Technical Workshops | Tuesday, July 12, 2011

Geoprocessing Services in JavaScript
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Geoprocessing in Web Applications

- Geoprocessing functionality can be added to web applications in four simple steps.
  1. Initialize the **Geoprocessing Task**
  2. Setup **Task Parameters**
  3. **Run** the task
  4. **Use the results** from the task.
But, what is a Geoprocessing Task?

- Publishing Geoprocessing Toolbox to ArcGIS Server creates a Geoprocessing Service.
- When publishing, tools/scripts/models in the toolbox becomes geoprocessing tasks.
1. Initialize a Geoprocessing task?

- Each Geoprocessing Task has a REST URL
  - REST URL:
    ArcGIS REST Services Directory/ <GPService>/GPServer/<GPTask>
  - Example:
    http://myserver/arcgis/rest/services/MyGpService/GPServer/Buffer

- Use Task URL and initialize the Geoprocessing Task
  - Geoprocessor gpTask= new Geoprocessor(<task url>)
2. Setup Task Parameters?

- Every Task has its own parameters
- Task Parameters are of two categories:
  - 1. Input parameters
  - 2. Output parameters
Setup Task parameters?

- Each parameter has a name and belongs to one of these **Data Types**:
  - FeatureSet
  - RecordSet (Tables)
  - Raster
  - Linear Unit (100 Km, 50 Miles…)
  - File (.xml, .gpx, .txt, .zip ….)
  - integer, long, double
  - date
  - boolean

- Example:
  - String: new GPString(”User Conference”)
  - Double: new GPDouble(23.34)
3. Run the Task?

- A task is run based on its Execution type.
- Execution type:
  1. Synchronous: For faster processes
     - Supported Operation: Execute Task
  2. Asynchronous: For long running processes (more than 10 secs)
     - Supported Operation: Submit Job

Supported Operations:  
- Execute Task

Supported Operations:  
- Submit Job
4. Use Results?

- GPTask
- FeatureSet
- Draw Graphics Layer
- Create Grids, Charts
- Input to another Task
- GPTask2
Drive Time Polygon Demo
Drive Time Polygon Demo

1. Initialize the Task

new Geoprocessor = Geoprocessor(http://....arcgisonline.com...)

2. Setup Parameters
   - Input Location (FeatureSet)
   - Drive Times (String)

3. Execute the Task

4. Use the Result
What about Raster Output?

- Problem: Raster images cannot be drawn by Web APIs.
What about Raster Output?

- Solution: Result Map Server
Result as Map Server?

- Outputs are drawn as Map Service Layers
- Get Layer and add to Web map to show result.

GPTask

Output

Result Map Server

Get Layer

Add GPResultImageLayer to web map
Crime Hotspot Demo
Crime Hotspot Demo

Crime Points (FeatureSet)

Crime Hotspot Task

Add Layer to web map

Status = Success

Status?

Get Layer Hotspot

until Job Completed

GPResultImageLayer
Summary

- **Web Application pattern #1**
  - Graphics as Input
  - FeatureSet as Output

  Execution Type: Synchronous
  Supported Operation: Execute Task

- **Web Application pattern #2**
  - FeatureLayer as Input
  - Raster as Output
    - Returns Result Map Server
    - Get Layer
    - Add Layer to Map

  Execution Type: Asynchronous
  Supported Operation: Submit Job
Sessions of Interest

• Wednesday
  - Creating Geoprocessing Services (8:30-9:45 Room14B)
  - Geoprocessing Services in JavaScript (12-12:30 Spatial Analysis Demo Theater in the Showcase - Repeat)
  - Geoprocessing Services in Silverlight (12:30-1 Spatial Analysis Demo Theater in the Showcase - Repeat)
  - Debugging a Geoprocessing Service (1:00-2:00 Spatial Analysis Demo Theater in the Showcase)
  - Performance tips for a Geoprocessing Service (2-2:30 Spatial Analysis Demo Theater in the Showcase)

• Thursday
  - Creating Geoprocessing Services (1:30-2:45 14B, repeat)
Further exploration...

- Check list for authoring a service:

- Supported Input / Output types:
  http://esriurl.com/inNout  Search: “input output”

- Understanding the Localjobs directory:
  http://esriurl.com/localjob  Search: “local job”