Workshop overview

• Agenda
  i. Overview of sharing analysis
  ii. Basics of geoprocessing packages
  iii. Creating and sharing geoprocessing packages
  iv. Using geoprocessing and customizing packages
  v. Anatomy of a geoprocessing package
Overview of Sharing Analysis
Sharing Analysis

- Simple concept
- Powerful implications
  - Sharing of knowledge
  - More collaboration
  - Increased productivity
Sharing Analysis

Analysis

Share as...

Package

GIS Professionals

Service

Everyone

Share as...
Basics of Geoprocessing Packages
### A quick tour of sharing tools

**Resource Center > Professional Library > Geoprocessing > Sharing tools**

Nothing is more satisfying to you as a tool author than to distribute your tools to others and have them report back that everything worked great and as expected. And nothing is more disappointing than to hear that users couldn’t get your tools to work and it was all a waste of their time. The latter situation is caused by the resources that your tools use. Resource, in this case, means datasets, layers in map documents, geodatabase files, etc. The tools you provide to your tool parameters. Resources that exist on your computer or elsewhere when others use your tools. Seemingly minor issues with data access that you encounter running your tools locally become major issues when sharing to ArcGIS—they are generic issues found in all software applications.

### Guide to topics

The topic links below give you the insight to determine the best way to share your tools, as well as guidelines for structuring your toolboxes, data layer files, and map documents in such a way that they can be easily delivered, installed, and used by your clients.

<table>
<thead>
<tr>
<th>Topic</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methods for distributing tools</td>
<td>Discusses the methods for sharing your tools and the resources they use.</td>
</tr>
<tr>
<td>An overview of the Package toolset</td>
<td>This section describes the Data Management toolset and contains tools for consolidating, packaging, and sharing.</td>
</tr>
<tr>
<td>Paths explained: Absolute, relative, UNC, and URL</td>
<td>You deal with paths every day to navigate to your data and toolboxes. You probably don’t give them much thought, but time to share your tools and data. This section explains paths and how they work.</td>
</tr>
<tr>
<td>A structure for sharing tools</td>
<td>Organizing your tools and data into a well-structured folder is the first step in sharing your tools. This topic suggests a folder structure that you can use as a template for a well-organized folder.</td>
</tr>
<tr>
<td>A quick tour of documenting tools and toolboxes</td>
<td>Good tool documentation is a must when you share your tools.</td>
</tr>
<tr>
<td>Geoprocessing Considerations for ArcGISTools</td>
<td>Methods and techniques for sharing tools that use ArcGISTools.</td>
</tr>
<tr>
<td>Techniques for sharing Python scripts</td>
<td>This topic describes techniques to make your Python scripts and libraries portable.</td>
</tr>
<tr>
<td>Managing intermediate data in shared models</td>
<td>This topic goes into the details of how geoprocessing determines where to store intermediate data created by model- and tool-authoring tools for ArcGIS server.</td>
</tr>
<tr>
<td>An overview of sharing tools at an ArcGIS Server</td>
<td>Your tools can be shared and used across the Internet by using ArcGIS Server technology. ArcGIS Server is a separate application and once it is installed at your workplace, you can use it to share your tools as services available to anyone who has access to the server.</td>
</tr>
<tr>
<td>Checklist for sharing tools and toolboxes</td>
<td>Use this checklist to help you share your tools and toolboxes.</td>
</tr>
</tbody>
</table>
What is a geoprocessing package?

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  - Across a network
What is a geoprocessing package?

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• Unpacked and consumed by ArcGIS Desktop or ArcGIS Runtime applications
Why use geoprocessing packages?

• Improve productivity
  - Learn from experts
  - Fewer resources wasted on duplicating efforts
  - Enable more people to work in parallel
Why use geoprocessing packages?

• Improve productivity
  - Learn from experts
  - Fewer resources wasted on duplicating efforts
  - Enable more people to work in parallel

• Enhance collaboration
  - Efficient team work within an organization
  - Combine the power of a large pool of diverse talents
  - Be part of the ArcGIS Online community
What is in a geoprocessing package?

