Automating GIS Tasks

(so you can play more golf)

Presented by:
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Automating GIS Tasks

Presentation Agenda

- Reasons for automating tasks
- Define the components for automating tasks
- Review those components
- Create and configure an automation
- Run the automation
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Where were you yesterday???
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Where were you yesterday???
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Here is where I was...
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Reasons for automating tasks

• Repetitive tasks to complete
• Need to complete tasks during off hours
• Need to perform tasks with long durations
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Getting started

First things first…

You don’t need to be a software developer to automate GIS tasks!
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Necessary components

- Task(s) to automate
  - e.g. Nightly export to shapefile
  - e.g. Weekly compact of a file geodatabase

- ArcGIS Desktop *(license level does not matter!)*
  - ArcToolbox
  - Model Builder
  - Python Script

- Windows Scheduler
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Step 1 – Create a model

• It’s EASY…
Step 1 – Create a model

- Models are created in Model Builder
  - Model Builder is tightly integrated with ArcToolbox
- Must create a custom Toolbox to hold your model
  - Models are saved within custom toolboxes (.tbx files)
  - Right click inside ArcToolbox and choose “New Toolbox”
  - Default location for custom toolboxes - C:\Documents and Settings\[User Name]\Application Data\ESRI\ArcToolbox\My Toolboxes (hint: “Show Hidden Files and Folders”)
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Step 1 – Creating a model continued...

- If desired, you can create a Toolset within your custom Toolbox to hold your model
  - Think of Toolsets as subfolders
  - Helps to organize a Toolbox

- Create your model within your newly created Toolbox/Toolset
  - Right click inside your new Toolbox/Toolset and choose New-Model
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Step 1 – Creating a model continued…

• Finally…begin creating your model
  • Models are built by dragging and dropping system tools into ModelBuilder
  • Double click model components to define input parameters
    • This essentially “hard codes” inputs
  • Use the “Add Connection” tool to connect model components if the model contains multiple tools/processes
  • Save your model
  • Rename your model
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Step 1 – Your model...
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At this point...

• Your GIS task is partially automated, but you still have to push a button.
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At this point...

That’s too much work!!!
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At this point...

*That’s too much work!!!*
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Before moving on...

• If you want to use your model without 100% automation consider:
  • Creating input parameters
    • *Cannot be in your model if you’re going to use total automation*
  • Naming the model components
  • Creating model help
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Before moving on consider...

Creating input parameters

- Cannot be in your model if you’re going to use total automation
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Before moving on consider...

Naming the model components
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Before moving on consider...

Naming the model components

Parent Geodatabase

Synchronize Addressing Replica

Click error and warning icons for more information

Parent Geodatabase

Database Connections\GCGIS@sde.sde

Replica

GCGIS.AddressingReplica

Child Geodatabase

Database Connections\sa@LIVE_rwsaegisgisdb_geneseed.sde

Direction

FROM_GEODATABASE1_TO_2

Conflict Resolution Policy

IN_FAVOR_OF_GDB1

Conflict Definition

BY_OBJECT

OK Cancel Environments... Show Help >>
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Before moving on consider...

Creating model help...

This tool can be used to generate a new parcel feature class. It takes the inputs of RPSv4 extracts, parcel history database (PHD) extracts and the Real Property department maintained parcel boundaries to create the new feature class.
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Step 2 – Export model to a Python script

• To completely automate your GIS task you’ll need to export it to a Python script
  • Why Python???
  • Software to run the script comes with ArcGIS Desktop
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Step 2 – Export model to a Python script

Things to remember before exporting your model to a script

- No model parameters
- Be cautious of the license level used to create the script
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Step 3 – Configure the Windows Scheduler

- Using the Windows Scheduler you can completely automate your GIS tasks
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Step 3 – Configure the Windows Scheduler

- The Windows Scheduler allows you to set tasks to run at regularly scheduled intervals easily
  - Choose “Add a Scheduled Task”
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Step 3 – Configure the Windows Scheduler

- Begin stepping through the wizard to configure your schedule task
  - Choose the application that will run your task (Python.exe)
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Step 3 – Configure the Windows Scheduler

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  - Choose the application that will run your task (Python.exe)
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Step 3 – Configure the Windows Scheduler

- Continue stepping through the wizard to configure your schedule task.
  - Name your task.
  - Specify the schedule on which you'd like your task to run.
  - Define the user that runs the task.

- At the last step, check the box “Open advanced properties for this task when I click Finish.”

You have successfully scheduled the following task:

RasterGDBNightlyCompress

Windows will perform this task:
At 12:45 AM every day, starting 2/11/2009

Click Finish to add this task to your Windows schedule.
Step 3 – Configure the Windows Scheduler

- You need to open the advanced properties to specify which script the Python application needs to run – your script!
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Step 4 – Test the Scheduled Task

• Open the Scheduled Tasks dialog, right click on your task and choose run
  – Using this process your task can be run at any time
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Step 4 – Test the Scheduled Task

- Did the task run successfully???
  - View the Scheduled Tasks log
  - You want to see an “Exit code of (0).”
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Step 5 – Go Golfing…you’re done!
Questions???

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