Creating Geoprocessing Services and Web Tools

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Introduction

- Both ArcMap and ArcGIS Pro are covered
- Terms “Geoprocessing Services” and “Web Tools” are the same
  - ArcMap publishes geoprocessing services
  - ArcGIS Pro publishes web tools
  - Functionally equivalent

Design Your Service

- Where does your data come from?
  - Already on the Server
  - Upload the data
  - Feature Layer from map/feature service
- How do you want to view results
  - Draw features with map service
  - Client downloads and draws features

Workflow to create a Service

- Create tool in ModelBuilder or Python
- Document tool so that users understand the inputs and outputs
- Run tool
- ArcMap – From Results Window, publish as service
- ArcGIS Pro – From the Share tab or Geoprocessing History
- Analyze – do this first, because…
- Set service name, parameters, etc. in the Service Editor / Web UI Tool
- Publish
- Consume in WebApp, ArcGIS Pro, ArcMap, etc.

Creating and Publishing a Service

Demo

Parameter Transformation

- Parameter types converted to supported types when publishing
- Only support simple types
- You can update the Input Mode depending on the parameter type
  - User defined value: allows the end user to interactively add features or enter text and number values, files, etc.
  - Choice list: allows the end user to select from a list of layers already on the server
  - Constant value: hard codes the parameter; the end user will not be able to provide values

Supported Parameter Types

- Input
  - Feature set, feature layer
  - Record set, table view
  - Raster dataset, raster layer
  - File
  - Double, long
  - String (text)
  - Date
  - Linear unit
- Output
  - Feature class
  - Table
  - Raster dataset
  - File
  - Double, long
  - String (text)
  - Date
  - Linear unit

Data Store

- **Data Store tells ArcGIS Server about your data**
- **Data Store acts as a lookup table**
- **Without a Data Store entry, all required data is copied to the Server**

Service Editor

- Import configuration settings
- Multiple results = multiple tasks
- See how the task will look to someone consuming it from Desktop
- Analyze errors and warnings

Execution Mode

- **Defines how the client interacts with the service while it executes**
  - **Synchronously: the client waits for the server to finish executing and then gets the result**
    - **Use only with fast services**
  - **Asynchronously: client asks the server if it's finished, then gets the result, and is free to do other work until the result is finished**
    - **Can only use a result map service with Asynchronous**

Script Tools

Subhead Here

- **Paths and data handled same as models**
- **Output and intermediate paths**
  - **os.path.join(arcpy.env.scratchFolder, “out.shp”)**
  - **os.path.join(arcpy.env.scratchGDB, “out”)**
  - **in_memory/out**
- **In Python, we do name matching, so can do this**
  - **myRoads = “roads”, where “roads” is the name of a layer**
  - **This way is very fast, so use this when possible**
  - **Other way is to reference on disk: myRoads = “c:\\data\\myGDB.sde\fc.sde.roads”**

Result Map Service

- **Provides an additional way to get results from the Geoprocessing Service**
- **An Image is returned to the client**
  - **The data can still be downloaded**
- **Use RMS when:**
  - **Desire better cartography than the client can support**
  - **Impractical to render a large dataset in the client**
- **Execution must be set to Asynchronous**
- **Do not use in_memory workspace if using Result Map Service**

Web AppBuilder

Subhead Here

- **Service layer is passed to the geoprocessing service/web tool as input**
- **The link between the two services**

Web AppBuilder

Demo

Performance Tips

- Use layers for project data
- Use data local to ArcGIS Server
- Write intermediate data to memory – Note the only exception is with RMSs
- Preprocess data used by your tasks
- Add attribute indexes
- Add spatial indexes
- Use synchronous rather than asynchronous
- Avoid unneeded coordinate transformations
- Reduce data size – attributes and vertices

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Print stations located in the 140 Concourse

Tuesday

12:30 pm – 6:30 pm
GIS Solutions Expo
Hall B

5:00 pm – 6:30 pm
GIS Solutions Expo Social
Hall B

Wednesday

10:30 am – 5:15 pm
GIS Solutions Expo
Hall B

6:30 pm – 9:00 pm
Networking Reception
Smithsonian National Portrait Gallery

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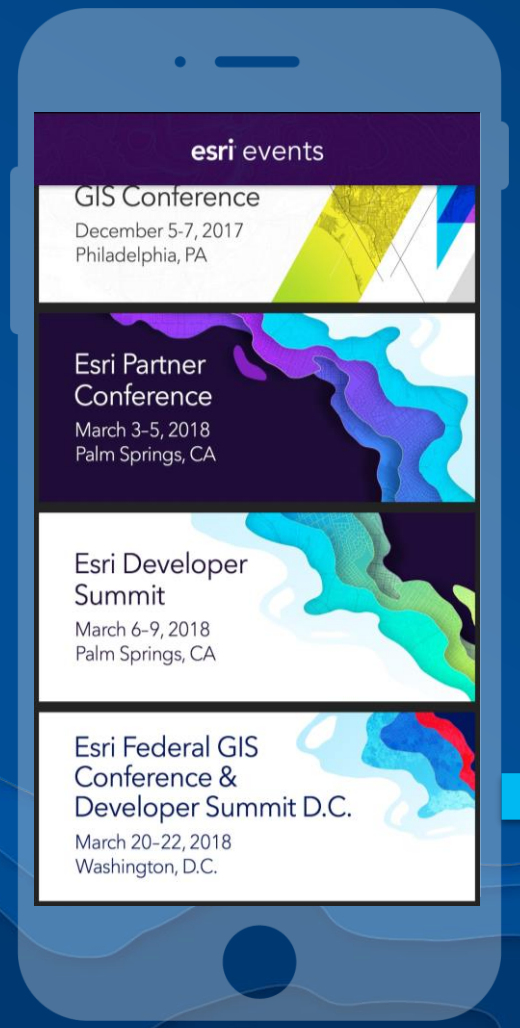

