

Geodatabase Design and Management

Georeferencing & Editing

For Any Project, Managing Data is Key

- What stakeholders do you have to work with?
 - What are their short term and long term needs?
 - What data can you collect now to prevent going back to redoing the data collection

For Any Project, Managing Data is Key

- For your thoughts
 - Think about what data you need to collect
 - Do you want a user to manually enter the data or do you want coded values (Domains)?
 - Will help in painting a clean dataset
 - How many characters are needed for manually entered data?

11 Steps to Designing Geodatabases

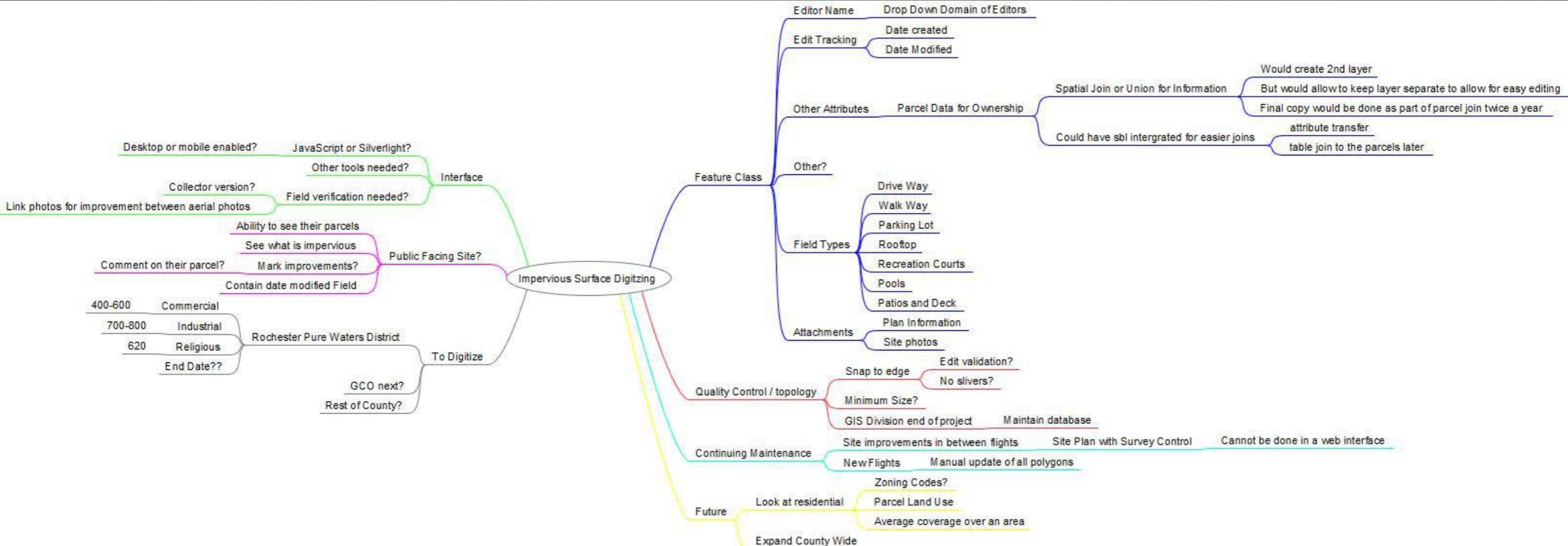
- Identify the information products you will create and manage with your GIS
- Identify the key data themes based on your information requirements
- Specific the scale ranges and the spatial representation of each data theme at each scale
- Decompose each representation into one or more geographic datums

11 Steps to Designing Geodatabases

- Define the tabular databases structure and behavior for descriptive attributes
- Define the spatial behavior, spatial relationships, and integrity rules for your dataset
- Propose a geodatabase design
- Design editing workflows and map display properties
- Assign responsibilities for building and maintaining each data layer

