Best Practices for Geoprocessing Services

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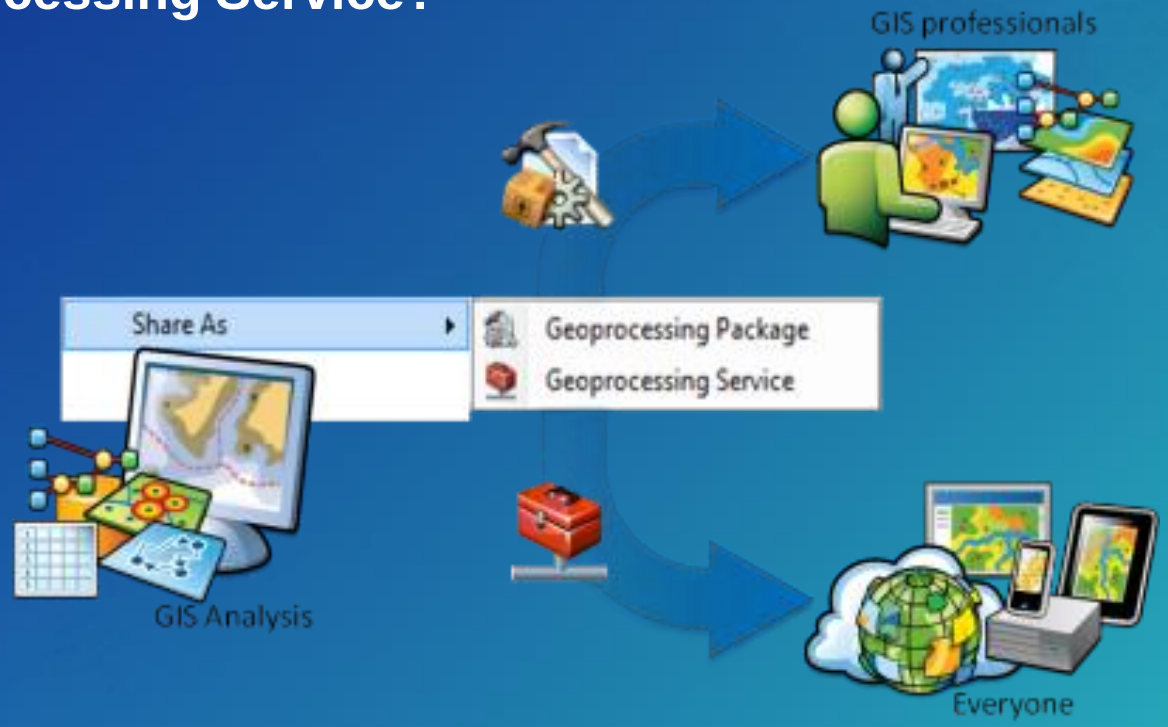
Overview

- What is a Geoprocessing Service
- Input
- Process
- Demo: Common Geoprocessing Troubleshooting
- Output
- Question Time

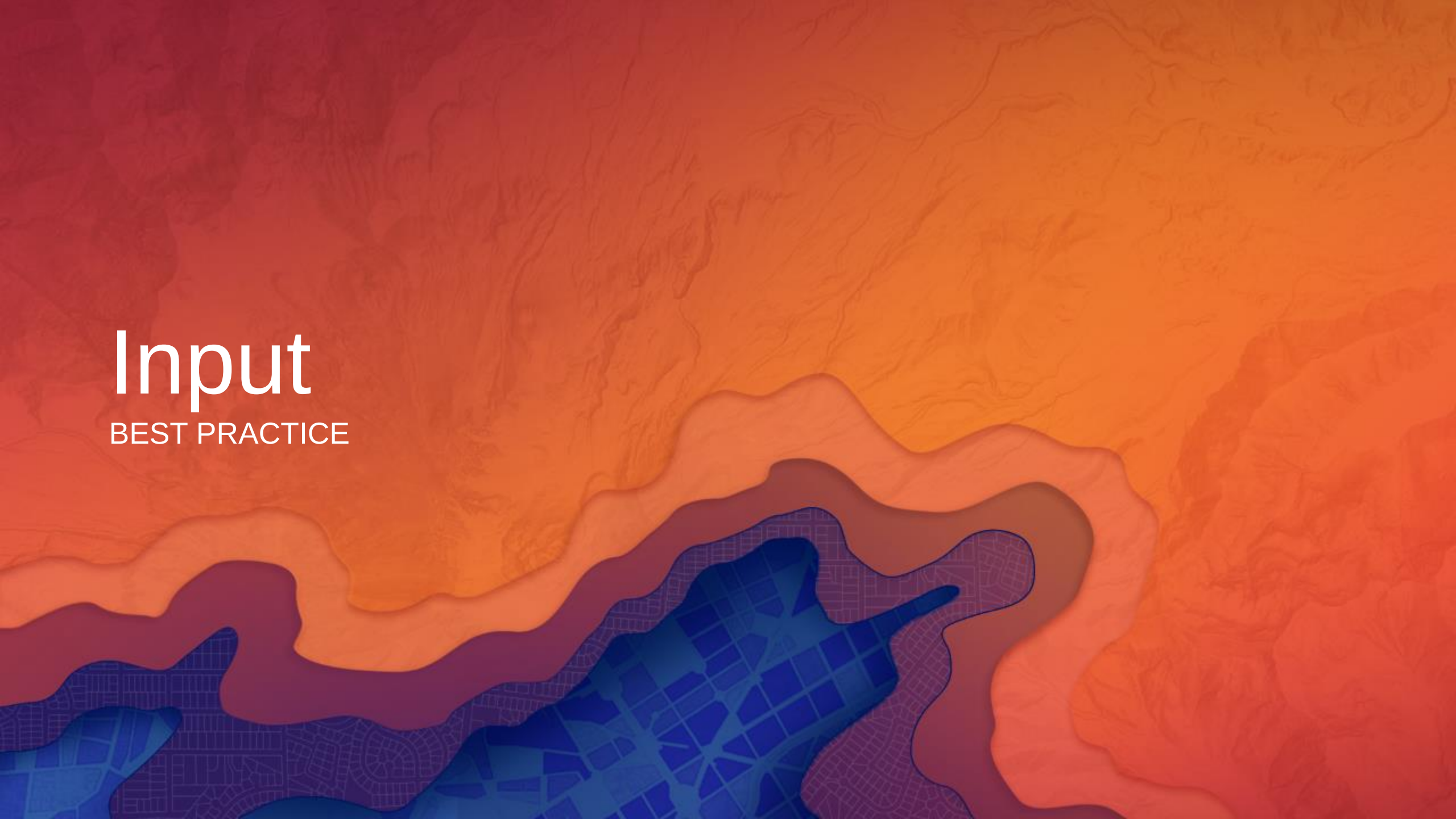
Geoprocessing Service

- **What is a Geoprocessing Service?**



Input

BEST PRACTICE



Input

- **Input data type**

Data types for geoprocessing tool parameters

ArcMap 10.4 | Other versions

- Where data types are needed
- Determining a parameter's data type
- String syntax
- Data types and scripting objects

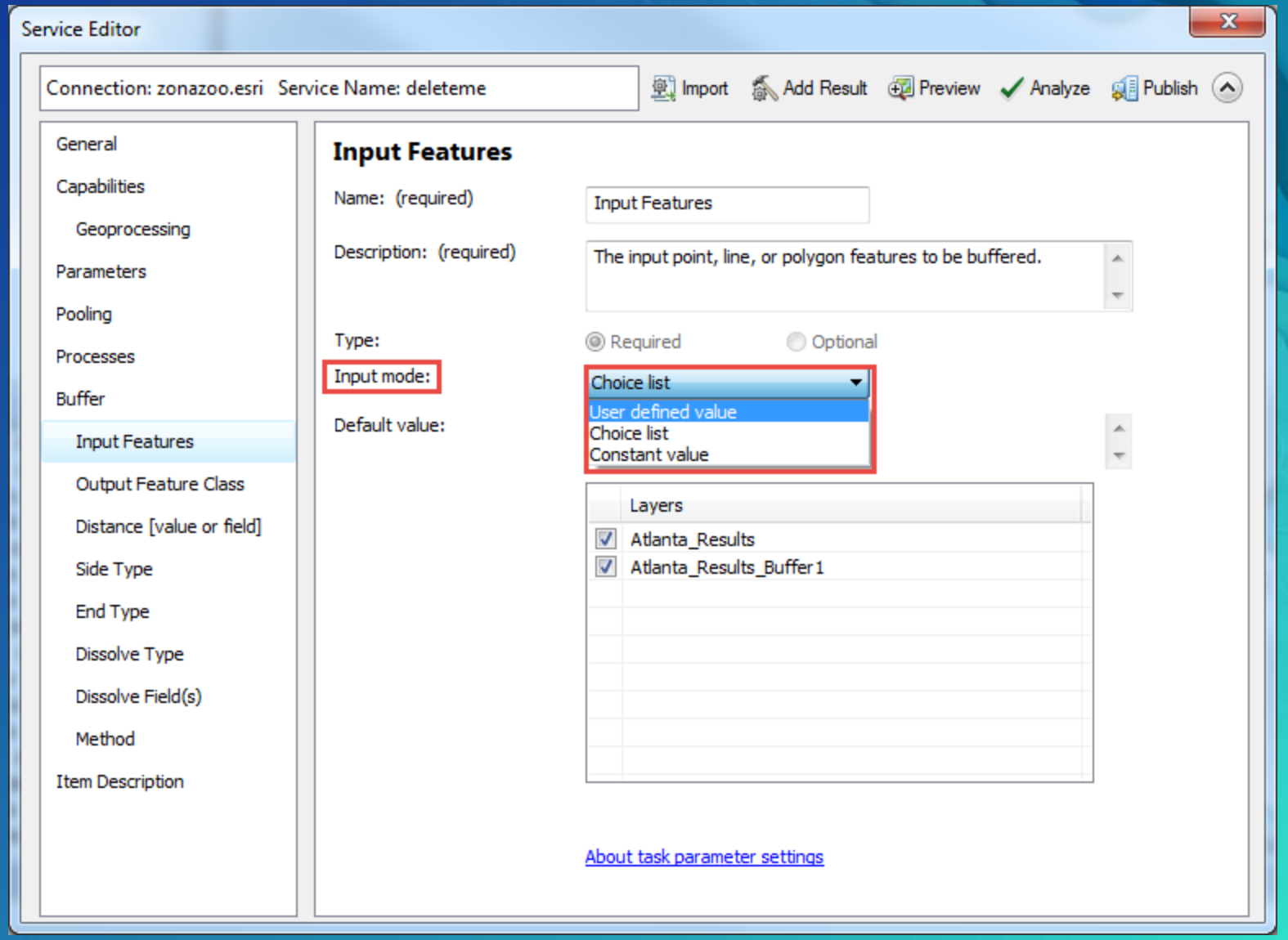
Geoprocessing is built around the concept of data types. Every tool parameter has an associated data type that defines the contents of the variable. Some simple data types are string (any set of alphanumeric characters), Boolean (a true/false value), and long (an integer value between -2,147,483,648 and 2,147,483,647). In addition to these simple data types, there are dozens of other data types built specifically for data found in ArcGIS, such as field, coordinate system, and extent.

Documentation for each data type is found in Geoprocessing_data_types.pdf. If this link doesn't work, you can open the document (**Geoprocessing_data_types.pdf**) from the **\arcgis\Documentation** folder in your ArcGIS for Desktop installation location.

