains all the .xhtml files and the Java managed beans in the WEB-INF/classes directory.