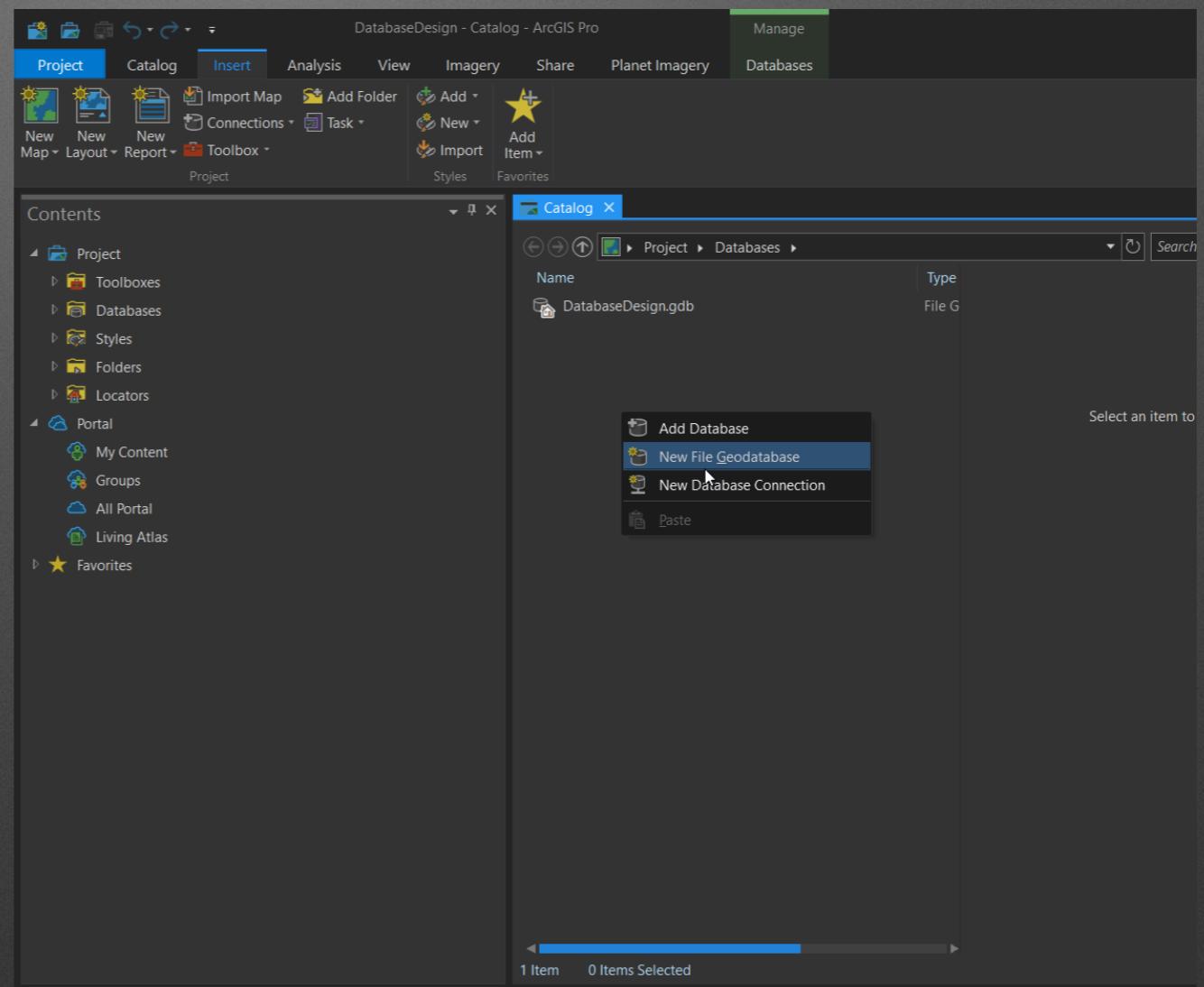
11 Steps to Designing Geodatabases

- Build a working prototype. Review and refine your design
- Document your geodatabase design