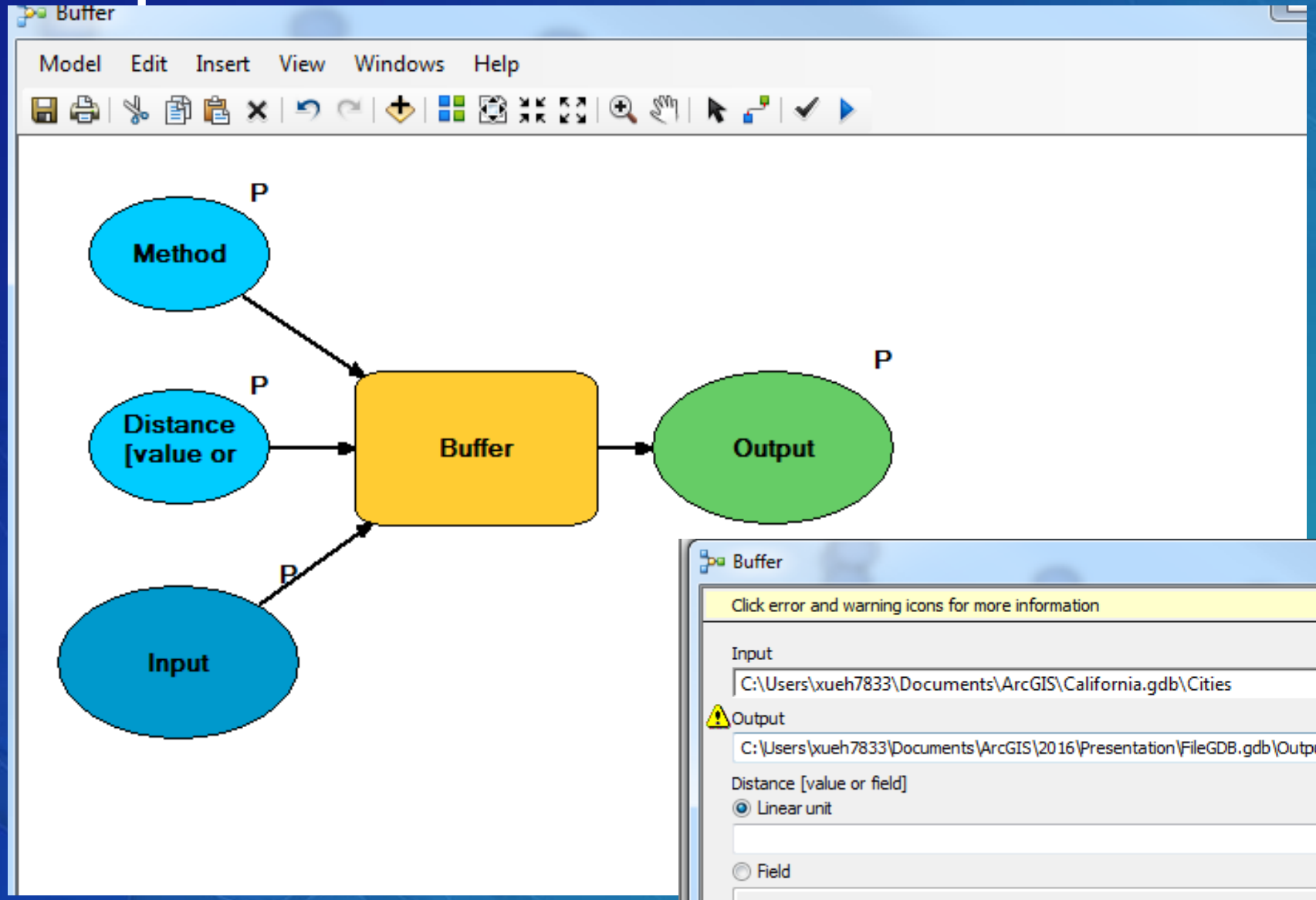
To view this document, you need a copy of Adobe Reader, which you can download free from http://www.adobe.com/products/acrobat/readstep.html.

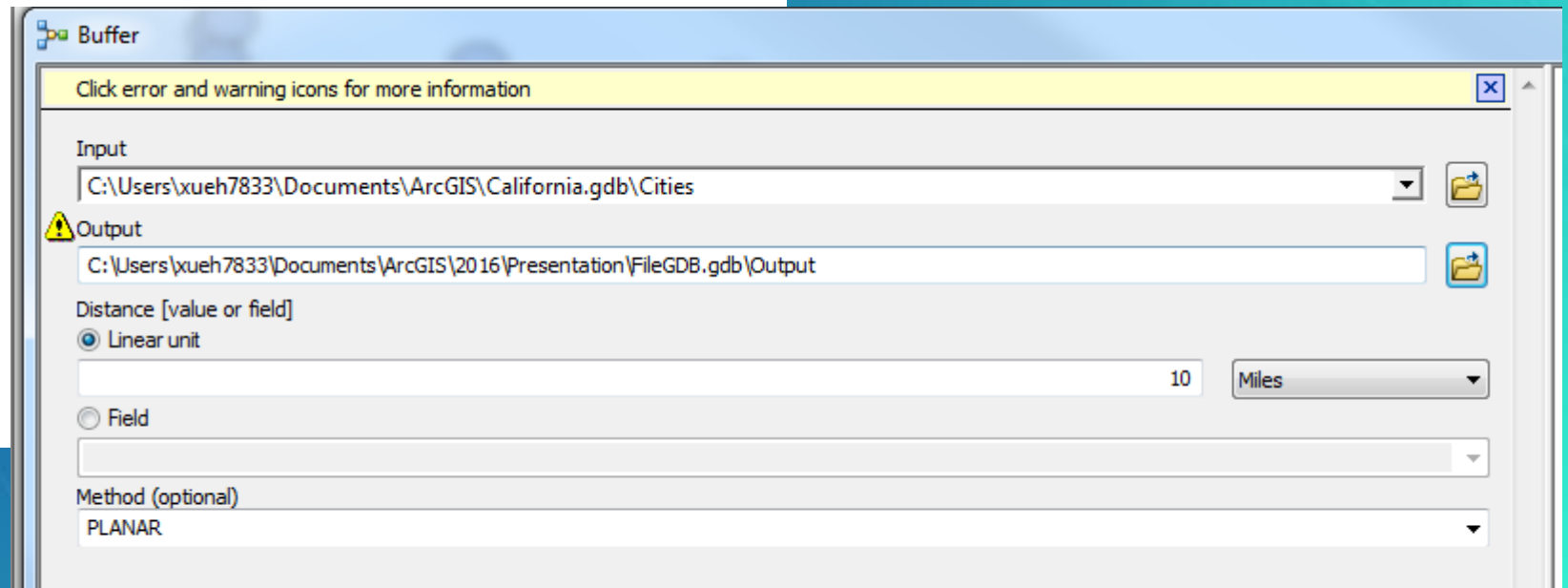
Input

- Input mode
  - User defined value
  - Choice list
  - Constant value



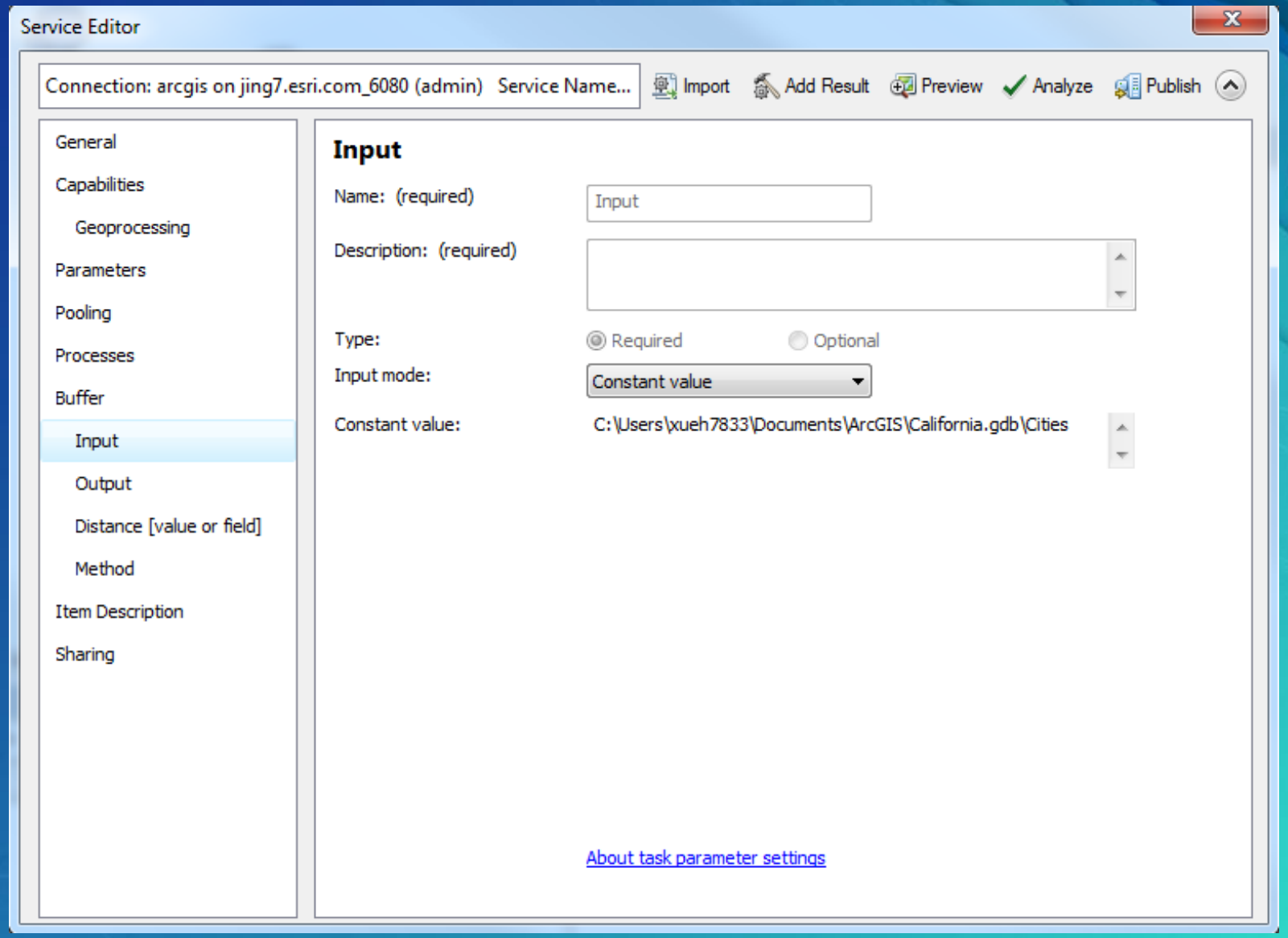
Input mode


Buffer
Model
Edit
Insert
View
Windows
Help
P
Method
P
Distance [value or
Buffer
P
Output
P
Input


Buffer
Click error and warning icons for more information
Input
C:\Users\xueh7833\Documents\ArcGIS\California.gdb\Cities
Output
C:\Users\xueh7833\Documents\ArcGIS\2016\Presentation\FileGDB.gdb\Output
Distance [value or field]
Linear unit
10
Miles
Field
Method (optional)
PLANAR