- Settings
- Docs
- Data
- Scripts
- Models
- Tools

Geoprocessing package
Creating and Sharing Geoprocessing Packages
The steps

- Construct your tools
- Run tools
- Share results as a package

- Only successfully run analyses can be shared
Construct tools for sharing
Construct tools for sharing

- Test and debug models, scripts, and tools with data
Construct tools for sharing

- Test and debug models, scripts, and tools with data

- Take the time and effort to document the tools
  - Go beyond the minimum requirement
Construct tools for sharing

• Test and debug models, scripts, and tools with data

- Take the time and effort to document the tools
  - Go beyond the minimum requirement

• Considerations for sharing:
  - Size of the data included in the package
Run tools

- Execute the tools, which will write results in the Results window
  - Only valid results can be shared as packages
Run tools

- Execute the tools, which will write results in the Results window
  - Only valid results can be shared as packages

- A geoprocessing package can have more than one result
  - Consolidate different results into one package
Share analyses as geoprocessing packages

- Right-click in the **Results** window and choose **Share As > Geoprocessing Package**

- **Share location**
  - ArcGIS Online or on disk?

- **Data**
  - Schema only or including data?

- **ArcGIS Runtime**
  - Support ArcGIS Runtime?
Software demonstration
Using and Customizing Geoprocessing Packages

Ashley Pengelly
Using geoprocessing packages: The steps

Get

Unpack

Use
Get geoprocessing packages

• Search for geoprocessing packages on ArcGIS Online
  - Keyword search
  - Search for tools
  - Options to download or open in ArcGIS Desktop
Get geoprocessing packages

- **Search for geoprocessing packages on ArcGIS Online**
  - Keyword search
  - Search for tools
  - Options to download or open in ArcGIS Desktop

- **Receive geoprocessing packages from others**
  - Email
  - ftp
  - File sharing
Unpack a geoprocessing package

- Open from ArcGIS Online
- Double-click from Windows Explorer or e-mail client
- Right-click from Catalog Window
- Drag and drop
- Use the Extract Package tool
Use geoprocessing package in ArcGIS

- Unpacked results are available in the Shared node in the Results Window

Run as-is
- Understand how the analysis workflow works

Supply with own data
- Apply own scenario to the same workflow
Optional steps

1. Get
2. Unpack
3. Edit
4. Run
5. Share New Result

Optional
Editing geoprocessing packages

1. Make modifications
2. Document modifications and tools
3. Run
4. Share New Result
Software demonstration
Anatomy of a geoprocessing package

Bill Moreland
Folder Structure Demystified

Where do my packages live?

XP  C:\Documents and Settings\<username>\My Documents\ArcGIS\Packages
Vista and Windows 7  C:\Users\<username>\Documents\ArcGIS\Packages
Folder Structure Demystified

Common data folder:
- Top level folder name comes from the 'Name' of the result.
- For items that are version independent (e.g., Shapefiles, file-based rasters):
  - Shapefile that was used as input.
- All non-spatial files (e.g., additional files).
- Original toolbox.
- Version specific data (e.g., gdfs, toolboxes).
- Output dataset generated by geoprocessing tasks created from original model.

Result file (.rlt):
- Version specific data (e.g., gdfs, toolboxes).
- (Tasks are needed to handle limitations of geoprocessing services.)
Model

- Model tools are scanned
- Project data (non-derived and parameter data) is consolidated
- All non-parameter output of each process is set to the scratch location
- Consolidated model tool is modified (modify only what is necessary)
- All geoprocessing tools called from within the model are also consolidated
Python Scripts

- Python script tools are scanned
- Found data is consolidated
- Consolidated script tool is modified (modify only what is necessary)
- We have to recognize the data
- Python Toolboxes are modified in the same way
- All geoprocessing tools called from within the script are also consolidated

• Considerations
  - Raw building of paths
  - Importing other Python Modules (Third party)
Custom Tools

• Considerations
  - Manual steps involved to ensure consumers of your package are using the same 3\textsuperscript{rd} party custom tools.
Online help topics

What is a geoprocessing package?
A quick tour of creating a geoprocessing package
Using a geoprocessing package
Analysis and Geoprocessing Resource Center

- resources.arcgis.com
  - (This is the home page. From here, navigate to the Analysis community page.)

Option 1: from the home page

Option 2: click “Communities” to get a list of all resource centers.
Important features of the Analysis Resource Center

- **Quick Links:**
  - [Education Gallery](#): you can find User Conference presentations here
  - [About the tool gallery](#): learn all about the new gallery of geoprocessing tools and analysis hosted on ArcGIS Online

- **Gallery:**
  - A sample of entries in the tool gallery
  - Click [More Gallery posts](#) to see all the entries