The background of the slide is a dark grey-blue color with faint, light-colored sketches of various scientific and technical objects. These include a globe, a microscope, a test tube, a cross-section of a mechanical part, a percentage sign, and other geometric shapes. In the top-left corner, there is a small yellow icon of a speech bubble with three lines inside, indicating a comment or feedback feature.

# ArcGIS Pro Tasks

## What are they and why should I use them?

David W. Allen, GISP



# ArcGIS Pro Tasks

David Allen

34 years with the City of Euless – Almost 1 year with the City of Roanoke

Taught GIS at Tarrant County College for almost 20 years

Author of many GIS textbooks including:

‘Designing and Building Tasks in ArcGIS Pro’ – *GISGuidebooks.com Press*



# ArcGIS Pro Tasks

## Tasks

Esri invented this in ArcGIS Pro at about the Version 2 level. They're embedded and free so it does no harm to try one out.

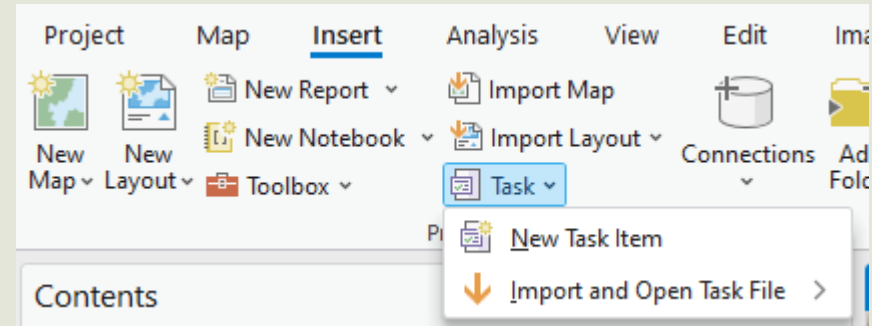
They are used primarily to build a set of repeatable steps into a file that can be run over and over. Along the way you can :

- Create temporary editing sets
- Use ANY menu tool
- Use ANY geoprocessing tool
- Create variables

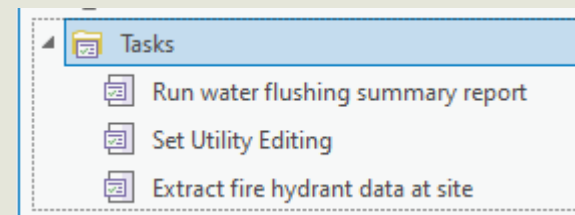
**INCLUDING THE ABILITY TO INTERACTIVELY SELECT FEATURES INSIDE THE TASK!**  
You can't do that in a Model or a Python script.

# ArcGIS Pro Tasks

Tasks are made from the Insert menu.



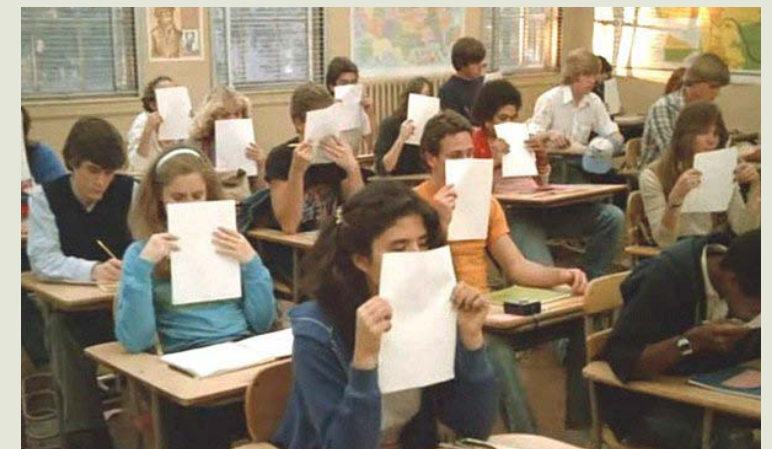
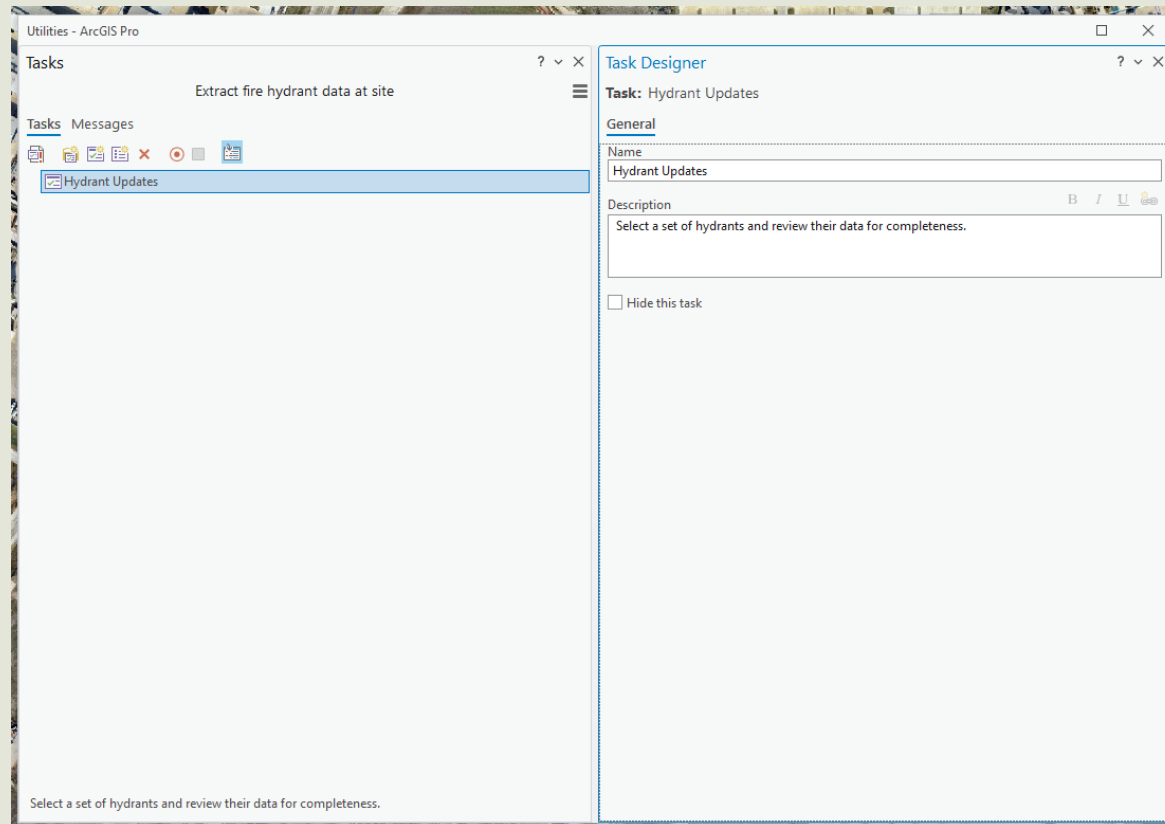
Then a new category is added to the Catalog list.