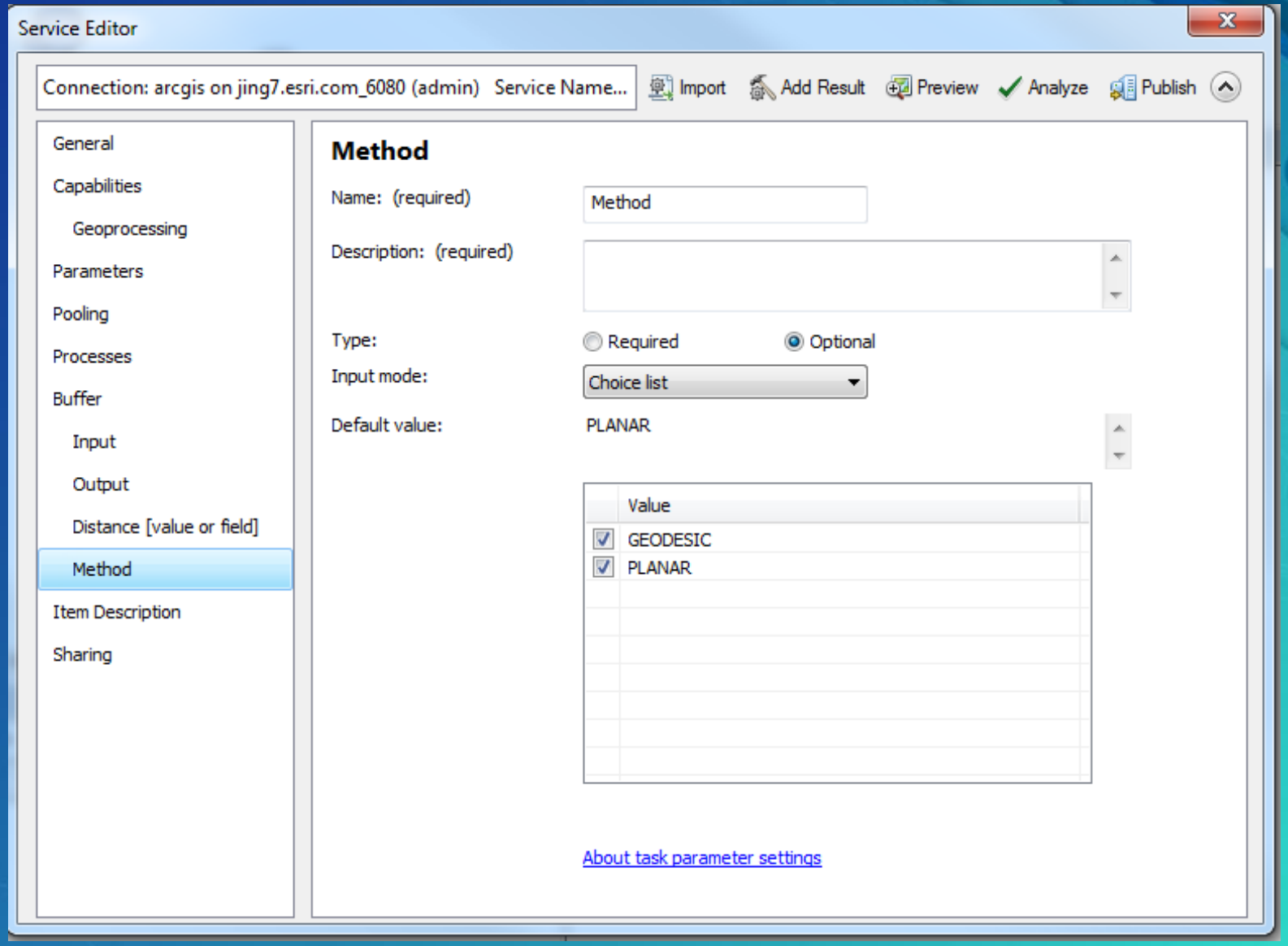
Input mode

Constant value



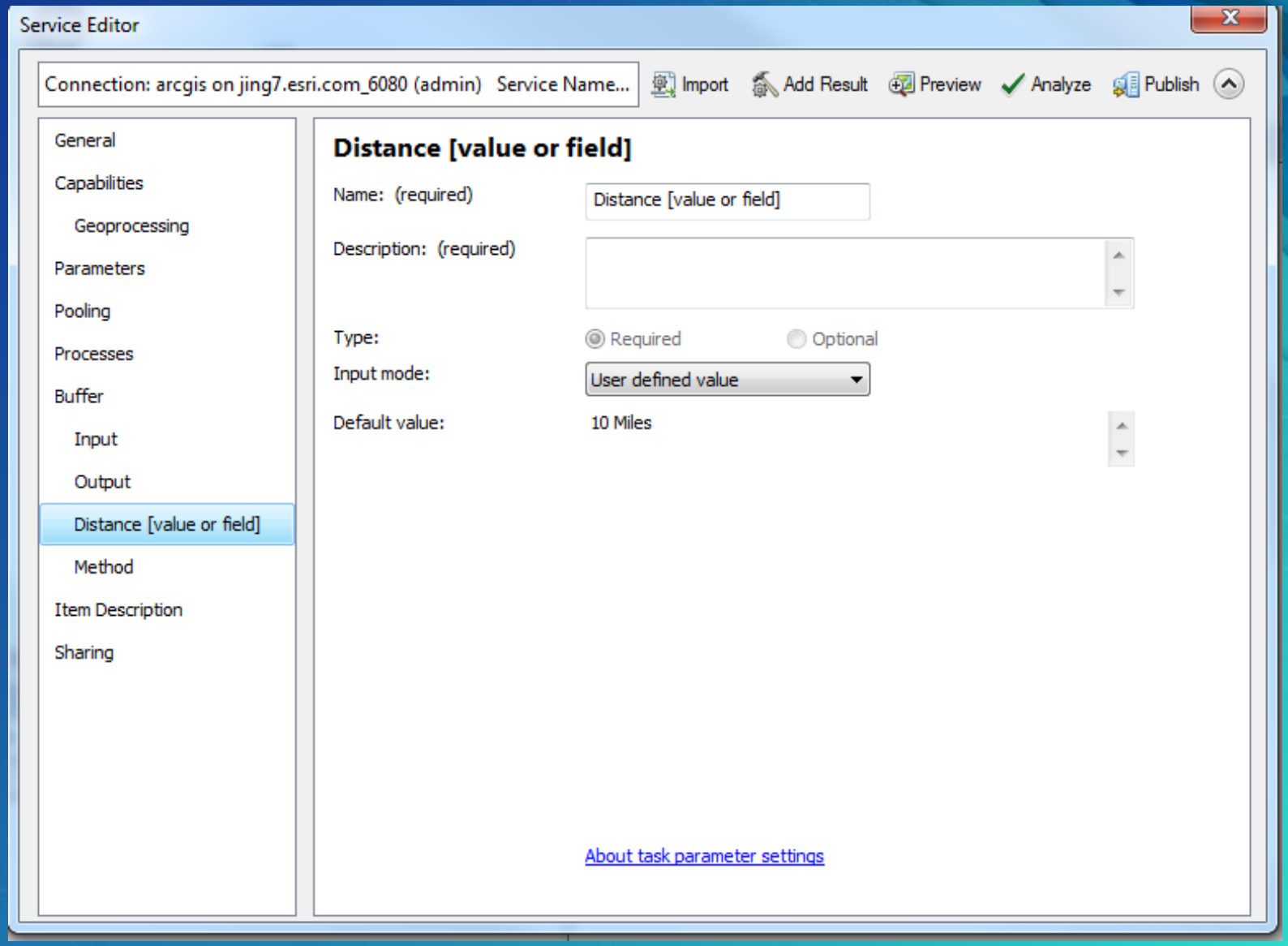
Input mode

Choice list



Input mode

User defined value



Share Web Tool from ArcGIS Pro

- Web tools allow you to share your analysis with others in your organization's portal. Data is stored and processing occurs on a server that is federated with your portal, which makes it possible for a number of client apps in the ArcGIS platform to run the analysis, even at the same time.

Input mod

REST

Submit Job (Buffer)

Distance [value or field]:
(*GPLinearUnit*)

```
{
 "distance": 10,
 "units": "esriMiles"
}
```

Method:
(*GPString*)

```
PLANAR
```

Options:

Output Spatial Reference:

Process Spatial Reference:

ReturnZ: ○ True ◉ False

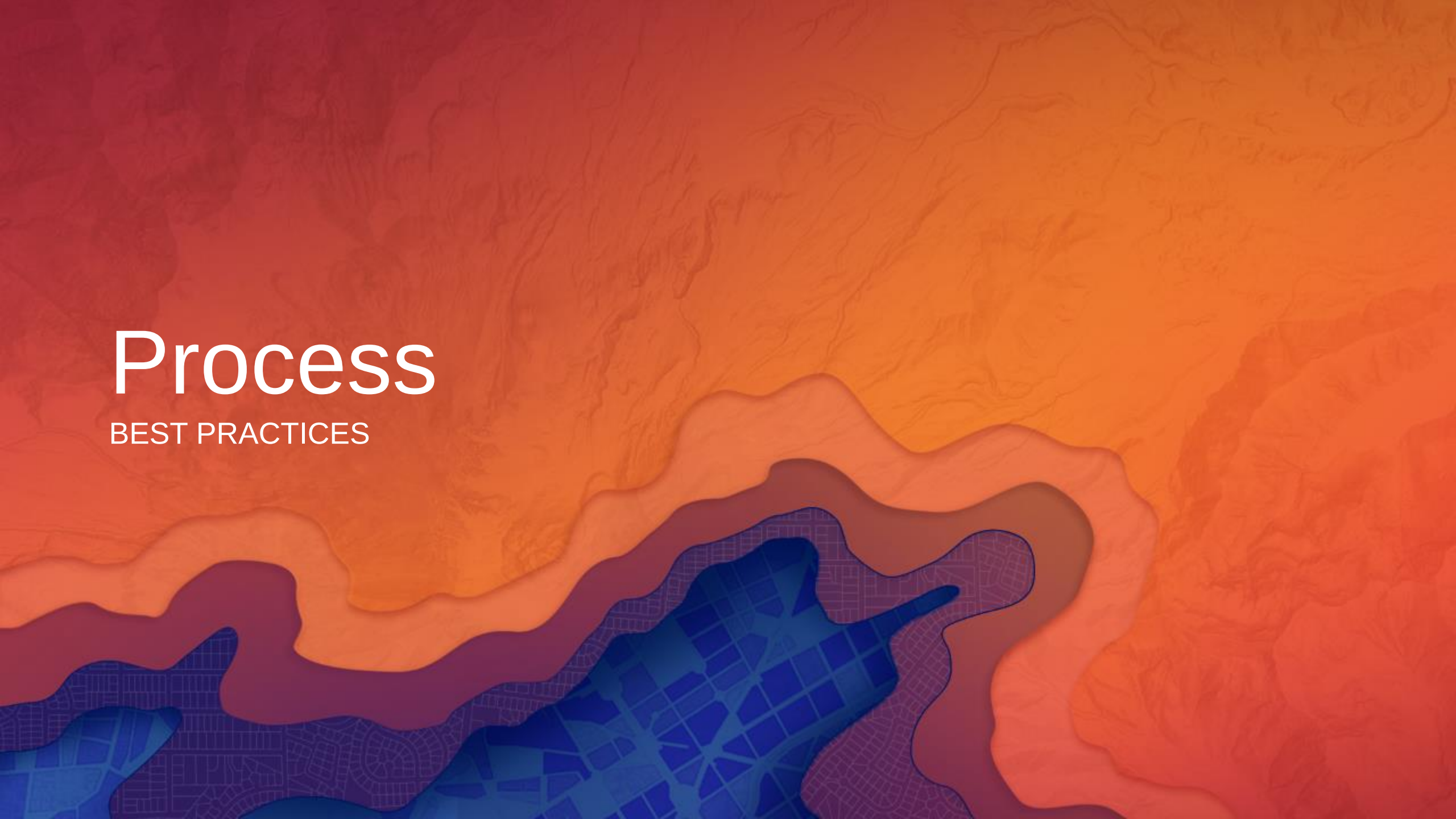
ReturnM: ○ True ◉ False

Format: HTML ▾

Submit Job (GET) Submit Job (POST)