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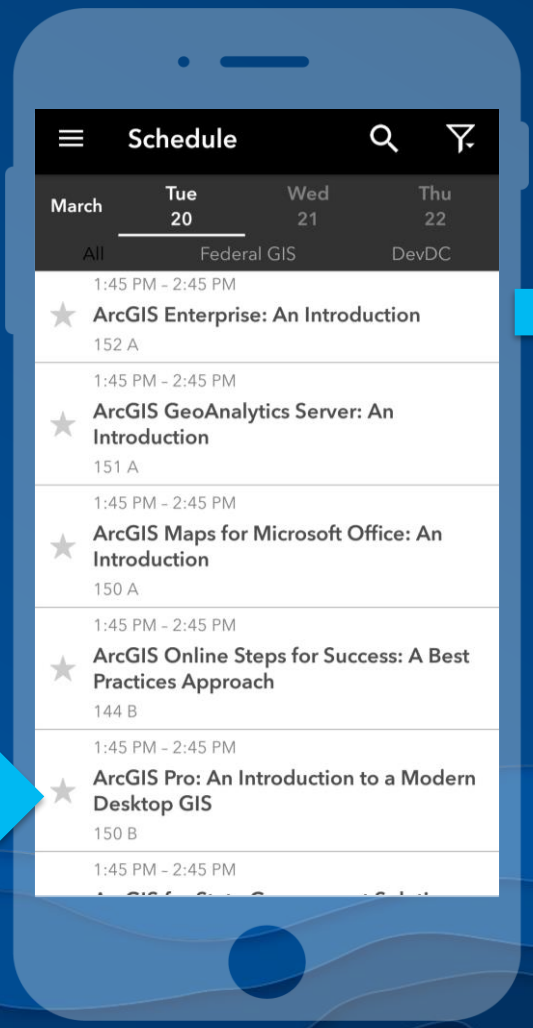

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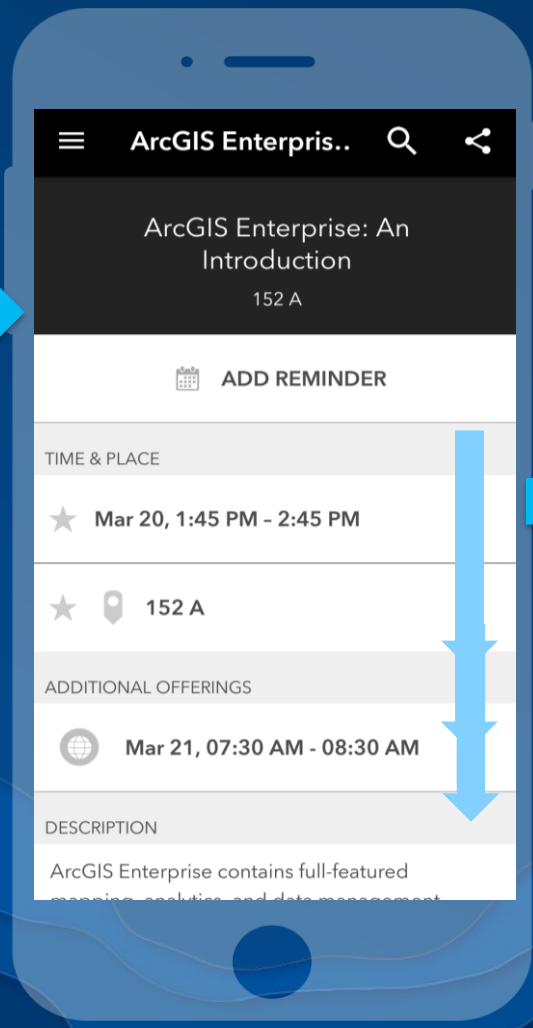

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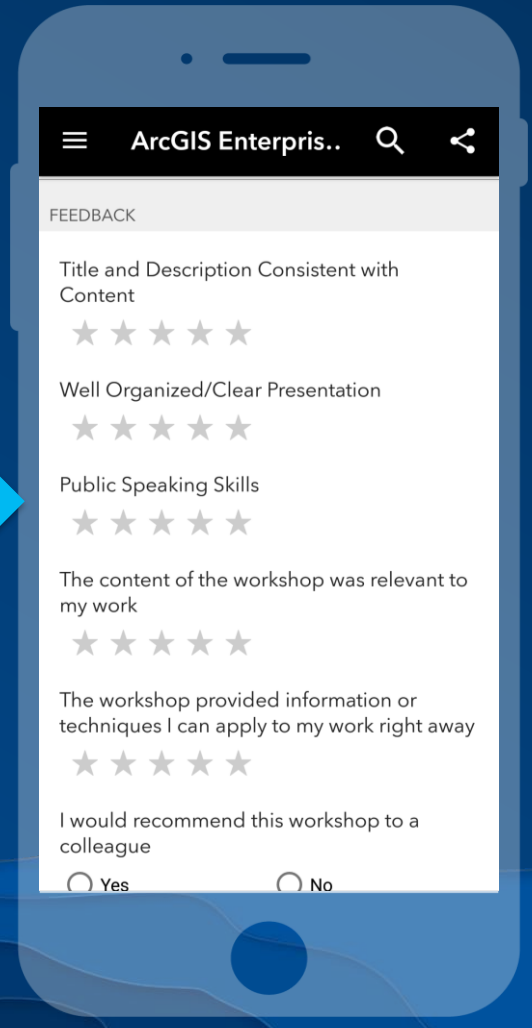

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