Tasks are edited and run from this location.

# ArcGIS Pro Tasks

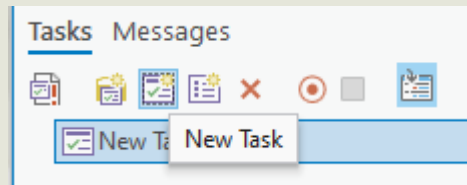
Brief pause – the handout shows how to set up your Tasks editing panes.



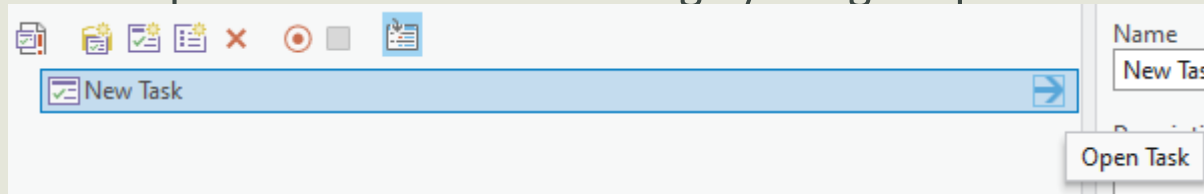
Sorry about the bland smell, but my Mimeograph machine is broken

# ArcGIS Pro Tasks

In the Tasks Management pane you can create a new task within the task item – Click New Task



Then open the task in the manager/designer panes and begin to build it – Click the Arrow



The task will have steps - Click New Step



When run, the task will go through the steps you define.

That sounds pretty simple, but the complexity of the steps is where the power lies.



# ArcGIS Pro Tasks

## Tasks – The Quick Start Method

The task editor has the ability to record your actions and make them into a task. It's a good idea to diagram out your process before trying this because it will record everything you do!

As a sample I'm going to make a task that will report back how many fire hydrants are within 350 feet of any building selected on a map. The fire chief wants this set up at a town hall meeting so that citizens can see how many hydrants are around their house and feel safe.



# ArcGIS Pro Tasks

The steps will be to:

Select a building footprint on the map

Select the fire hydrants within 350 feet of the building

Show them on the map

Export a spreadsheet with the maintenance records of the selected fire hydrants

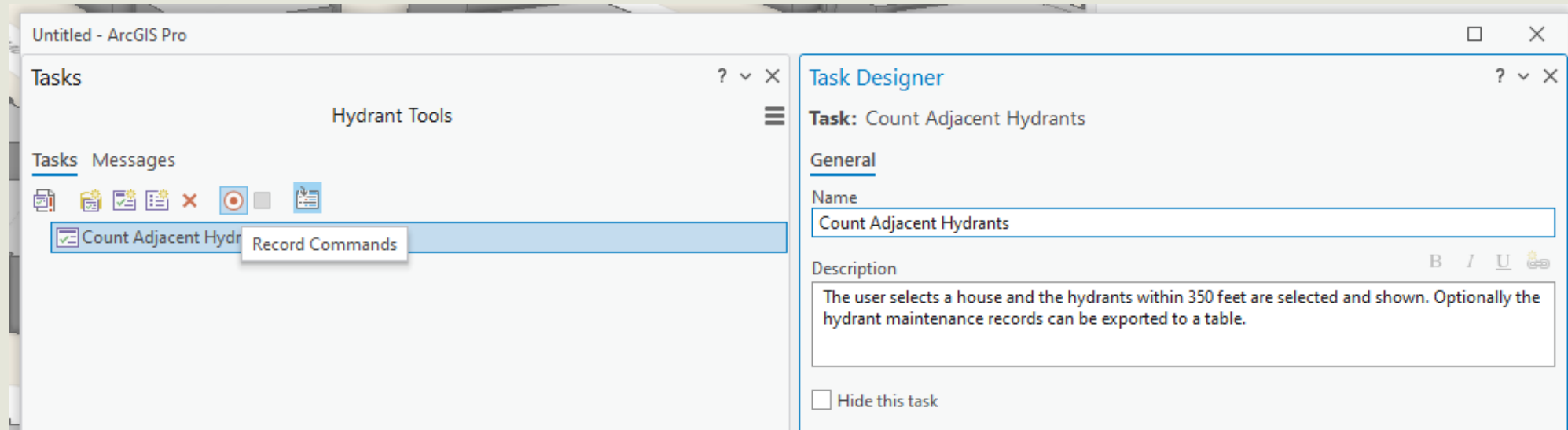
Each of these will be a step in the task, but we'll do them manually and let the task record them rather than build the steps one by one.



# ArcGIS Pro Tasks

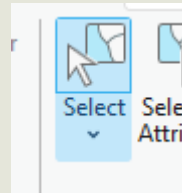
I created a new Task Item and made a new task within it.