Process

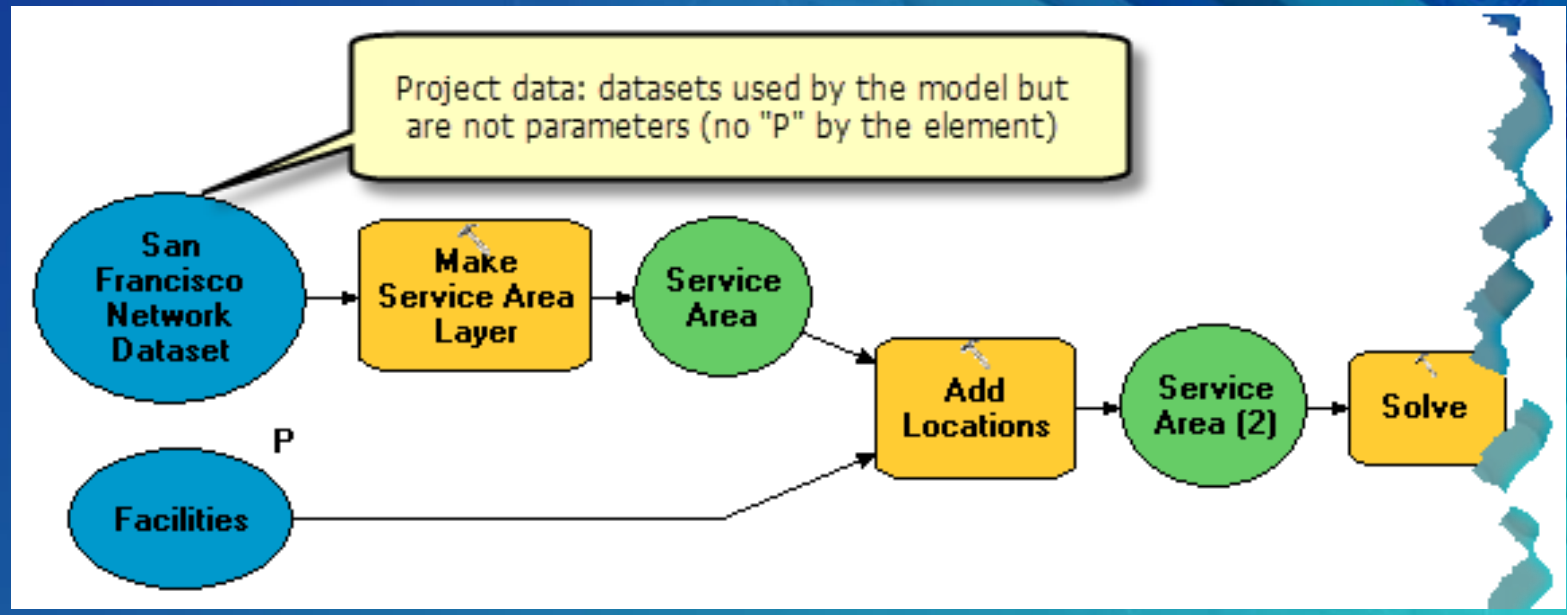
BEST PRACTICES



Process

Publishing – Essential Vocabulary

- **Project data - Term used by geoprocessing to describe input data that is not a parameter**

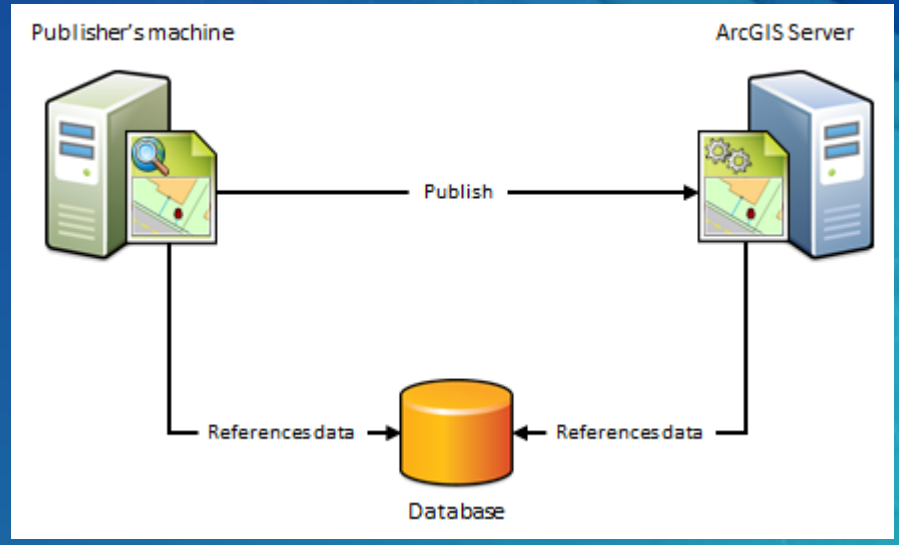


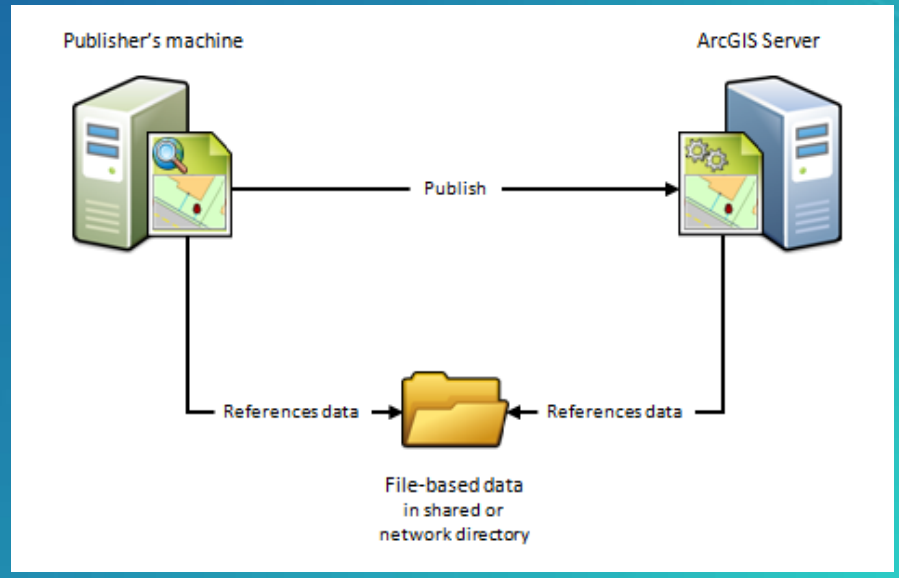

```
import arcpy

# The inputPoints variable is considered to be project data
#   since it is not an input parameter.
#
inputPoints = r"c:\data\Toronto\residential.gdb\shelters"

arcpy.Buffer_analysis(inputPoints, 'shelterBuffers', '1500 Meters')
```

Process

Publishing – Essential Vocabulary

- **data store – A catalog of data that can be found & accessed by ArcGIS Server. (Not to be confused with ArcGIS Data Store)**





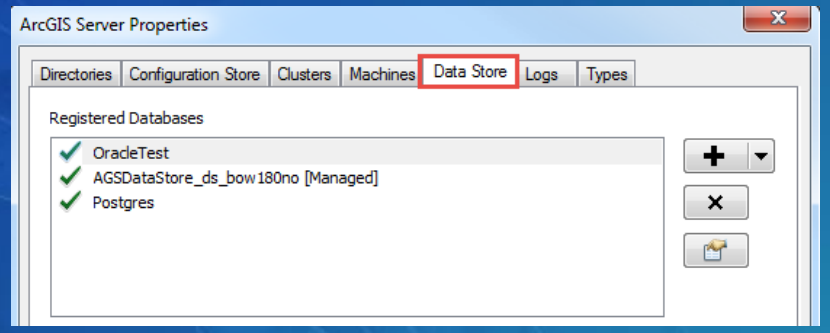
Process

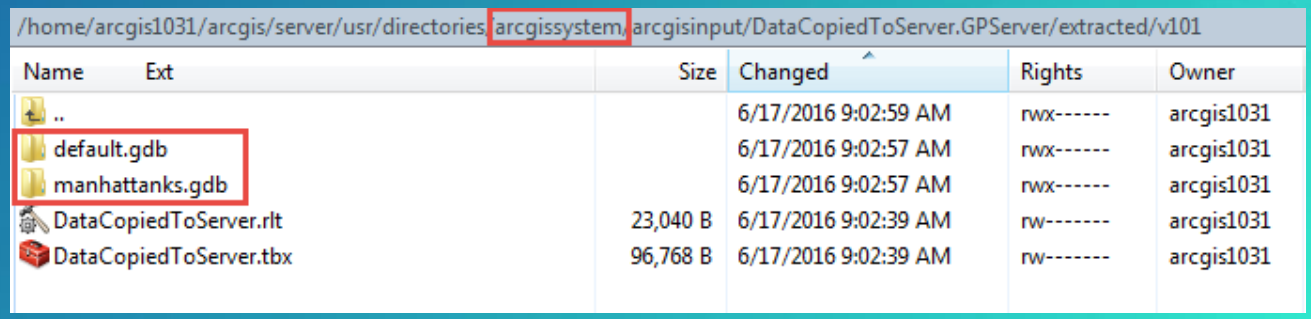
The Publishing Process

- Script or model is scanned
- Project data identified

- If in the datastore,
- data store will be used

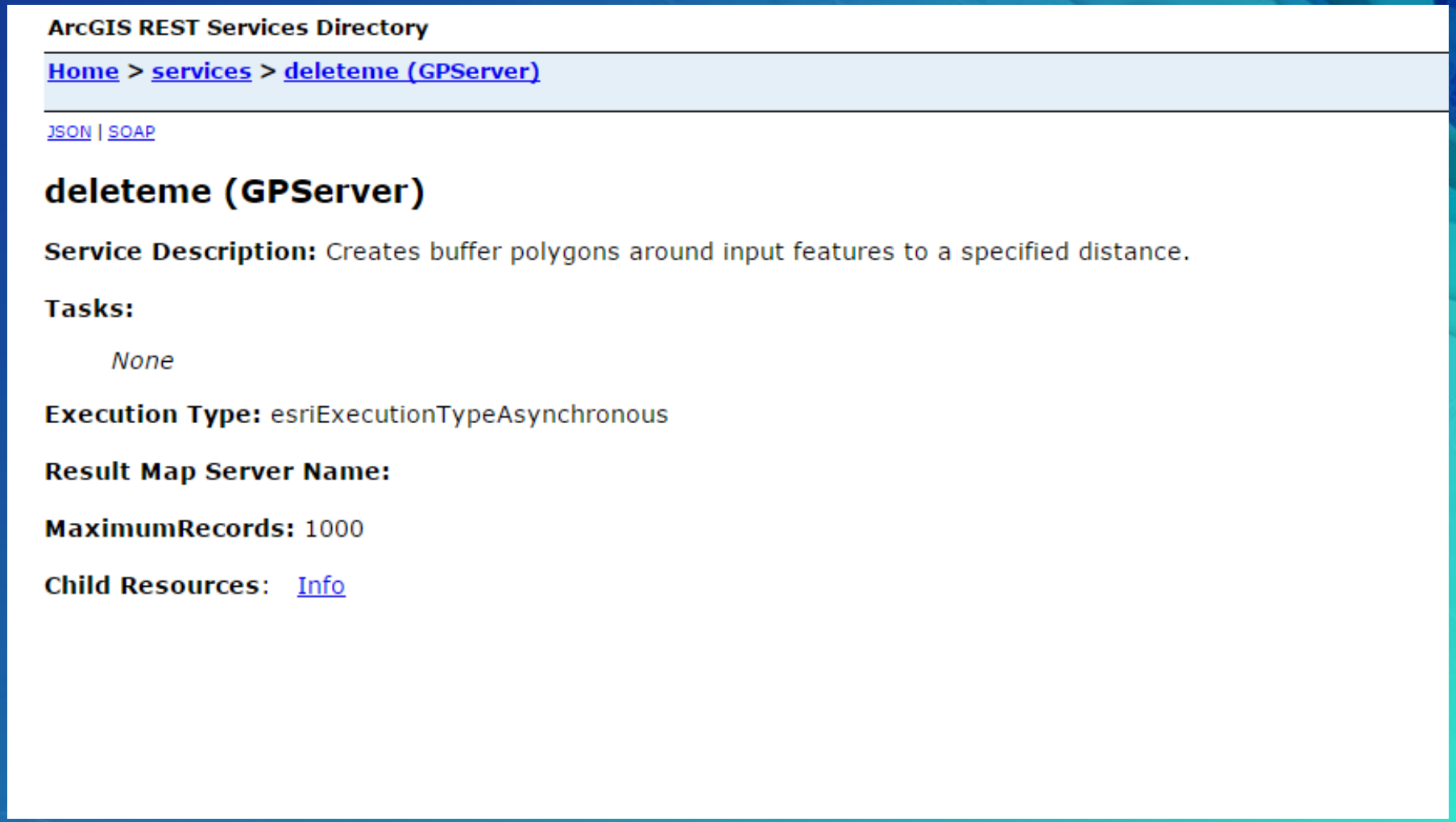
- If NOT in the datastore
- Package Workspace is created (data is copied to this location