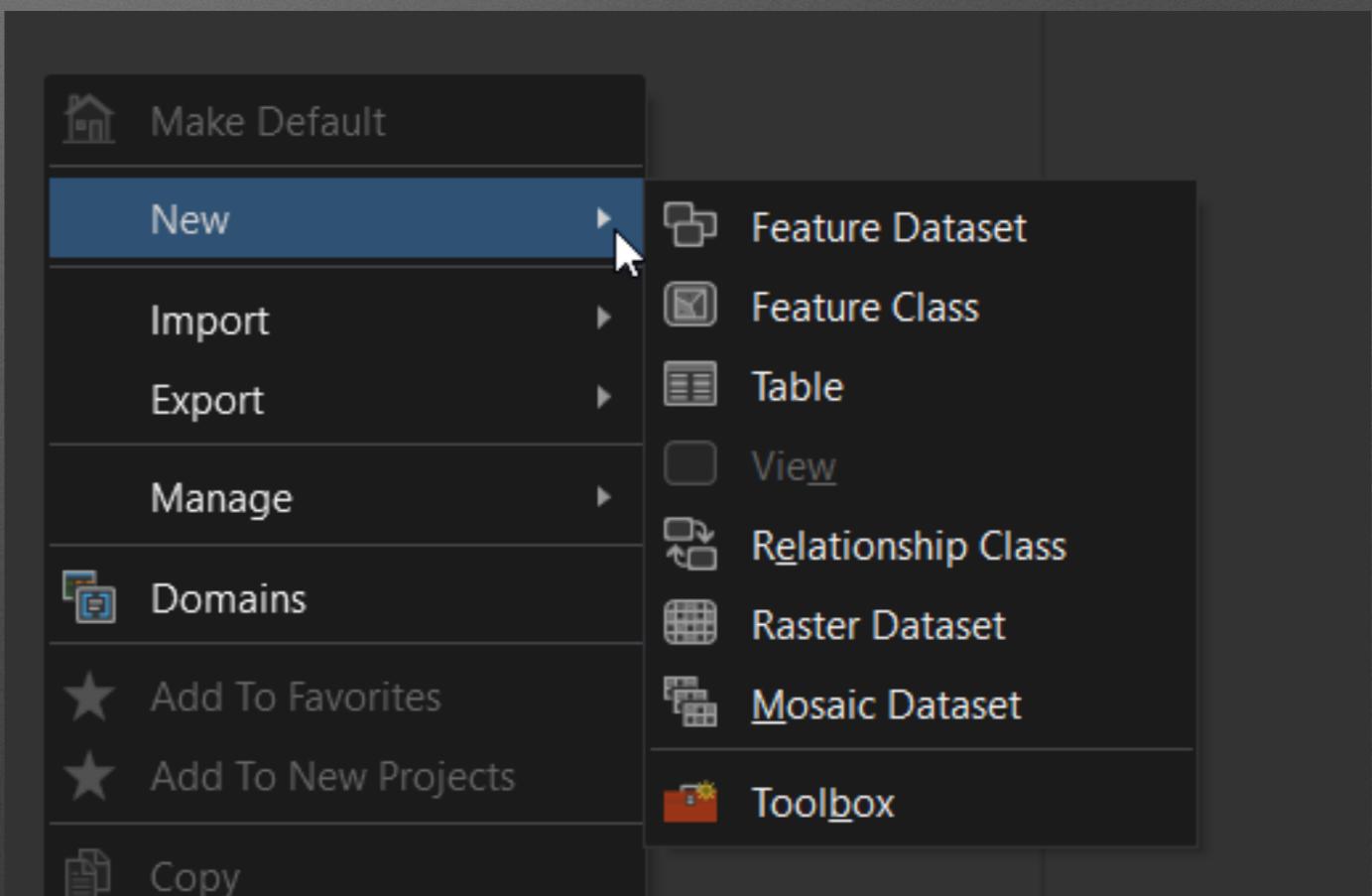
Steps to Create A Geodatabase

- Real Easy
- Right Click New -> File Geodatabase
- Give it a Name



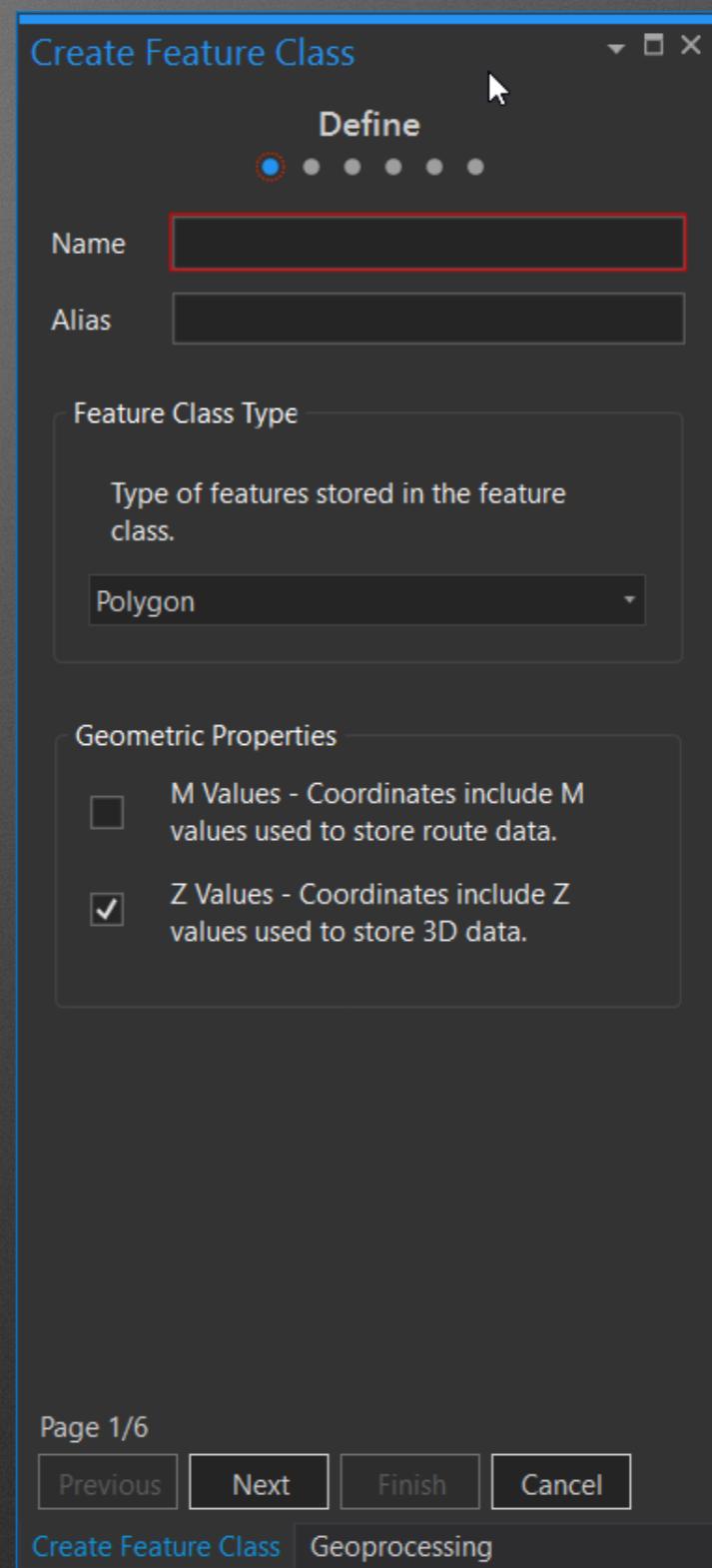
Creating A Feature Class

- Inside the File Geodatabase (or Feature Dataset) right click or file new, then Feature Class