Then I clicked the Record Commands tool and went through the steps manually. It can even record mouse actions on the menu and right-click context menu selections



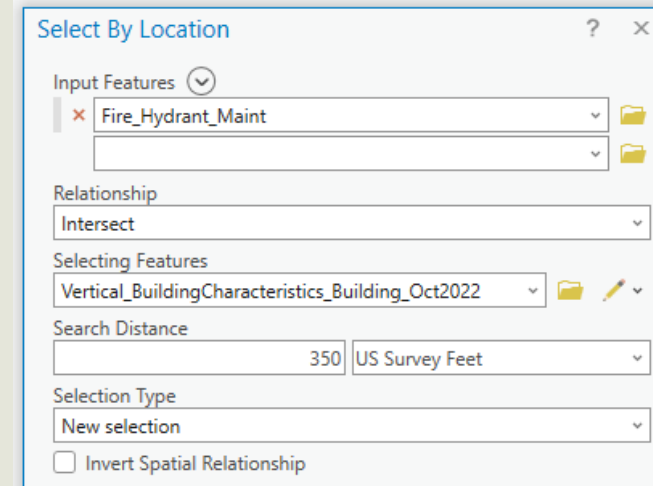
# ArcGIS Pro Tasks

Select a building using the pointer

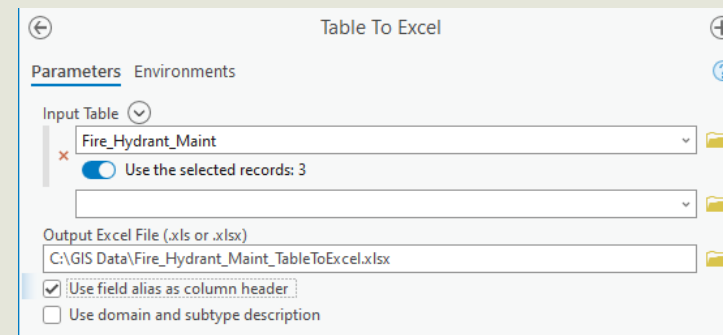


Select the hydrants using a geoprocessing tool

See the map

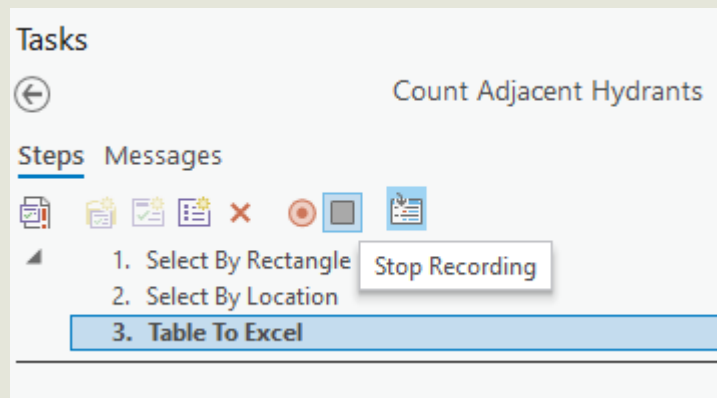


Export hydrant data to Excel



# ArcGIS Pro Tasks

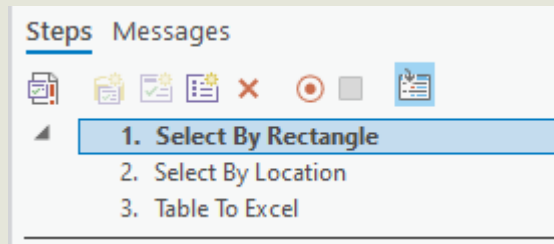
When I finished my steps, I clicked Stop Recording and here's the steps the task got.



When first created it will run everything manually requiring a lot of user input, but there are settings to help make it more user friendly. This is done with the Step Behavior settings.

# ArcGIS Pro Tasks

For the first step, you want the task to allow the user to select one or more features in the map, then when ready click Next. This is the Auto Run behavior.



Step Behavior

- Manual** User runs and user proceeds ⓘ
- Auto Run** Step runs and user proceeds ⓘ
- Auto Proceed** User runs and step proceeds ⓘ
- Automatic** Step runs and step proceeds ⓘ
- Hidden** User will not see the step
- Optional** User can skip this step ⓘ

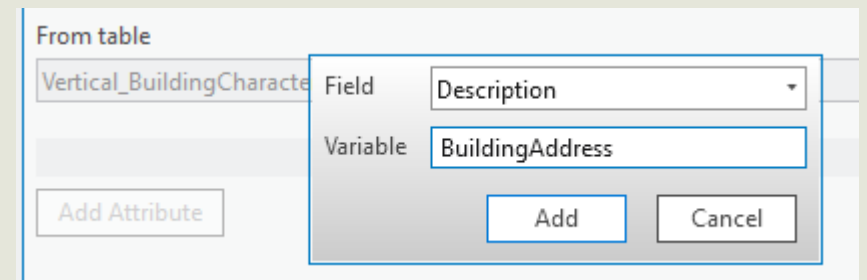
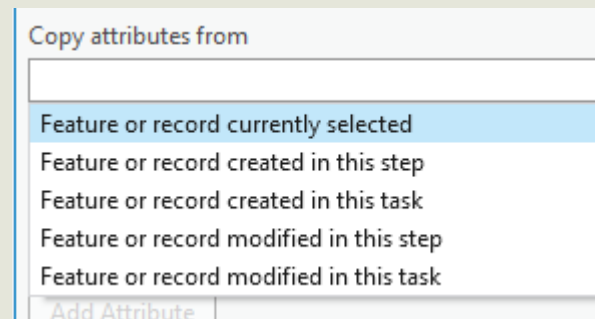
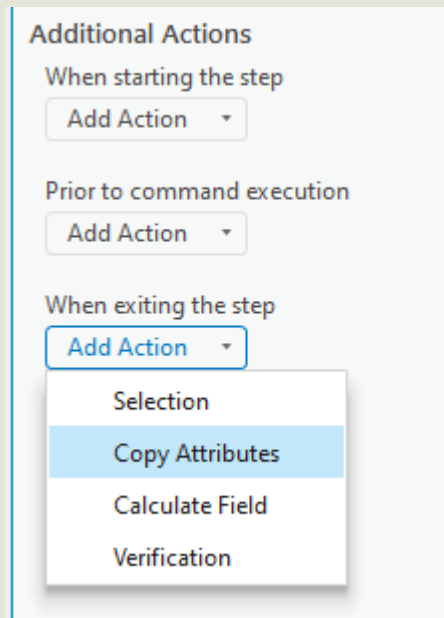
**Auto Run**

The step runs automatically and waits for the task user to click NEXT STEP to proceed.

For example, the step runs the Select By Rectangle tool. The task user selects features and clicks NEXT STEP to proceed.