Process

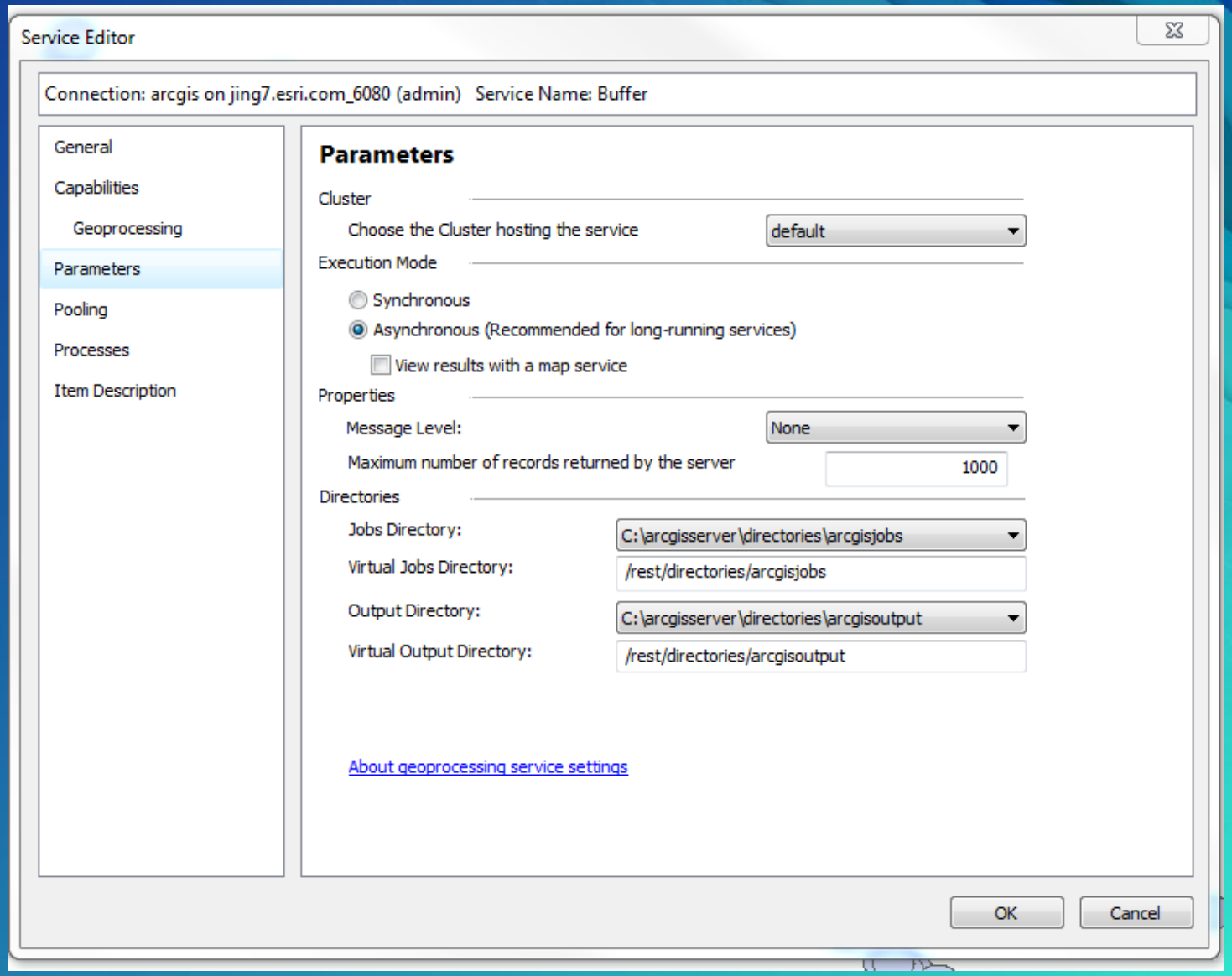
- ArcMap and ArcGIS Server have to be the same version.



Process

- Message Level of GP service

- None
- Error
- Warning
- Info



Process

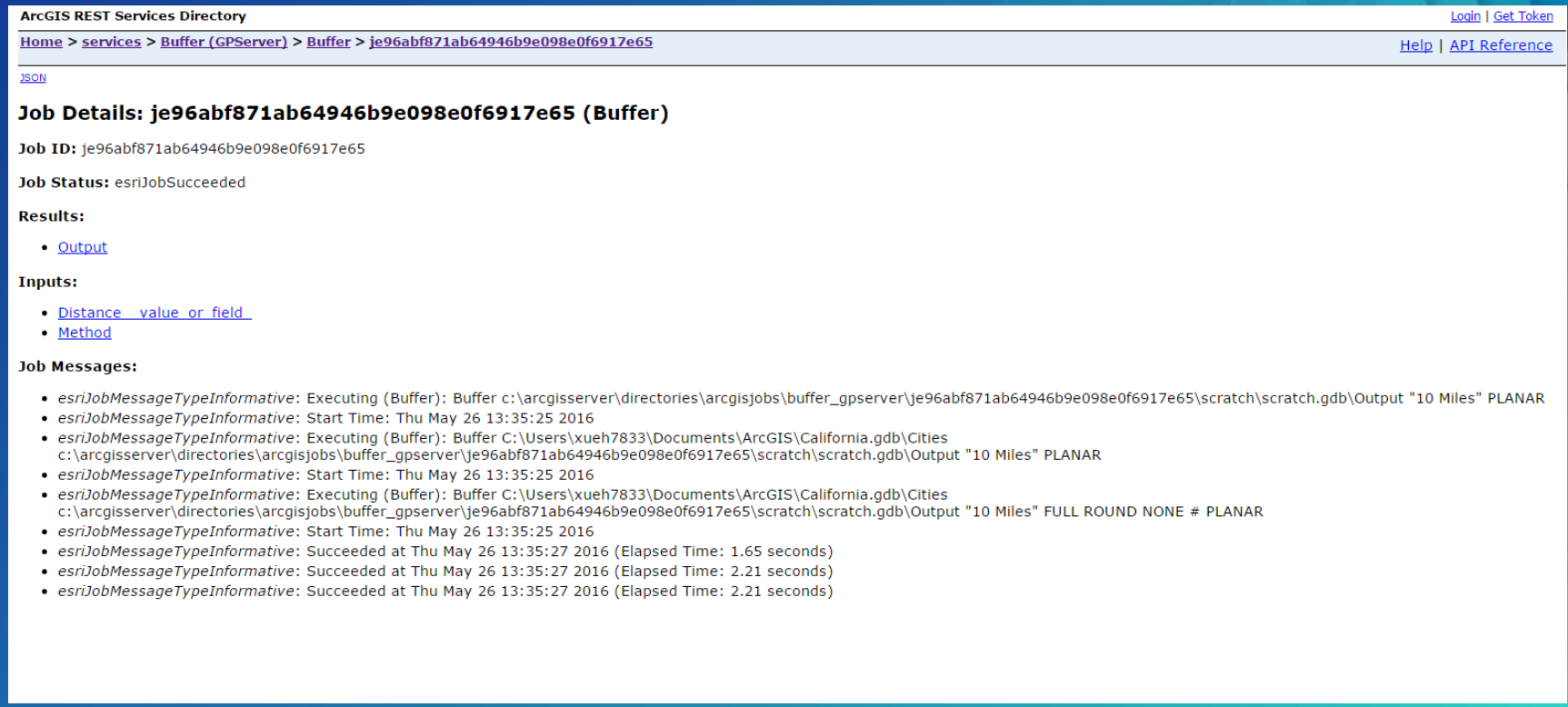
- Message Level

- None

Process

- Message Level

- Info



ArcGIS REST Services Directory

Login | Get Token

Home > services > Buffer (GPServer) > Buffer > je96abf871ab64946b9e098e0f6917e65

Help | API Reference

JSON

Job Details: je96abf871ab64946b9e098e0f6917e65 (Buffer)

Job ID: je96abf871ab64946b9e098e0f6917e65

Job Status: esriJobSucceeded

Results:

- Output

Inputs:

- Distance (value or field)
- Method

Job Messages:

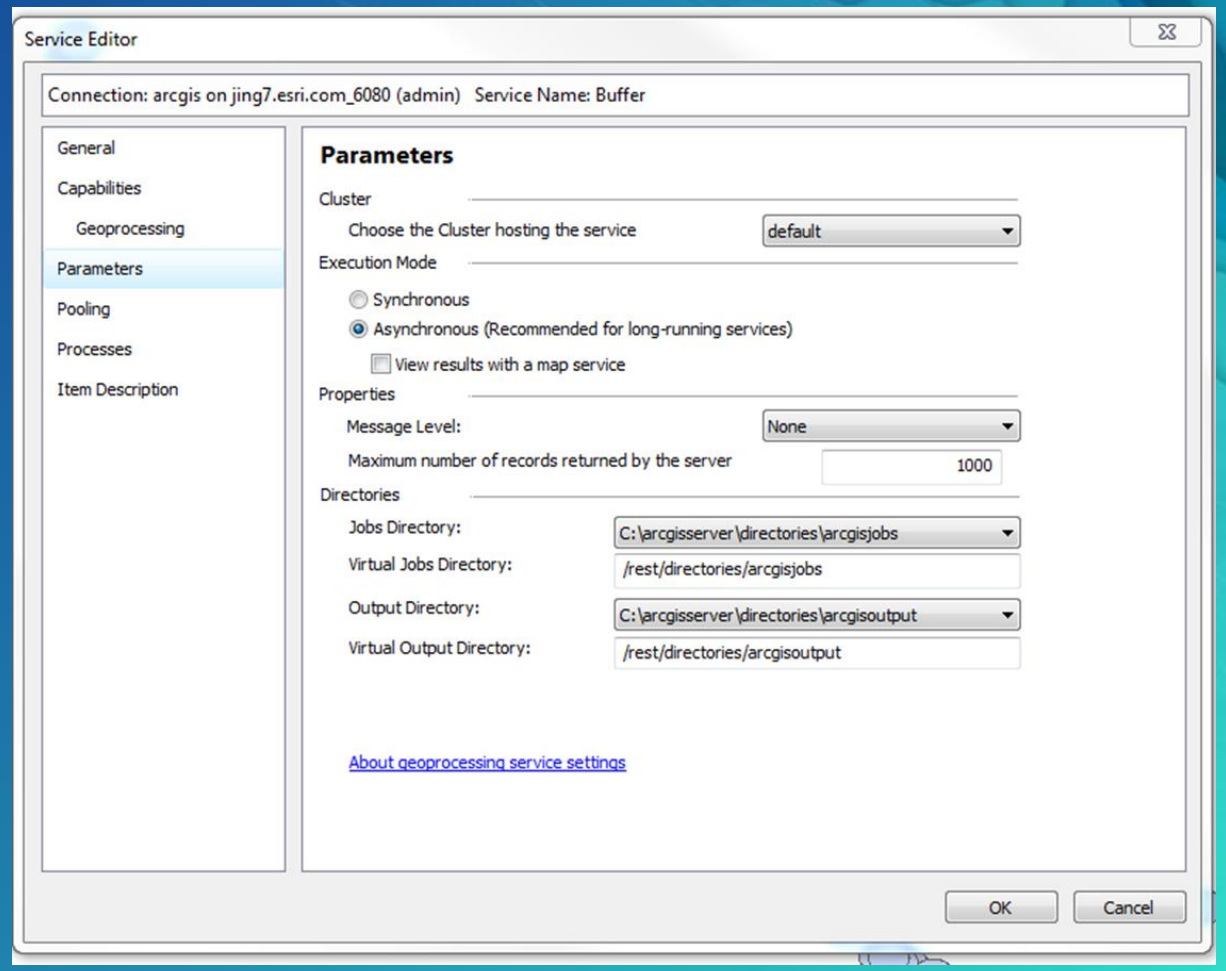
- *esriJobMessageTypeInformative*: Executing (Buffer): Buffer c:\arcgisserver\directories\arcgisjobs\buffer_gpserver\je96abf871ab64946b9e098e0f6917e65\scratch\scratch.gdb\Output "10 Miles" PLANAR
- *esriJobMessageTypeInformative*: Start Time: Thu May 26 13:35:25 2016
- *esriJobMessageTypeInformative*: Executing (Buffer): Buffer C:\Users\xueh7833\Documents\ArcGIS\California.gdb\Cities c:\arcgisserver\directories\arcgisjobs\buffer_gpserver\je96abf871ab64946b9e098e0f6917e65\scratch\scratch.gdb\Output "10 Miles" PLANAR
- *esriJobMessageTypeInformative*: Start Time: Thu May 26 13:35:25 2016
- *esriJobMessageTypeInformative*: Executing (Buffer): Buffer C:\Users\xueh7833\Documents\ArcGIS\California.gdb\Cities c:\arcgisserver\directories\arcgisjobs\buffer_gpserver\je96abf871ab64946b9e098e0f6917e65\scratch\scratch.gdb\Output "10 Miles" FULL ROUND NONE # PLANAR
- *esriJobMessageTypeInformative*: Start Time: Thu May 26 13:35:25 2016
- *esriJobMessageTypeInformative*: Succeeded at Thu May 26 13:35:27 2016 (Elapsed Time: 1.65 seconds)
- *esriJobMessageTypeInformative*: Succeeded at Thu May 26 13:35:27 2016 (Elapsed Time: 2.21 seconds)
- *esriJobMessageTypeInformative*: Succeeded at Thu May 26 13:35:27 2016 (Elapsed Time: 2.21 seconds)

Process

- Execution mode

- Synchronous

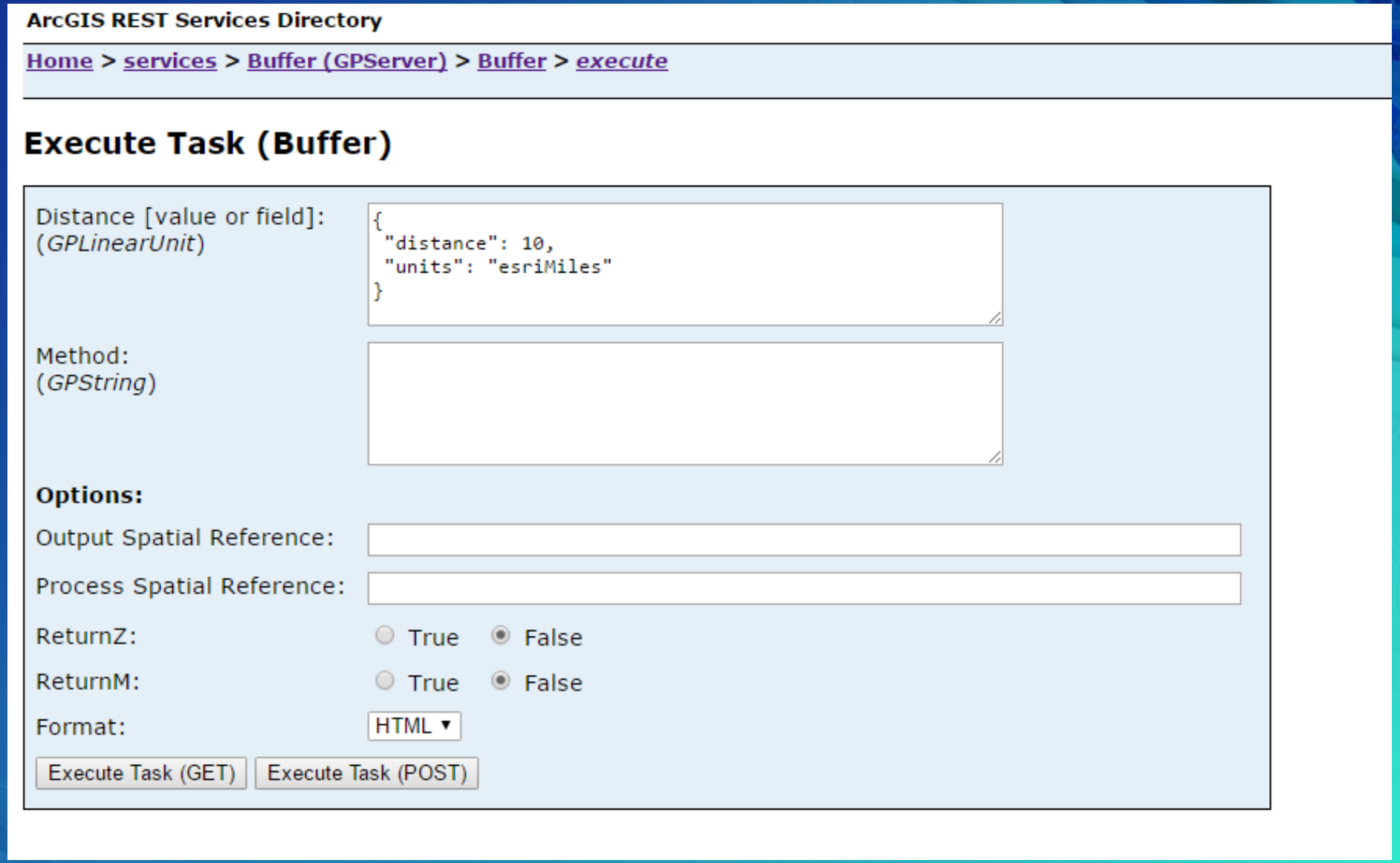
- Asynchronous (long-running services)