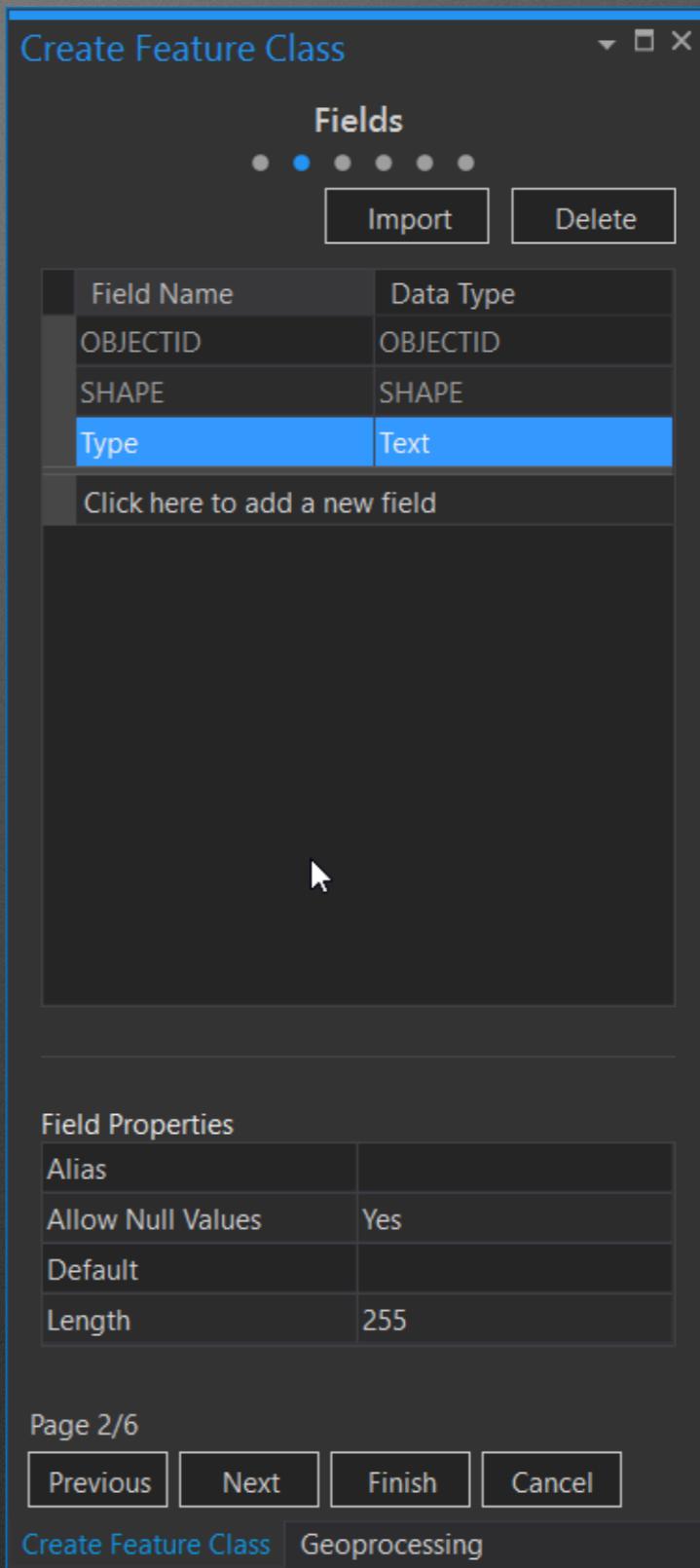
Creating A Feature Class

- Inside the File Geodatabase (or Feature Dataset) right click or file new, then Feature Class
- Enter a Name and Alias
 - Alias can have spaces and actual name, name is how to save the data in your geodatabase
- Pick you feature type
 - Point, Line, or Polygon