# ArcGIS Pro Tasks

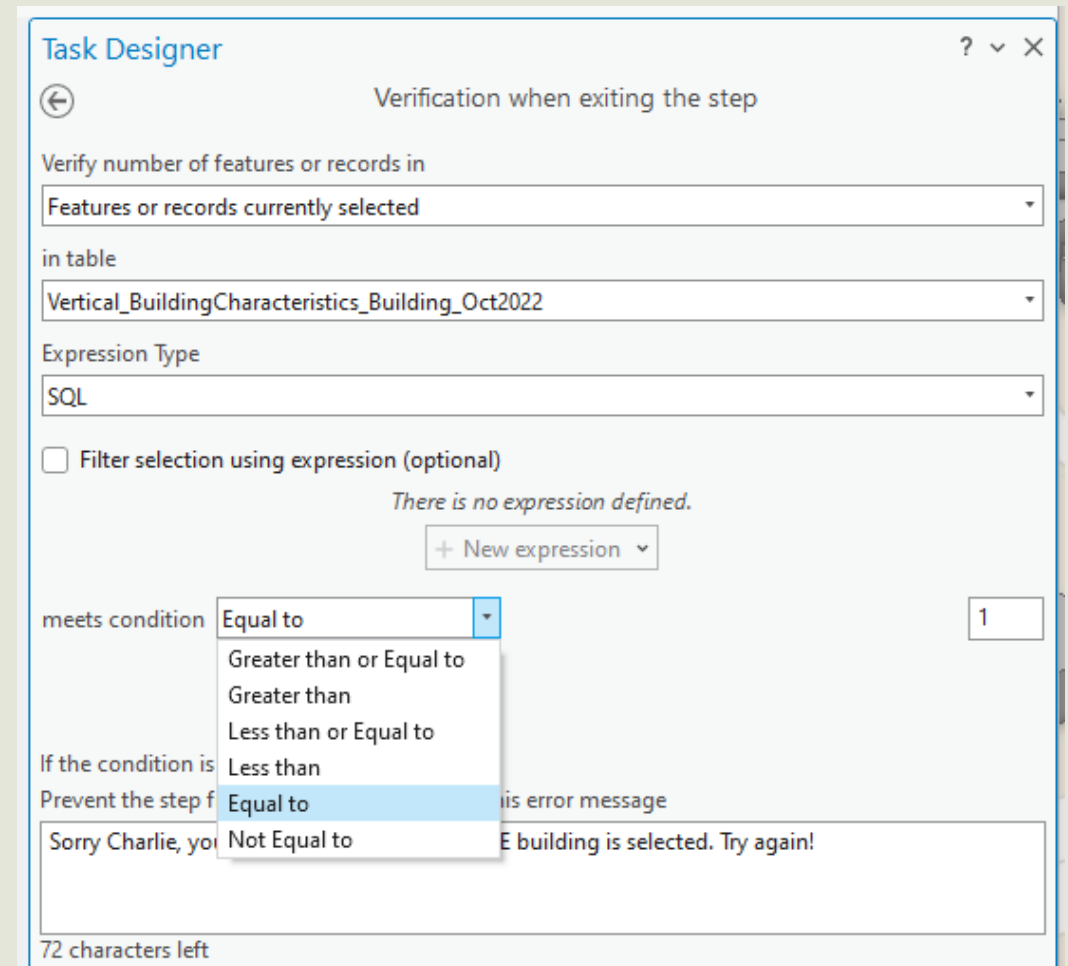
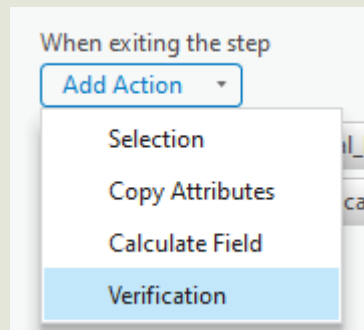
I also want to pull the address of the house out of the building layer and into a variable. This is done with an Additional Action.



# ArcGIS Pro Tasks

PLUS I want to make sure they have selected only one building.

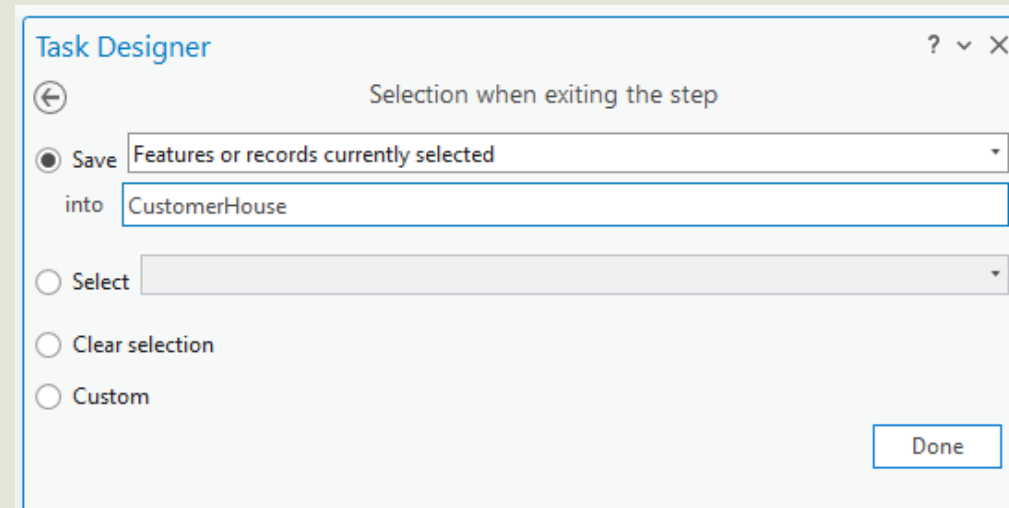
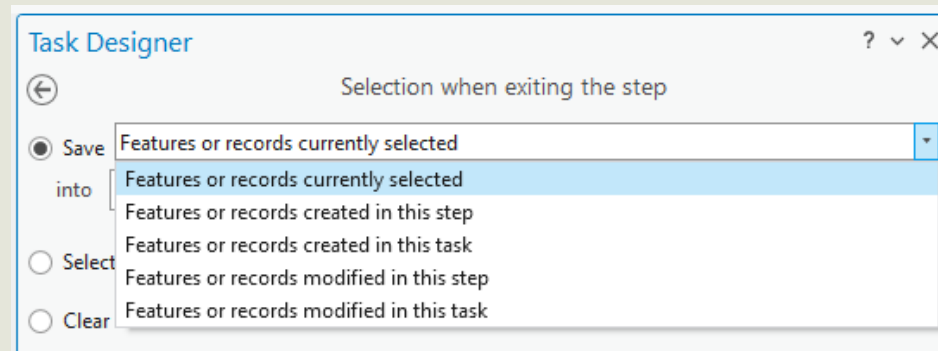
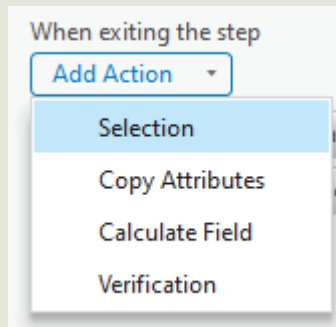
That condition can be checked when exiting the step with another Additional Action.