Process

Execution mode

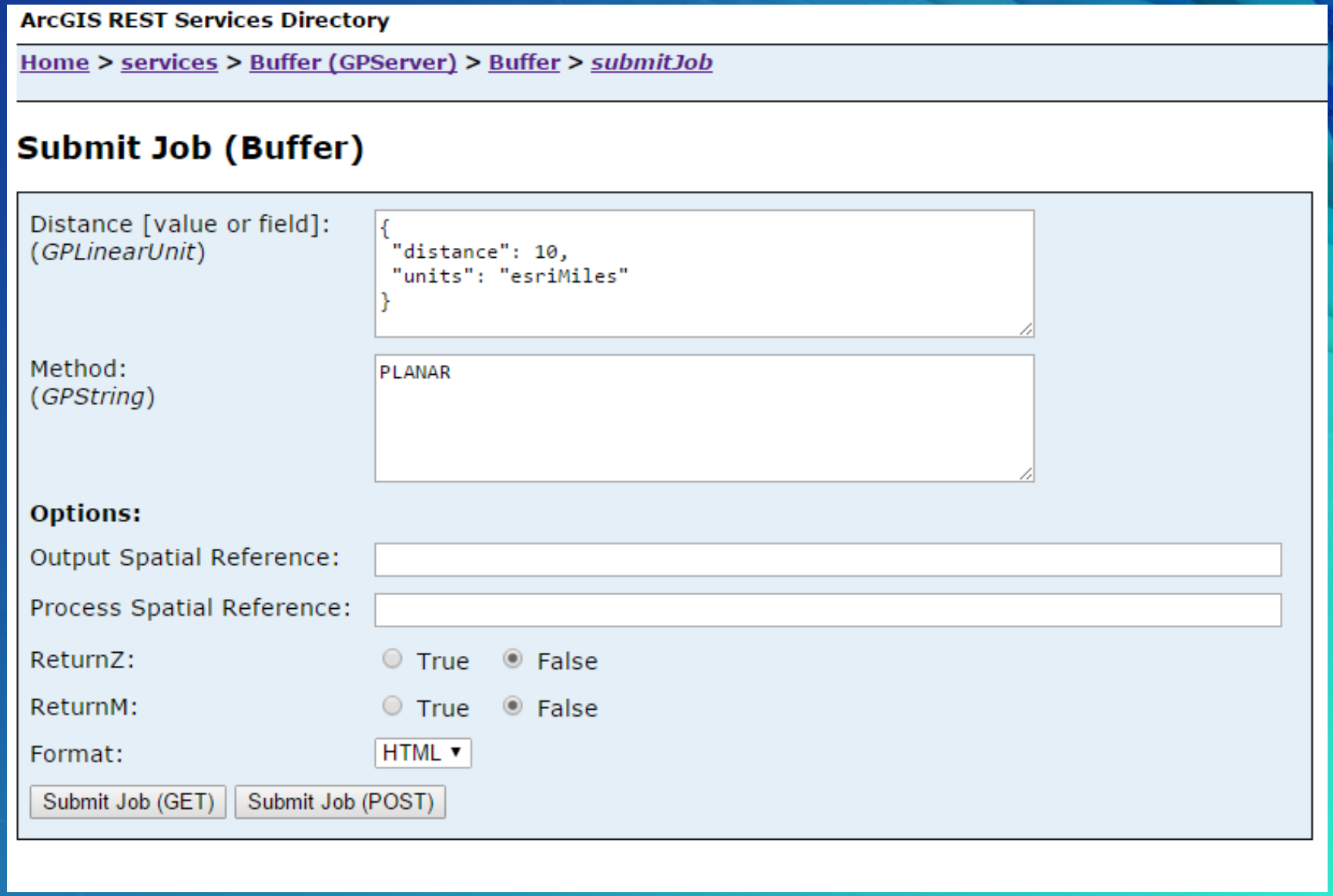
- **Synchronous**



Process

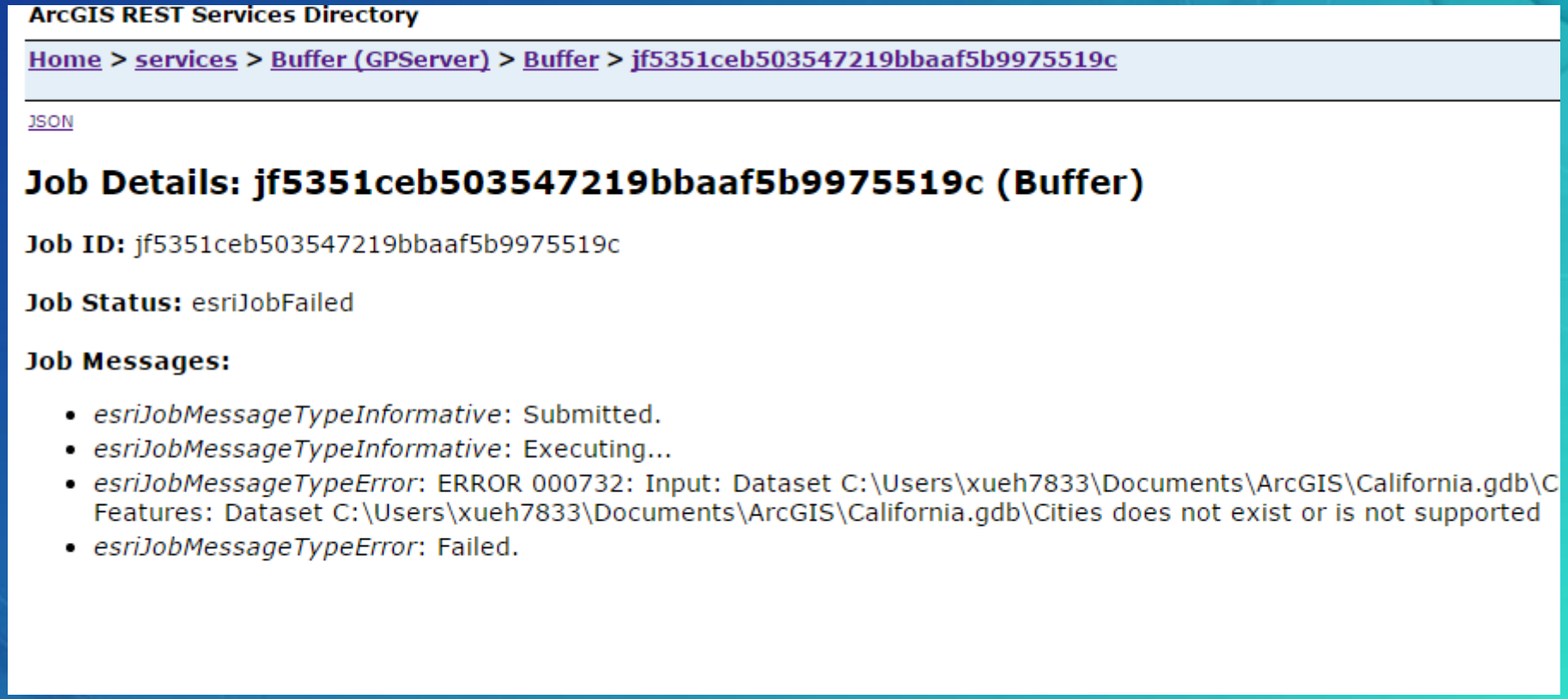
Execution mode

- **Asynchronous**



Process

- Search error code in resource center



Process

- **Error code in documentation**

000732: <value>: Dataset <value> does not exist or is not supported.

Description

The tool was unable to open your dataset.

There are several reasons that could prevent a tool from opening a particular dataset. Most fall into one of these categories:

- The tool could not find the data because the input data path was typed incorrectly or does not exist.
- The data is in an unsupported data format.
- The data is not supported by this particular tool.

Solution

Check the data path used to make sure it exists and can be accessed by ArcGIS. Correct as required and run the tool again.

If the data does exist, one of the following situations may have occurred:

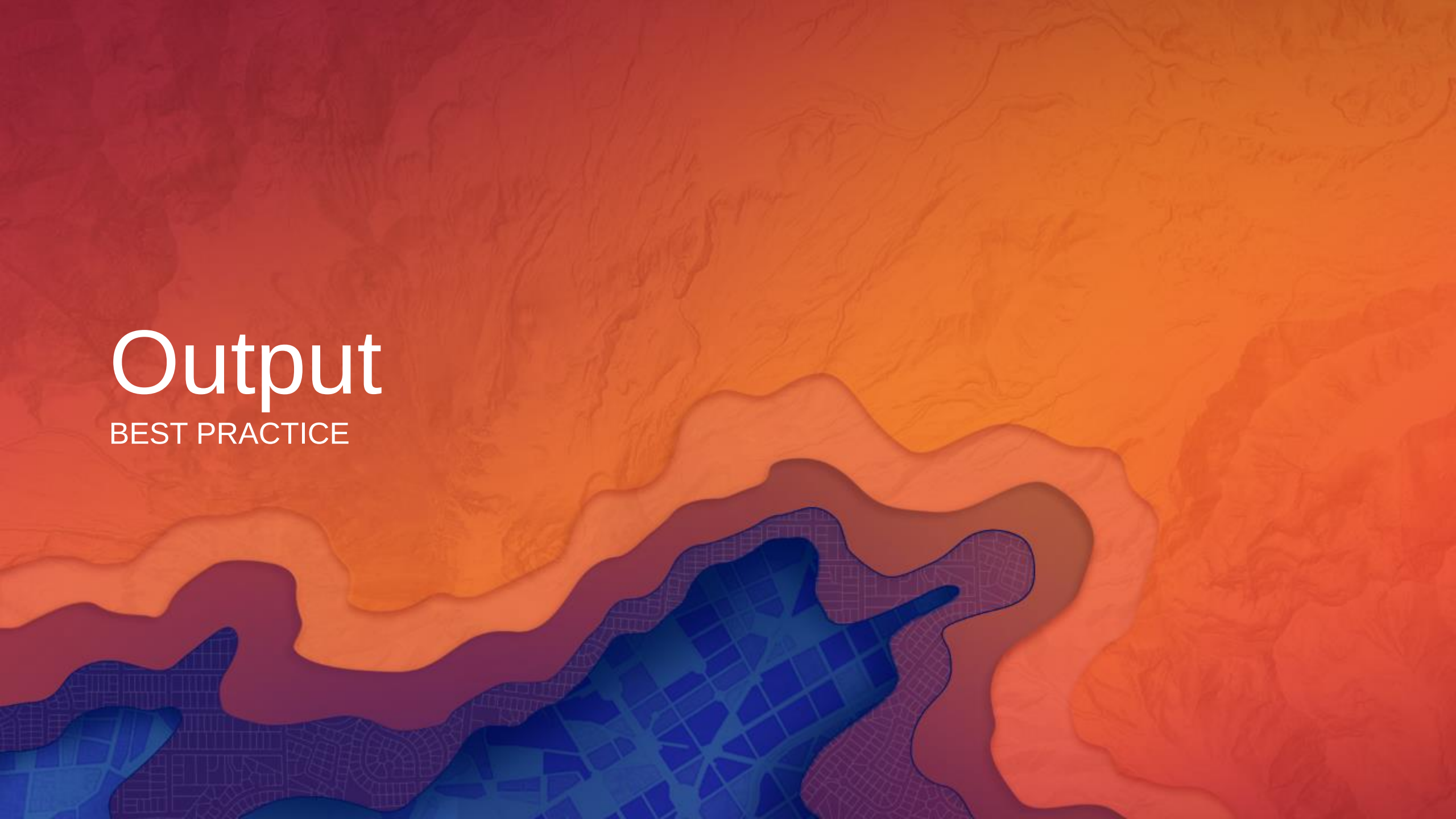
- 64-bit processing does not support some data formats. Use another format.
  Learn more about supported data types and items
- An invalid subtype on the dataset. To fix this, go to the feature class properties, click the **Subtypes** tab, and reenter the default subtype code. If the default is 0, click the cell with 0 and reenter that same value. Apply the change by clicking **OK**. You will now be able to use the dataset.
- In ArcGIS Engine for Linux, a text file cannot be used as an input to a tool with an input table parameter, such as Copy Rows or Make XY Event Layer. On Windows you can convert the file to another format using the Table To Table tool.
- The Register_As_Versioned and Unregister_As_Versioned tools cannot run against a controller dataset, such as a Geometric Network, Topology, Network Dataset, or Terrain. To fix this, run these tools against the feature dataset that