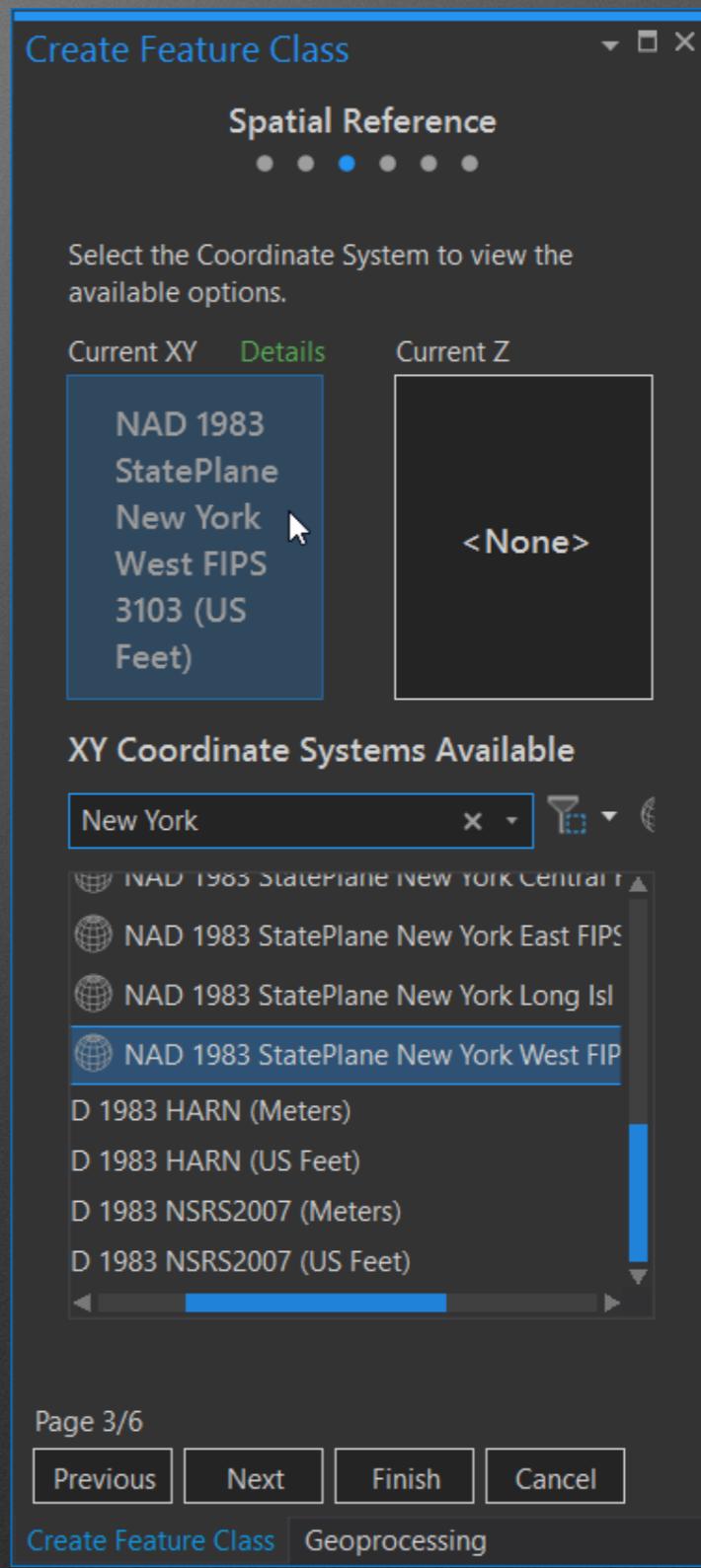
Creating A Feature Class

- Define your attributes
- For the example in class you will create a type text field
- Once we get this part click next and then define the projection



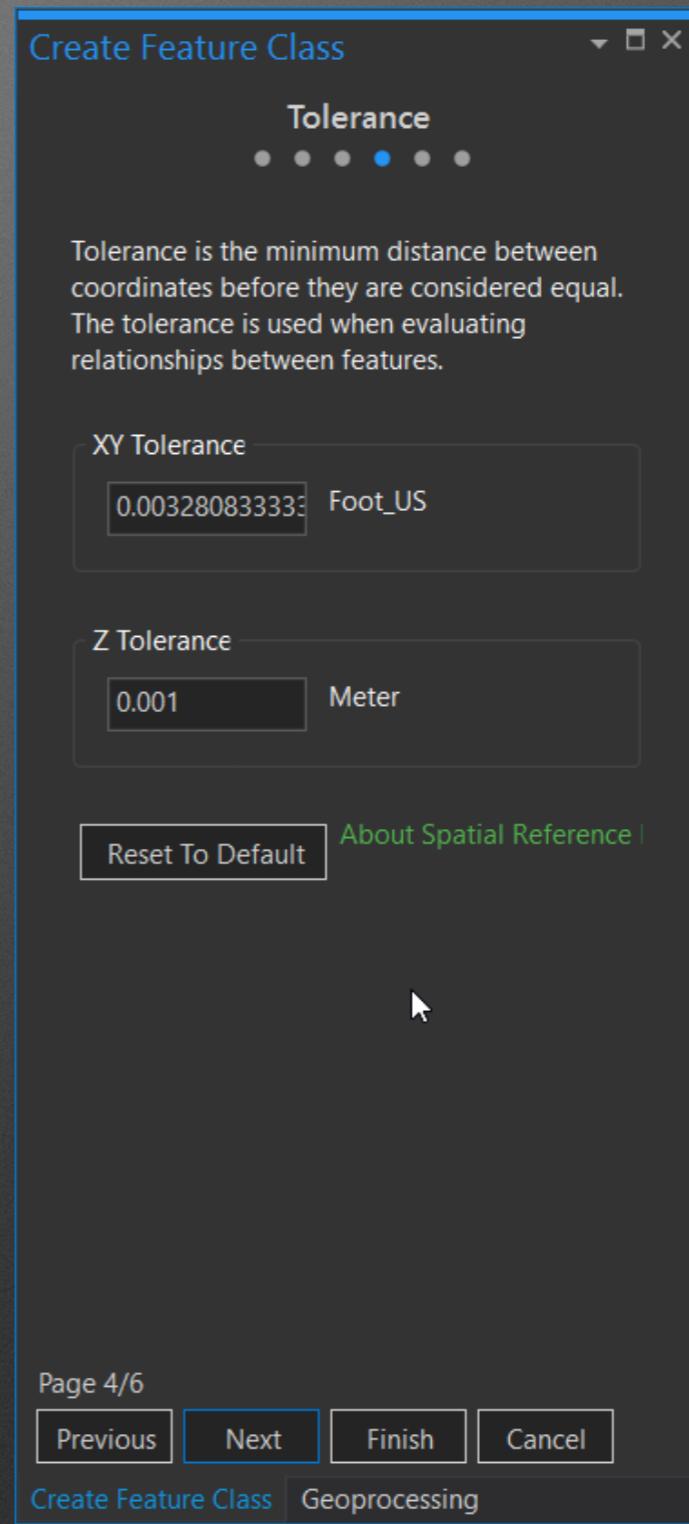
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- We will use State Plane NAD 1983 New York West (US Feet)
- Click Next Through the different screens