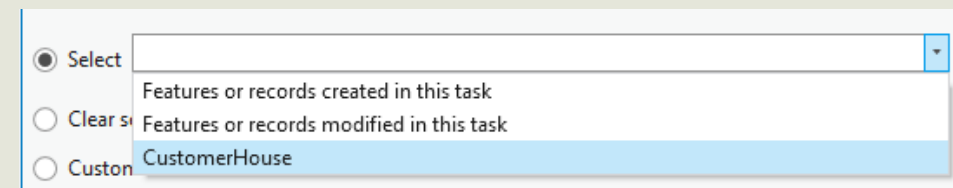
# ArcGIS Pro Tasks

AND I want to save the selected feature into a set that I can recall later in the task if needed.

That Additional Action can also be done when exiting the step.



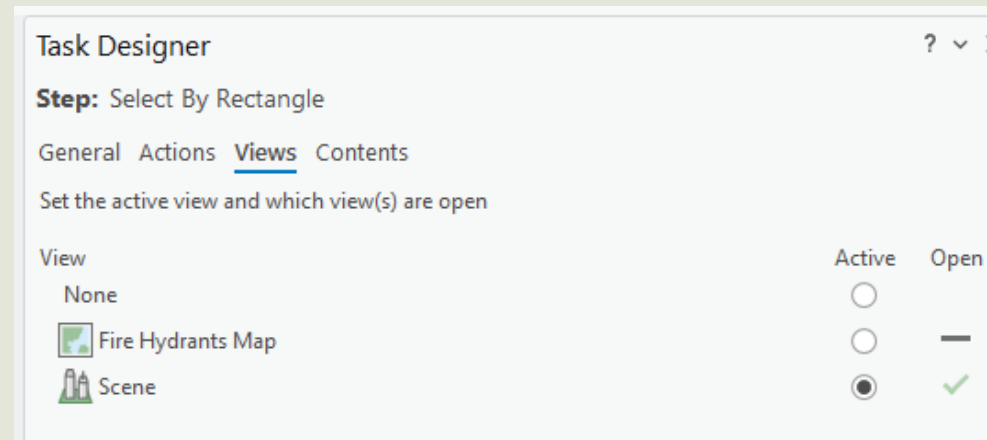
In later steps you can recreate the selection set using the name you assigned the set.



# ArcGIS Pro Tasks

BUT WAIT ... How do I keep the user from selecting something other than a building in the first place? If they pick a street centerline then the task will fail when run.

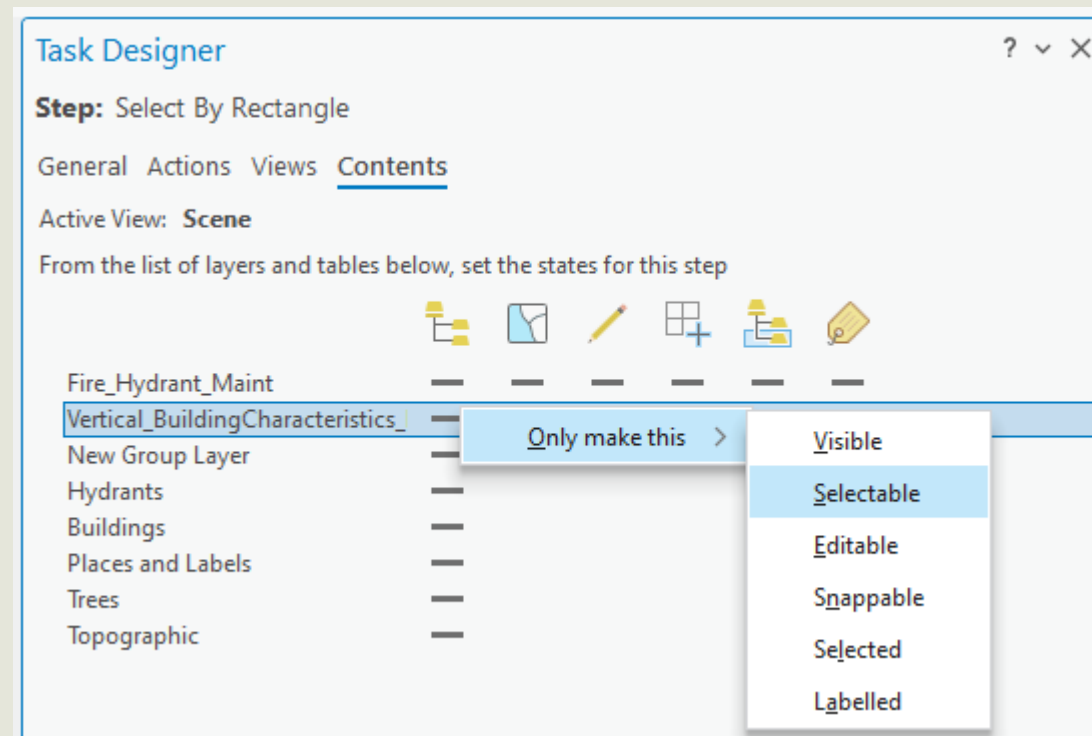
First, in the Views pane you can set which maps or scenes are used. It can even open the map or view if it isn't open already.





# ArcGIS Pro Tasks

Then you can set the various states for this step. I want the buildings to be the only selectable layer. This can be changed at each step.



# ArcGIS Pro Tasks

This example shows the full matrix of settings for my utility editing project. The task will change all the settings when the step runs – leading to my favorite task. It doesn't run any tools, it just sets the editing environment!

I use this one to set up the editing environment for my utility maps.

