



# Building Web Applications with ArcGIS Server and Java

*Steven Citron-Pousty*

# Goals and what we will cover



- What you know
  - Java
  - Simple JSF
  - A little bit about the ArcGIS Java Web ADF
- What I will cover
  - MapServer & \*Description Objects
  - AGSRecordset and IXMLSerialize
  - Adding custom tool
  - Use the JSF Navhandler
  - Web ADF Object Lifecycle
  - What is coming with 9.2
    - Seamless pan and zoom
    - Multi-source maps
    - Tasks
    - New Javascript
    - ...

# Intro to Web ADF at 9.1



- At 9.1 here is what you get:
  - Framework for managing your interactions with the ArcGIS Server
  - Rich set of JSF controls for mapping applications (Map, Overview, TOC...)
  - Predefined templates that you can use as starting points for your applications ( Map Viewer, Buffer Selection, Search...)
  - Let's look at a Map Viewer template
    - Show an simple app as a starting

# Our app



- Start with simple JSF form and results from a server object – No ArcGIS Server Web ADF
  - Use it to introduce some of the concepts of working with server
  - Don't have to understand the Web ADF for this portion
- Add a map front end to the same application – ArcGIS Server Web ADF
  - Use the map viewer we just looked at as a base



# Let's go to our app – working with the Server API using Java

# MapServer and Description Objects



- Go here first – they are stateless by default
- Does everyone understand stateful versus stateless?
- What do you want to do with MapServer
  - Select
  - Query
  - Find
  - Identify



# MapServer Object

- Accesses Map and PageLayout
- Coarse-grained functionality
- High-level functionality to
  - Export images
  - Convert points
  - Perform find and identify queries...
- Use IMapServer/  
IMapServerLayout
- Package
  - `com.esri.arcgis.carto`
  - Let's look at the JavaDoc



# MapServer description objects

- All MapServer objects store their default settings in a MapDescription object at runtime
- You can access and update the description if necessary
- Used for drawing by server
- Descriptions are serializable
- A description is reset when returned to the pool
- IMapServerInfo
  - getDefaultMapDescription()

```
MapServer mapSO = new MapServer(mapContext.getServerObject());  
IMapServerInfo mapServInfo =  
    mapSO.getServerInfo(mapSO.getDefaultMapName());  
IMapDescription mapDesc = mapServInfo.getDefaultMapDescription();
```



# MapServer description objects

- MapDescription/PageDescription
  - Provides access to map and page settings

```
IMapServerInfo mapServInfo =  
    mapSO.getServerInfo(mapSO.getDefaultMapName());  
  
IMapDescription mapDesc = mapServInfo.getDefaultMapDescription();  
//Alter map extent  
mapDesc.setMapArea(mNewExtent);
```

- LayerDescription
  - Provides ability to change layer settings

```
//set layer visibility to false  
ILayerDescription lyrDesc =  
    mapDesc.getLayerDescriptions().getElement(0);  
lyrDesc.setVisible(false);
```

# Demo



- Custom Graphic
- Query and Select

# On to AGSRecordSet



- QueryFeatureData and query against map return IResultSet
- Iterating through each item is a remote call – can be expensive
- But a whole bunch of objects implement IXMLSerialize – JavaDoc
- We built some classes to bring back the whole recordset as xml
- After this you have a Object in memory on the Application Server (or local JVM)

# How to use



- JavaDoc
- Code Snippet



# So with this new information covered let's extend our application

- Boss comes and says I need a map centric method to drag a box to select the counties
- Need a tool in the web ADF
- Steps
  - Make our original app a Web ADF app
  - Convert our query piece to fit into the web ADF framework
  - Write a tool
  - Edit the JSP
- Let's go to the Application



# Putting our Class into ADF and hooking it up

- Make QueryBean implement WebContextInitialize – really simple
- Added it to managed-context-attributes.xml
- Advantages
  - Hook directly into the context
  - Your object now participates in the life-cycle of the context
  - Easier access to other Context attributes

## Using 9.2

Your class is just a standard JSF managed-bean which implements WebContextInitialize



# A server side tool action class

- Now we need a tool to call into this bean
- Implement IMapToolAction
- Needs to work with eventargs
  - `com.esri.arcgis.webcontrols.faces.event.MapEventArgs`
  - `com.esri.arcgis.webcontrols.faces.event.ClientActionArgs`
- Add it to the default.xml in the tools folder

## Using 9.2

It's just a POJO with a method that accepts MapEvent  
Not required to implement MapToolAction  
No xml file



# Putting our Class into ADF and hooking it up - Continued

- Hijack the Nav handler
- Edit the JSP
- Good to go
  
- Let's look at the code



# Other benefits to using the ADF come talk to us about these

- Other pieces of the the Web Lifecycle
  - (WebContextObserver)  
[http://www.jroller.com/page/javanoid?entry=extend  
the\\_arccgis\\_adf\\_with1](http://www.jroller.com/page/javanoid?entry=extend_the_arccgis_adf_with1)
  - (WebLifeCycle)  
[http://www.jroller.com/page/javanoid?entry=extend  
the\\_arccgis\\_adf\\_with2](http://www.jroller.com/page/javanoid?entry=extend_the_arccgis_adf_with2)
- Shallowly Stateful Applications
- Working with the XSL to change the look and feel
- Anything else you want to talk about

# So what is coming with 9.2



- Multi-source ( ArcGIS Server Local, ArcGIS Server Internet, ArcIMS, ArcWeb Services, WMS, and EJB)
- Seamless pan and zoom/AJAX
- Updated UI – Enhanced interface with better DHTML experience
- Demo

# More 9.2



- Javascript – Object oriented and Ajax enabled
- New Stateless pure Java web-services API for HTTP and LAN use
- Site Builder – Build web applications without programming (you can think of them as templates)
- Tasks – Objects that encapsulate GIS business logic as well as the parameters required to execute
  - Task Framework
  - Task Control
  - Usable in Site Builder
- Geoprocessing – Coarse grained functionality for over 300 different geospatial tasks
- Eclipse integration – Mapviewer template, snippets, and JSF code palette
- Creator integration – drag and drop
  
- Let's go to the doc

# Session Evaluations Reminder



Session Attendees:

**Come talk to us in the tech talk area.**

**9.1 and 9.2**

Please turn in your session evaluations.

*... Thank you*