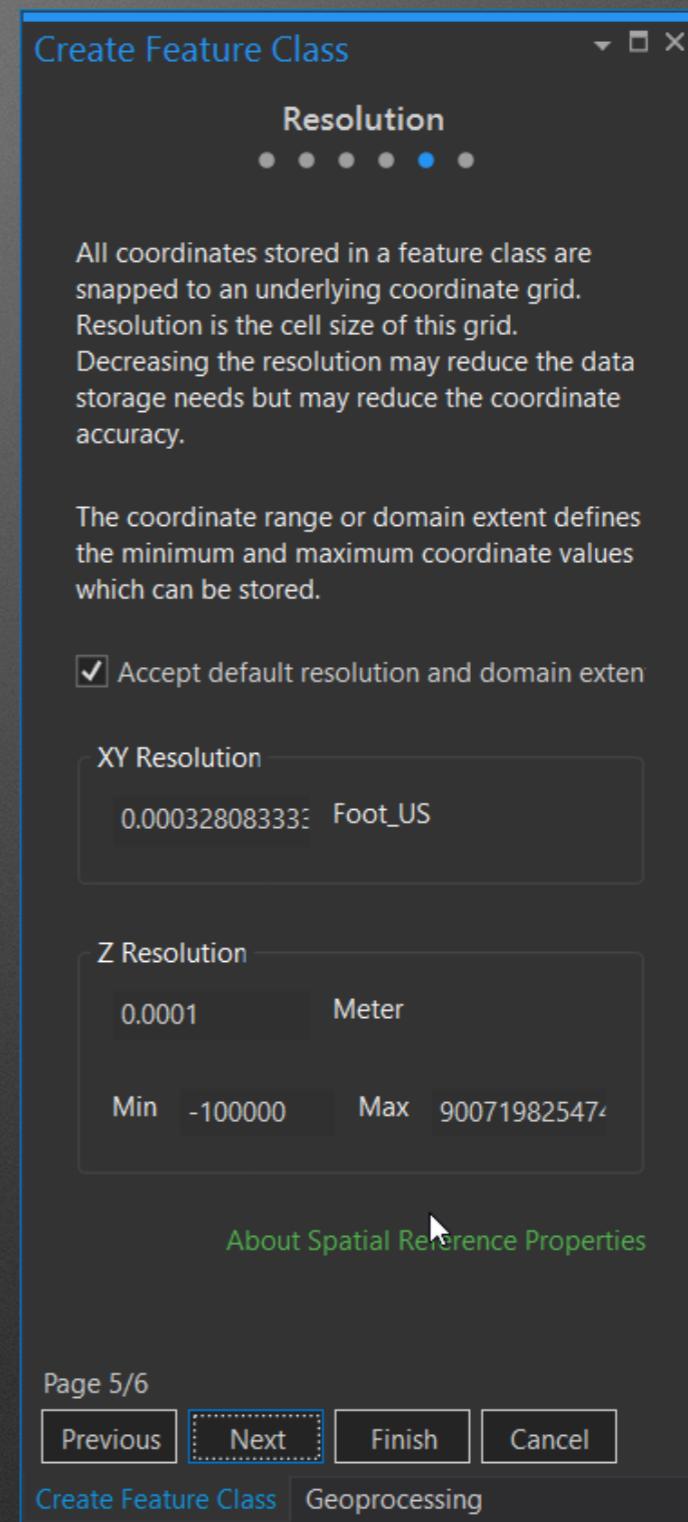
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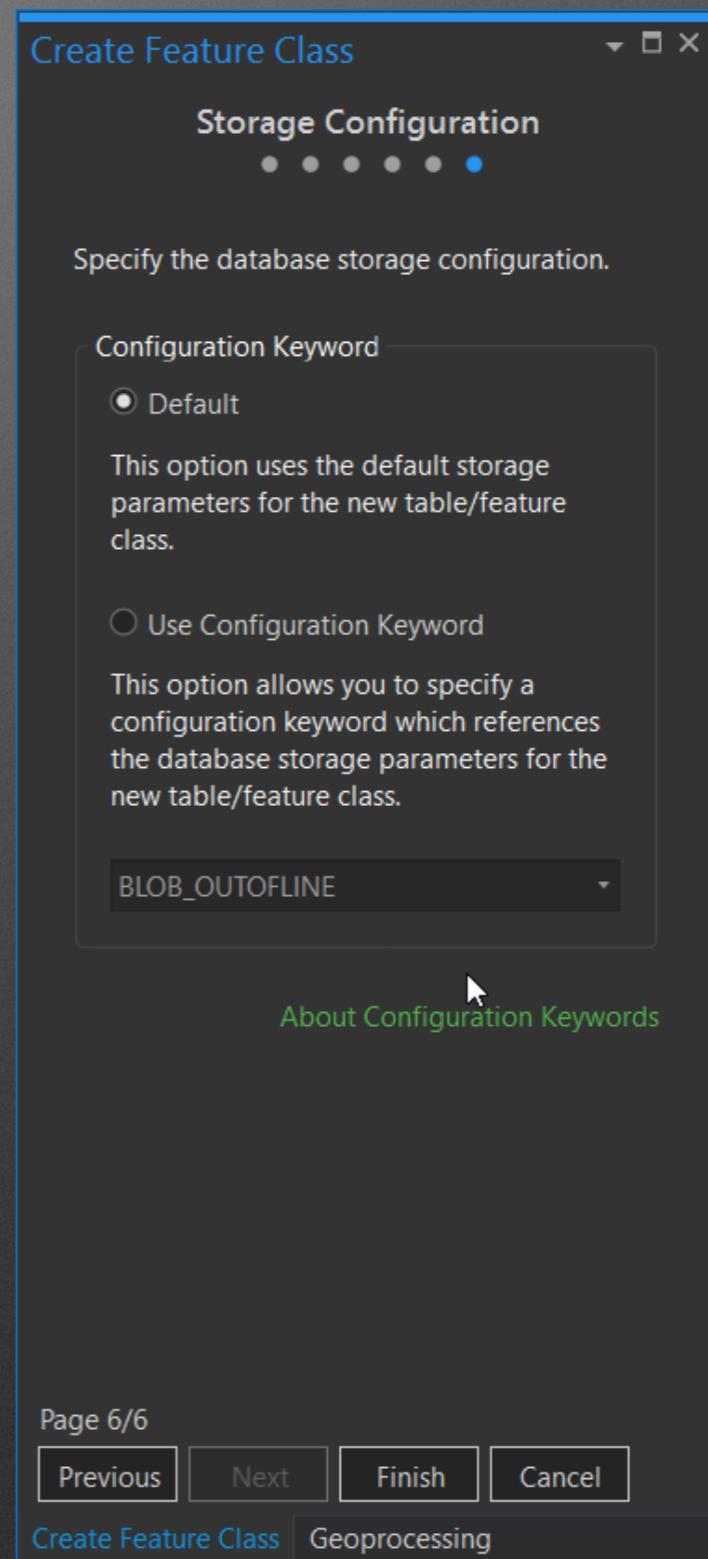
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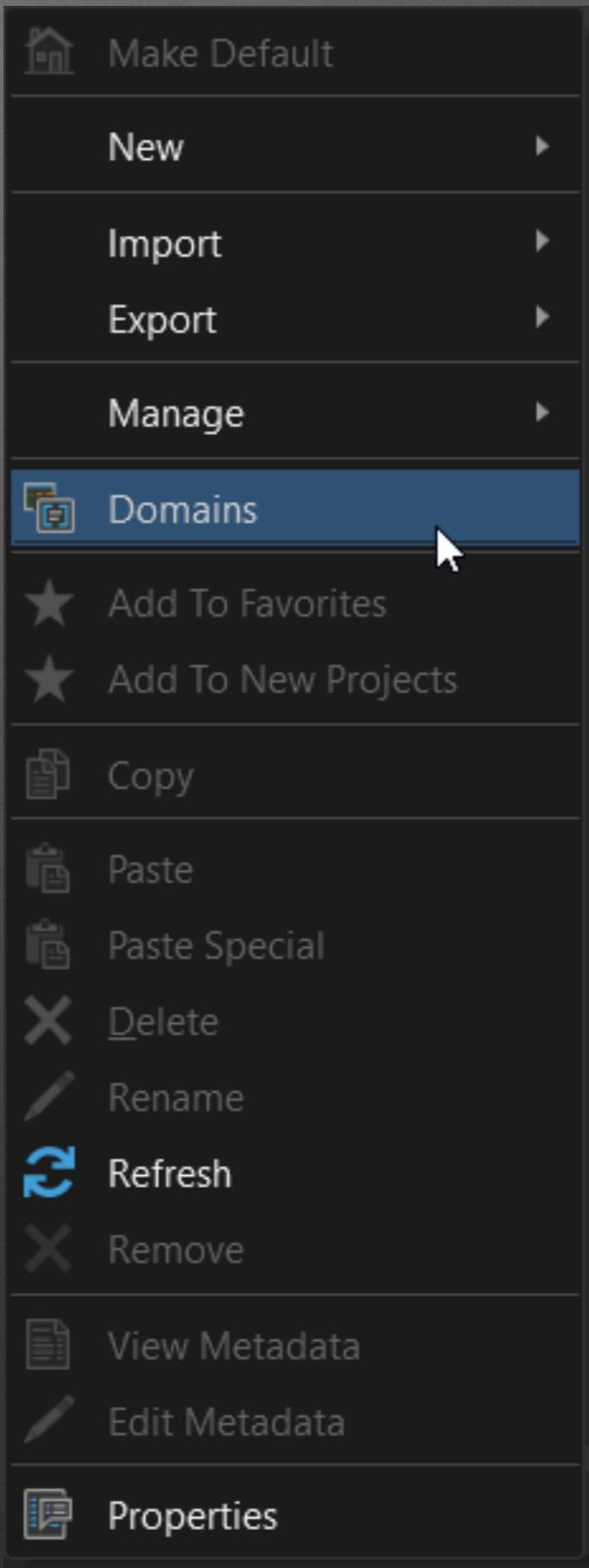
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Building A Domain