**Task Designer** ? v x

**Step:** Set parameters

General Actions Views Contents

Active View: **Main Utility Edits**

From the list of layers and tables below, set the states for this step

RoanokeSites	✓	✗	✗	✓	—	✓
ServiceLine	✓	✓	✓	✓	—	✗
Strm_Fixtures	✗	✗	✗	✗	—	✗
Storm Drain Manholes	✗	✗	✗	✗	—	✗
TRN_MASTER_THOROUGHFARE_	✗	✓	✓	✓	—	✓
Creek_Centerlines	✗	✓	✓	✓	—	✗
Test Lines - Temporary	✗	✗	✓	✗	—	✗
Storm Utility Pipes	✗	✗	✗	✗	—	✗
Markup Dec 14, 2023 at 11:13 AM	✗	✗	✗	✗	—	✗
▸ WaterCollection	✓				—	
▾ Water Utility	✓				—	
ServiceLine	✗	✗	✗	✗	—	✗
Fire Hydrant Service Line	✓	✓	✓	✓	—	✗
Water_Vaults	✓	✓	✓	✓	—	✗
Water_Valves	✓	✓	✓	✓	—	✗
Water_Tanks	✓	✓	✓	✓	—	✗
Water_Manholes	✓	✓	✓	✓	—	✗
Water_Fixtures	✓	✓	✓	✓	—	✗
Fire_Hydrants	✓	✓	✓	✓	—	✗
Fire_Hydrant_True	✓	✓	✓	✓	—	✗
Water_Main_Pipe	✓	✓	✓	✓	—	✓
▸ Wastewater	✗				—	

Reset

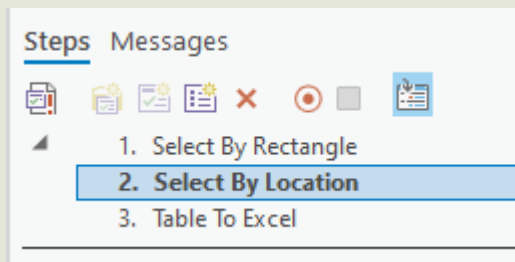
Snapping is On

Capture Settings from

Previous Step Current View

# ArcGIS Pro Tasks

The Select By Location step doesn't require any user interaction because the inputs and distance will always be the same. So I can set that Step Behavior to Automatic.



By making it Hidden, the user doesn't even see the step in the list or know that it has run

## Step Behavior

- Manual** User runs and user proceeds [i](#)
- Auto Run** Step runs and user proceeds [i](#)
- Auto Proceed** User runs and step proceeds [i](#)
- Automatic** Step runs and step proceeds [i](#)
- Hidden** User will not see the step
- Optional** User can skip this step [i](#)

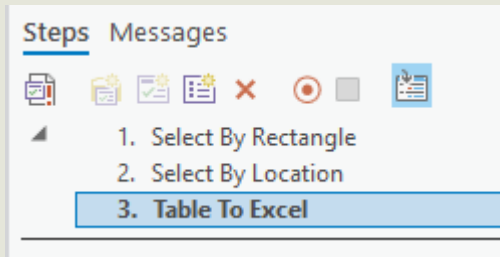
### Automatic

The step automatically runs and proceeds.

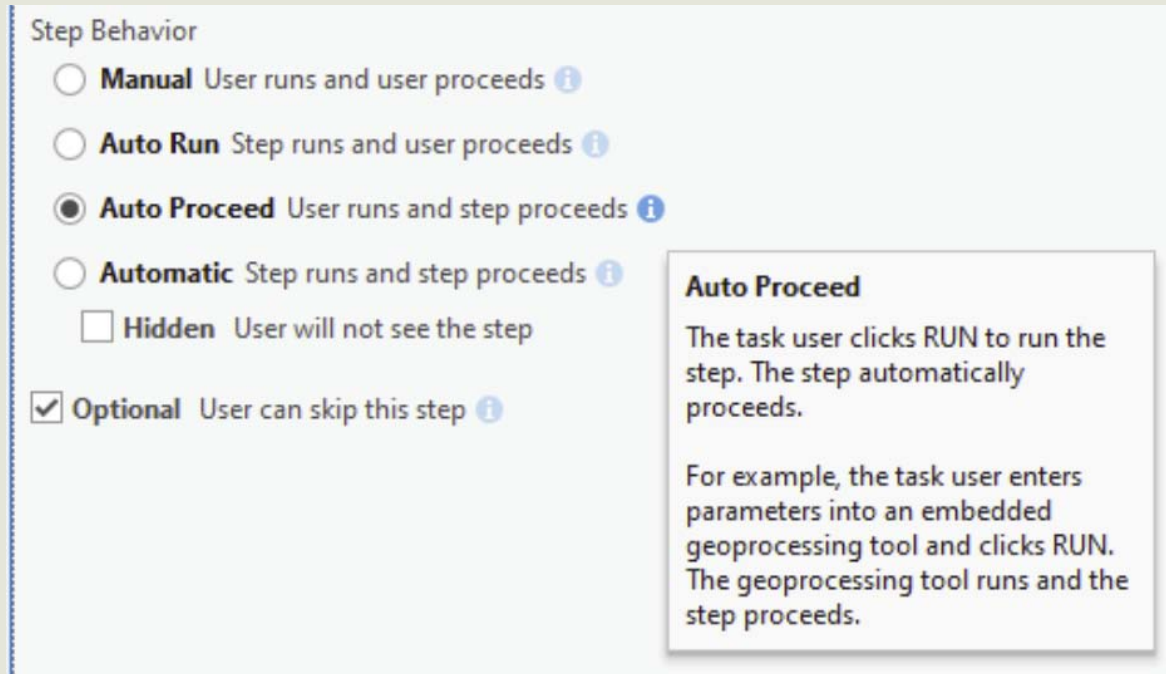
For example, the step runs the Zoom to Layer command to zoom to the selected layer and proceeds.

# ArcGIS Pro Tasks

The Table to Excel tool requires some user input, but it will need to open the tool first before the user can fill in the details. The Step Behavior for this one will be Auto Proceed.



By making it Optional, the user can skip the step and not make the output table.

A screenshot of the 'Step Behavior' settings in ArcGIS Pro. The settings are as follows:

- Manual** User runs and user proceeds [i](#)
- Auto Run** Step runs and user proceeds [i](#)
- Auto Proceed** User runs and step proceeds [i](#)
- Automatic** Step runs and step proceeds [i](#)
- Hidden** User will not see the step
- Optional** User can skip this step [i](#)

**Auto Proceed**  
The task user clicks RUN to run the step. The step automatically proceeds.

For example, the task user enters parameters into an embedded geoprocessing tool and clicks RUN. The geoprocessing tool runs and the step proceeds.

