Geoprocessing Services in Silverlight

Monica Joseph

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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
- Submit Job
4. Use Results?

GPTask

Output

FeatureSet

Draw Graphics Layer

Create Grids, Charts

Input to another Task

GPTask2
Drive Time Polygon Demo
new Geoprocessor = Geoprocessor(http://.....arcgisonline.com...)

1. Initialize the Task

2. Setup Parameters

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

![SanFranciscoCrime (GPFServer)]

- Service Description:
- Tasks:
  - CrimeHotSpot
  - CrimeHotSpotQuery
- Execution Type: esriExecutionTypeAsynchronous
- Result Map Server Name: SanFranciscoCrime
- Supported Interfaces: REST, SOAP

Supported Operations: Submit Job
Result as Map Server?

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

Crime Points (FeatureSet) → Crime Hotspot Task

until Job Completed

Status?

Status = Success

Get Layer Hotspot

GPResultImageLayer

Add Layer to web map
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:  
  [http://esriurl.com/2280](http://esriurl.com/2280)  
  Search: “Checklist for authoring”

• Supported Input / Output types:  
  [http://esriurl.com/inNout](http://esriurl.com/inNout)  
  Search: “input output”

• Understanding the Localjobs directory:  
  [http://esriurl.com/localjob](http://esriurl.com/localjob)  
  Search: “local job”