- Domains allow you to standardize the data
- Right click in the database and Click Domains

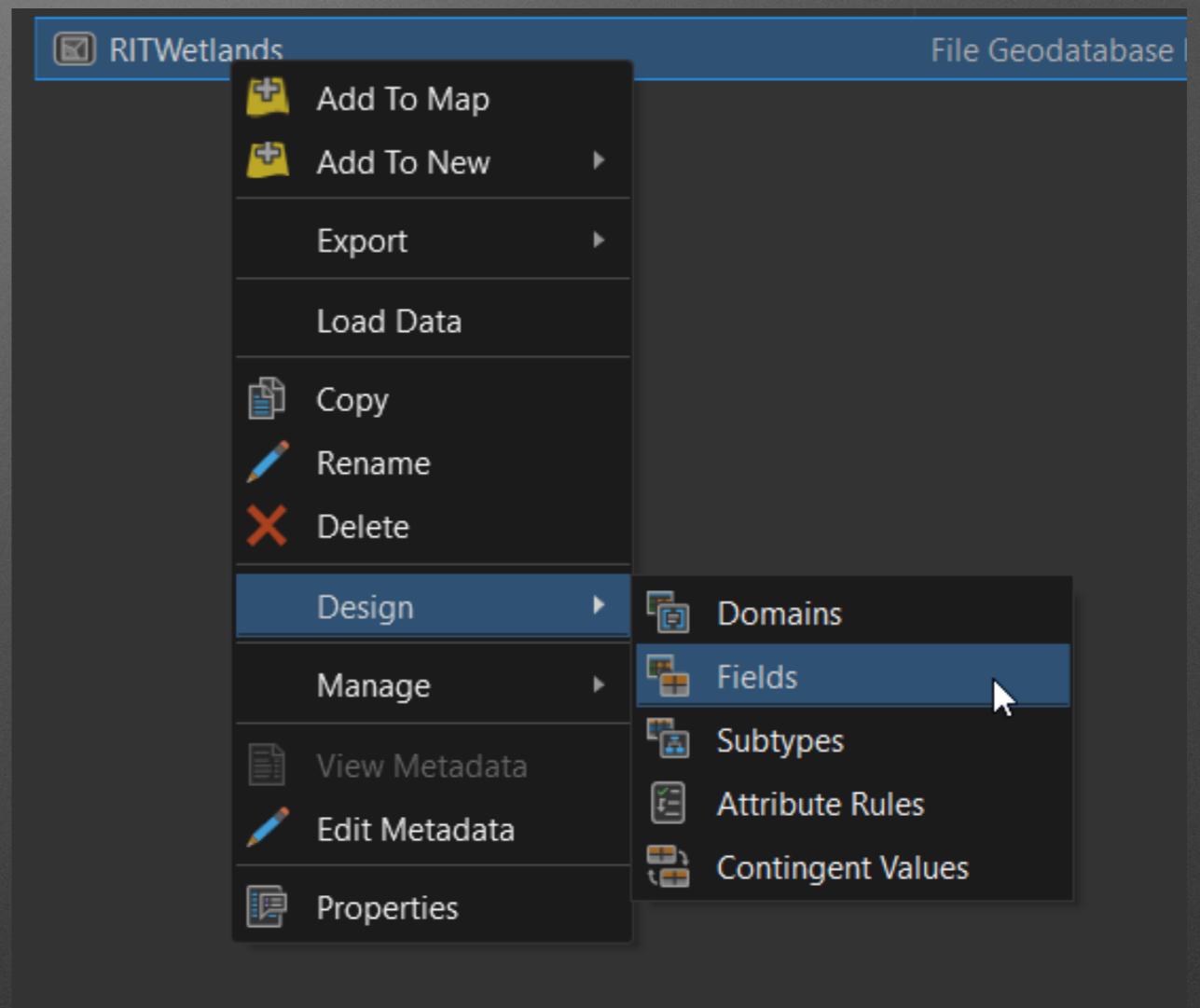


Building A Domain

- Domains allow you to standardize the data
 - Right click in the database and Click Domains
 - Use the Domain View and Add a New Domain for Wetland Type
(Make Sure to Save when you are done)