# ArcGIS Pro Tasks

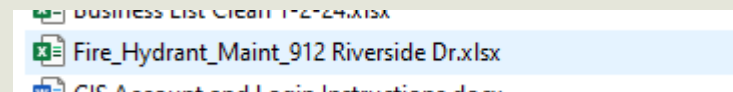
I even had it include the variable that was made before in the output file name.

Output Excel File (.xls or .xlsx)

C:\GIS Data\Fire\_Hydrant\_Maint\_#BldgAddress#.xlsx

Use field alias as column header

Use domain and subtype description

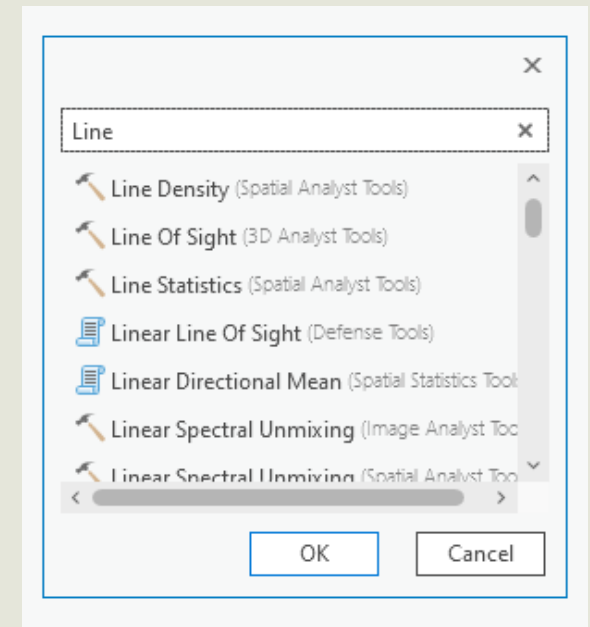
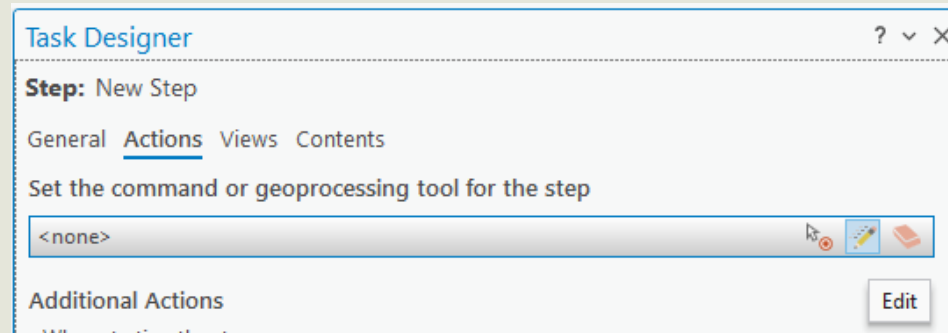
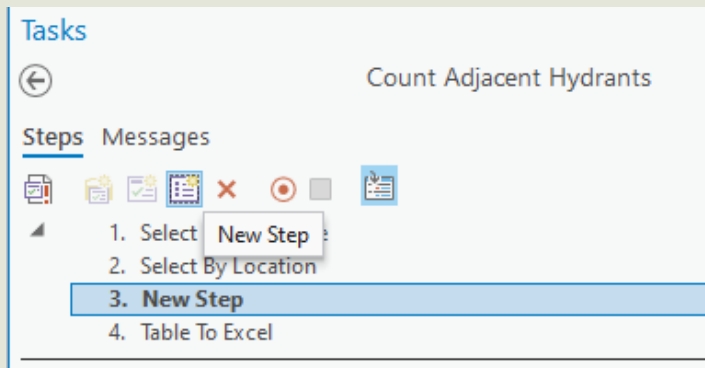


And the output table has the records for the selected hydrants.

OBJECTID	Site ID	created_on	dry_hydr	hydrant_flow	flow_ran	in_servic	lat	lon	
249		2021-12-08 20:28:53	False	Roan-Hyd	1300	GREEN	True	33.00916	-97.2314
263		2021-12-08 20:28:53	False	Roan-Hyd	1321	GREEN	True	33.0096	-97.233
284		2021-12-08 20:28:53	False	Roan-Hyd	1300	GREEN	True	33.01024	-97.2323

# ArcGIS Pro Tasks

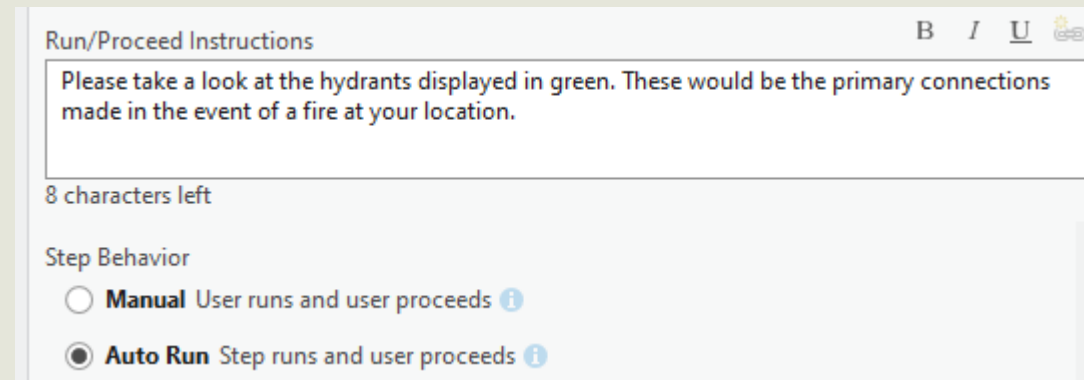
That was pretty easy with the record tool, but of course steps can be added and manually configured, too.