Demo

BEST PRACTICE - TROUBLESHOOTING

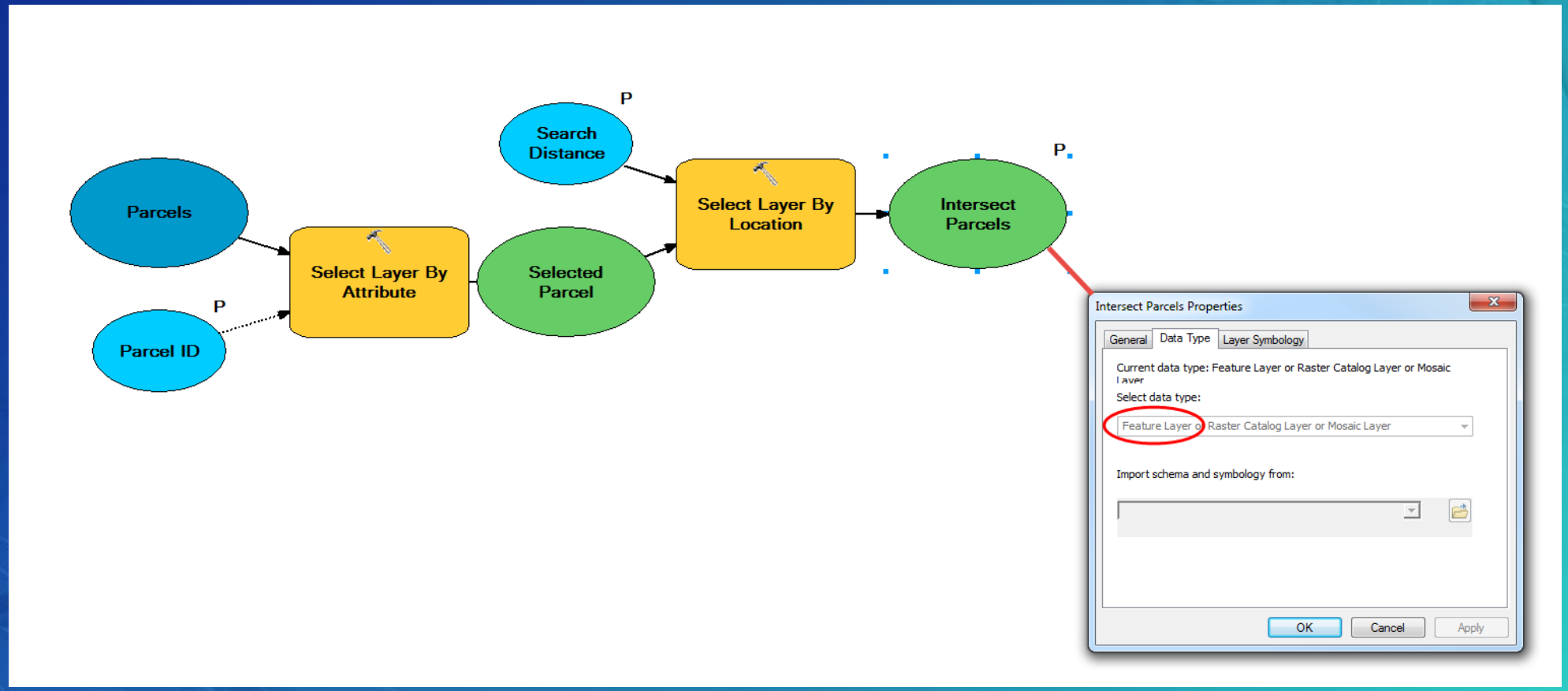
Output

BEST PRACTICE



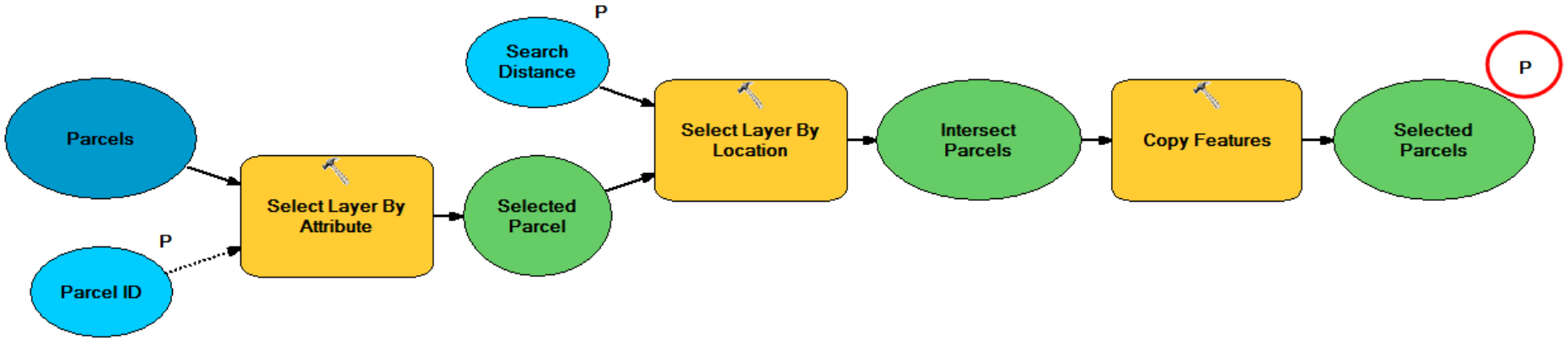
Output

- Like input, there are different data types for output parameters



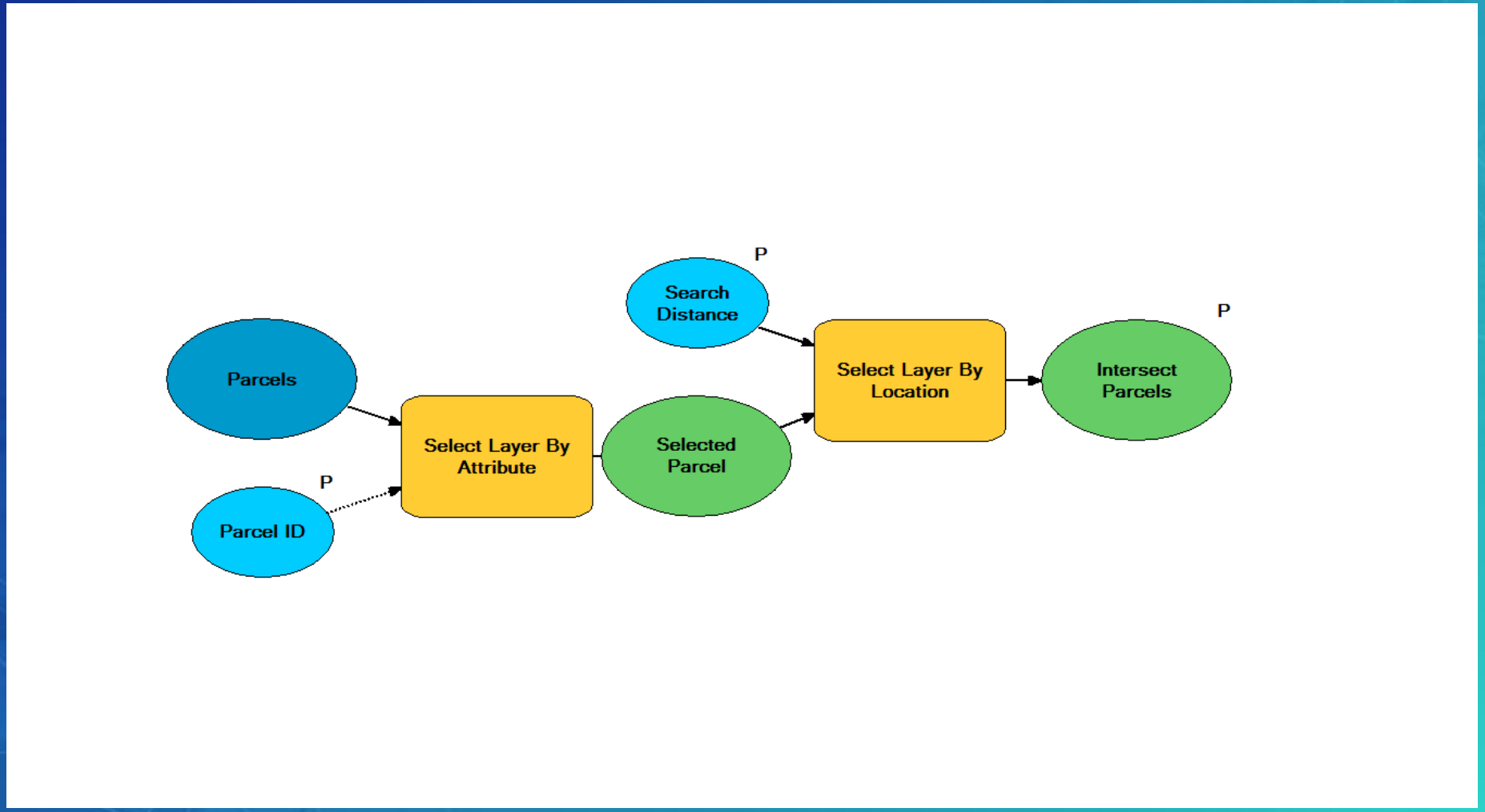
Output

- Output MUST be a model parameter



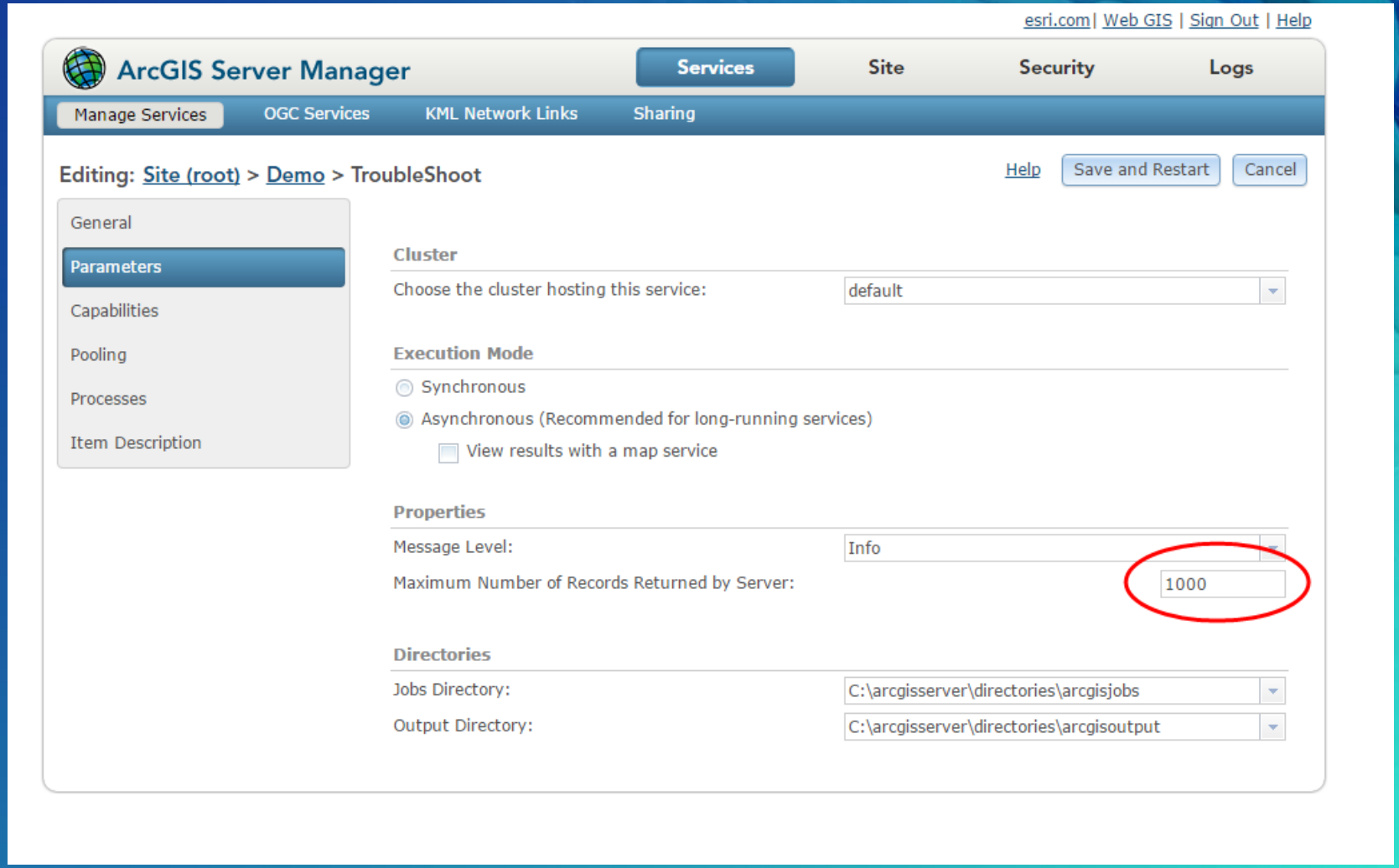
Output

- Select Layer By Attribute, Select Layer By Location
- The feature selection won’t show up in application



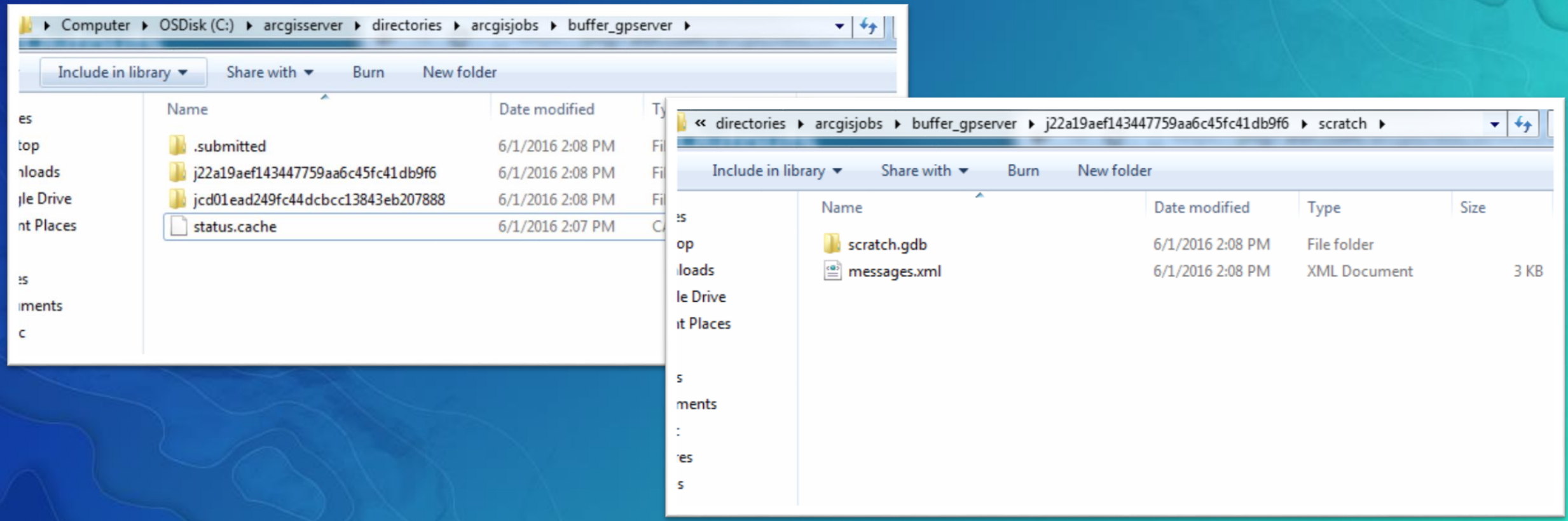
Output

- **Exceeded transfer limit**



Output

- Set your output to be in scratchGDB or in_memory
- In a python script, use os.path.join(arcpy.env.scratchGDB, “points”)
- scratchGDB is created in …\arcgisserver\directories\arcgisjobs\<name>_gpserver\<jobid>\scratch



Questions?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THE
SCIENCE
OF
WHERE