# ArcGIS Pro Tasks

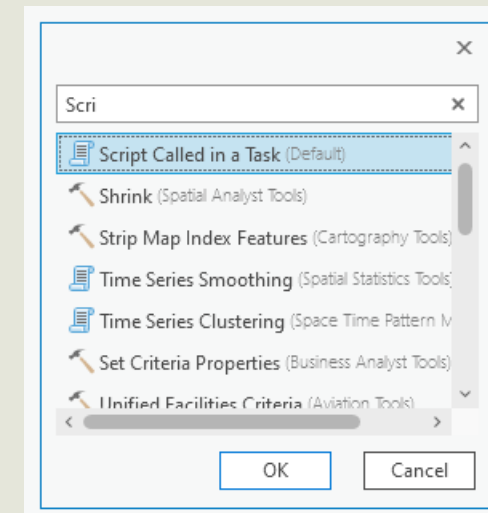
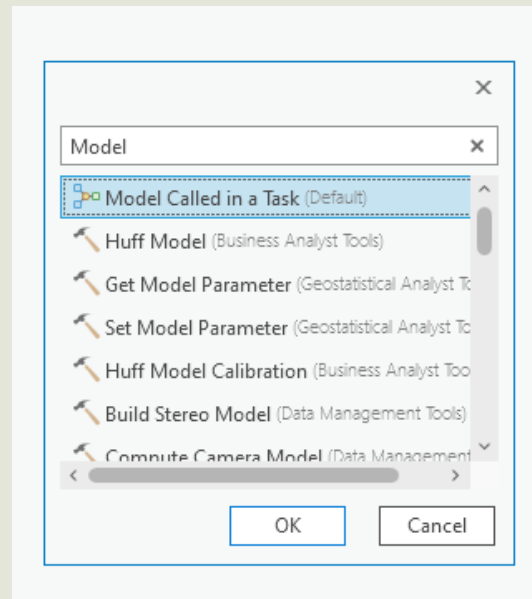
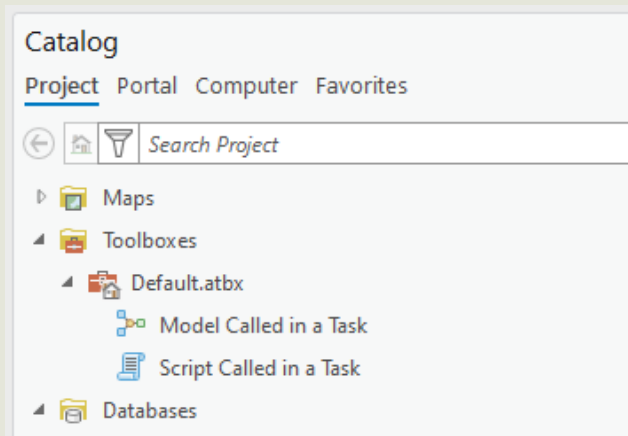
I've even been known to add a step with nothing but instructions as additional documentation for the user.



# ArcGIS Pro Tasks

And what about Python scripts or Models? Where do they fall with respect to tasks?

Here I made a model and a script in my toolbox. Both are then available as a geoprocessing tool that can be configured in a step.







# ArcGIS Pro Tasks

The best use cases for tasks are:

A process that has to be repeated many times

A process that requires user interaction

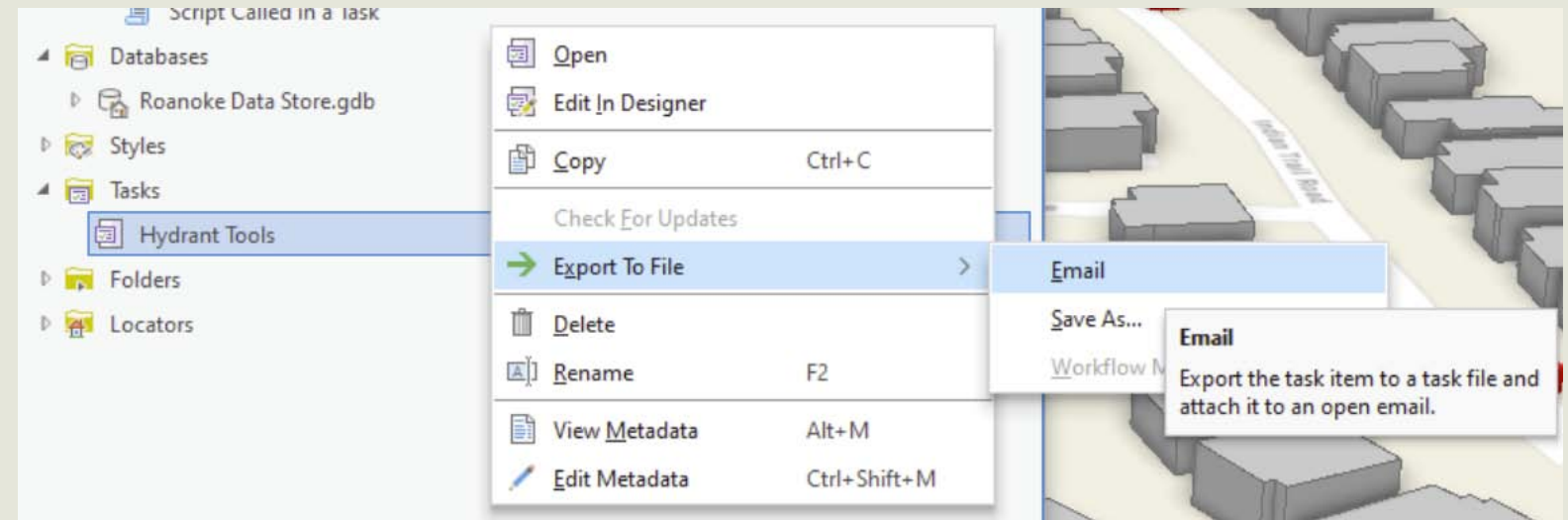
A process (or processes) you need to repeatedly run on a selected set of features

A process that controls what goes into a model or script

And More ...

# ArcGIS Pro Tasks

And when you have a good task going and you want to share it with others, it can be saved to a file or emailed around to others.



Just make sure they have the same data in their project!



# ArcGIS Pro Tasks

As you can see (and you'll find out when you work with them) tasks can be pretty complex but that complexity is what makes them so powerful.

Thanks for hanging around and seeing what Tasks are all about.

Be sure to keep that handout to guide you through setting up your tasks editing environment.

David Allen, GISP

You contact me at [Dallen@RoanokeTexas.com](mailto:Dallen@RoanokeTexas.com) or [Info@GISGuidebooks.com](mailto:Info@GISGuidebooks.com)