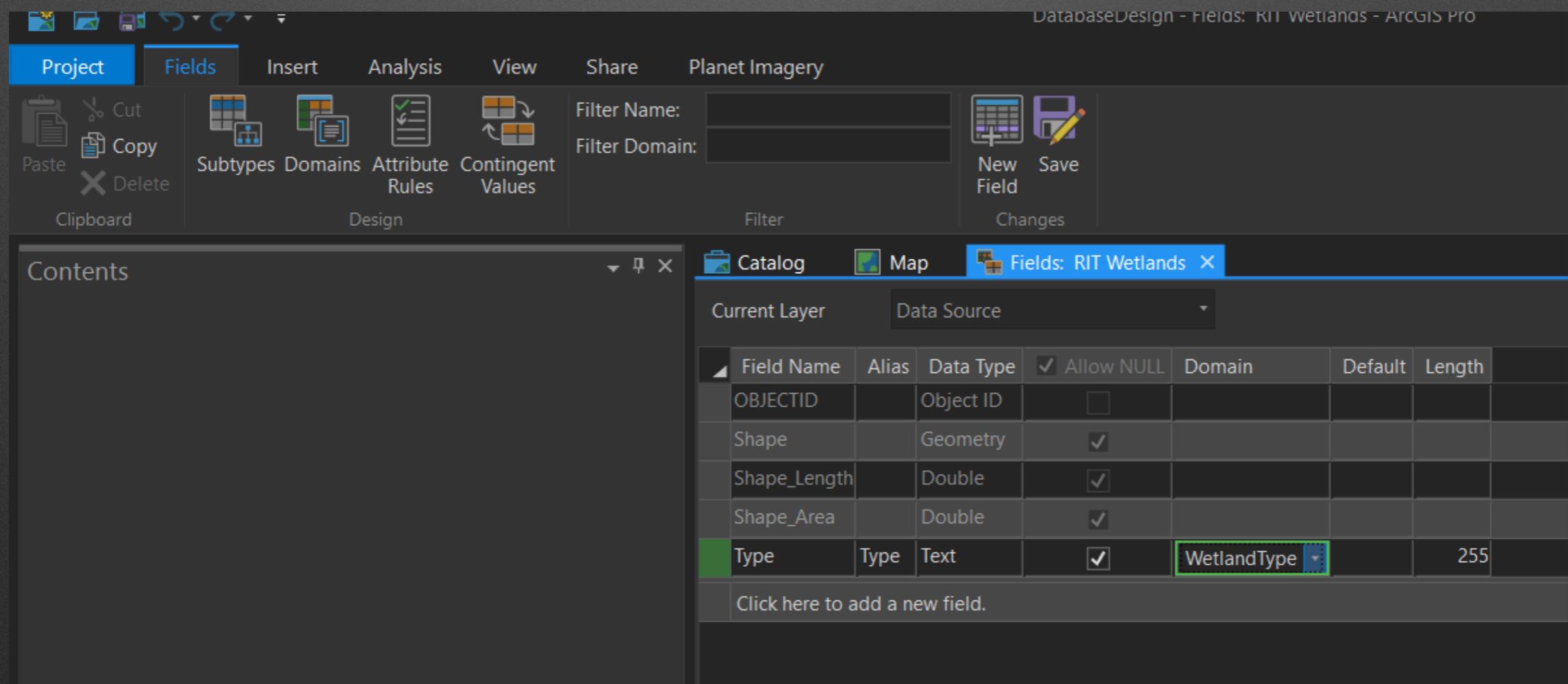
Adding the Domain to Our Data

- Right Click on our Layer
- Go to Design then Fields



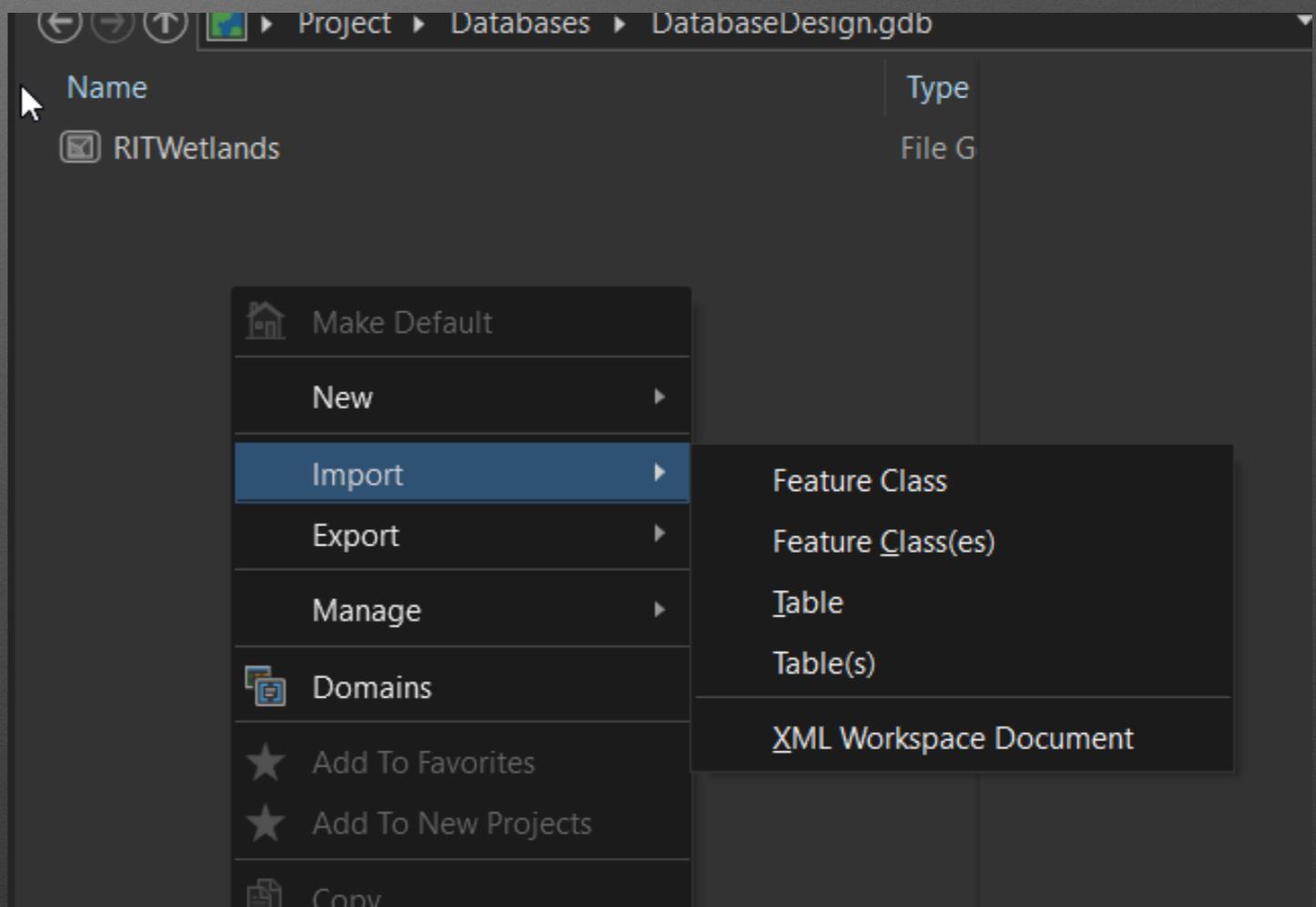
Adding the Domain to Our Data

- Right Click on our Layer
- Go to Design then Fields
- Click on Domain and then Select the Wetland Type
- Click Save To Save the Changes



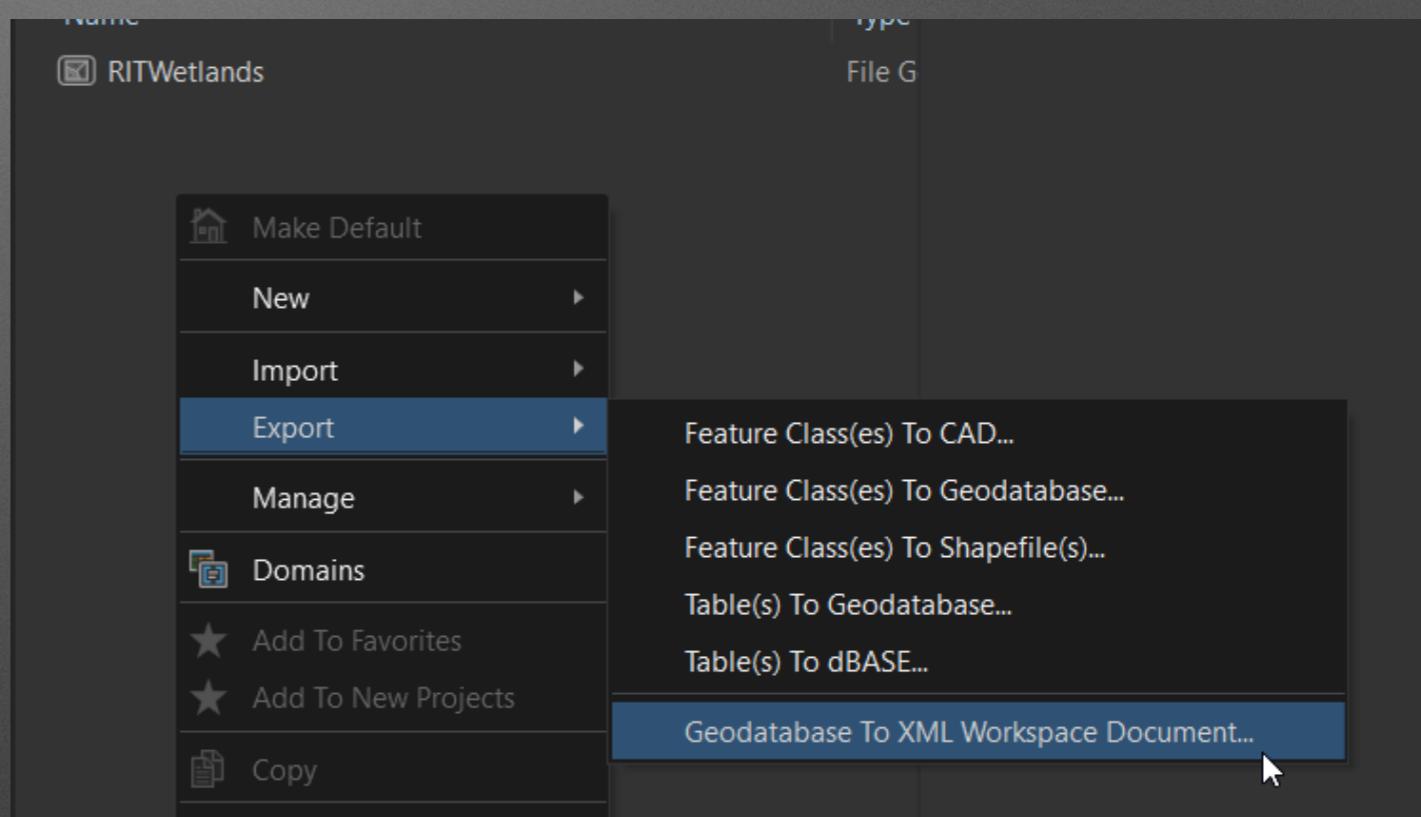
Importing Data Into Your Geodatabase

- Simple Import and Export Commands to move your data around



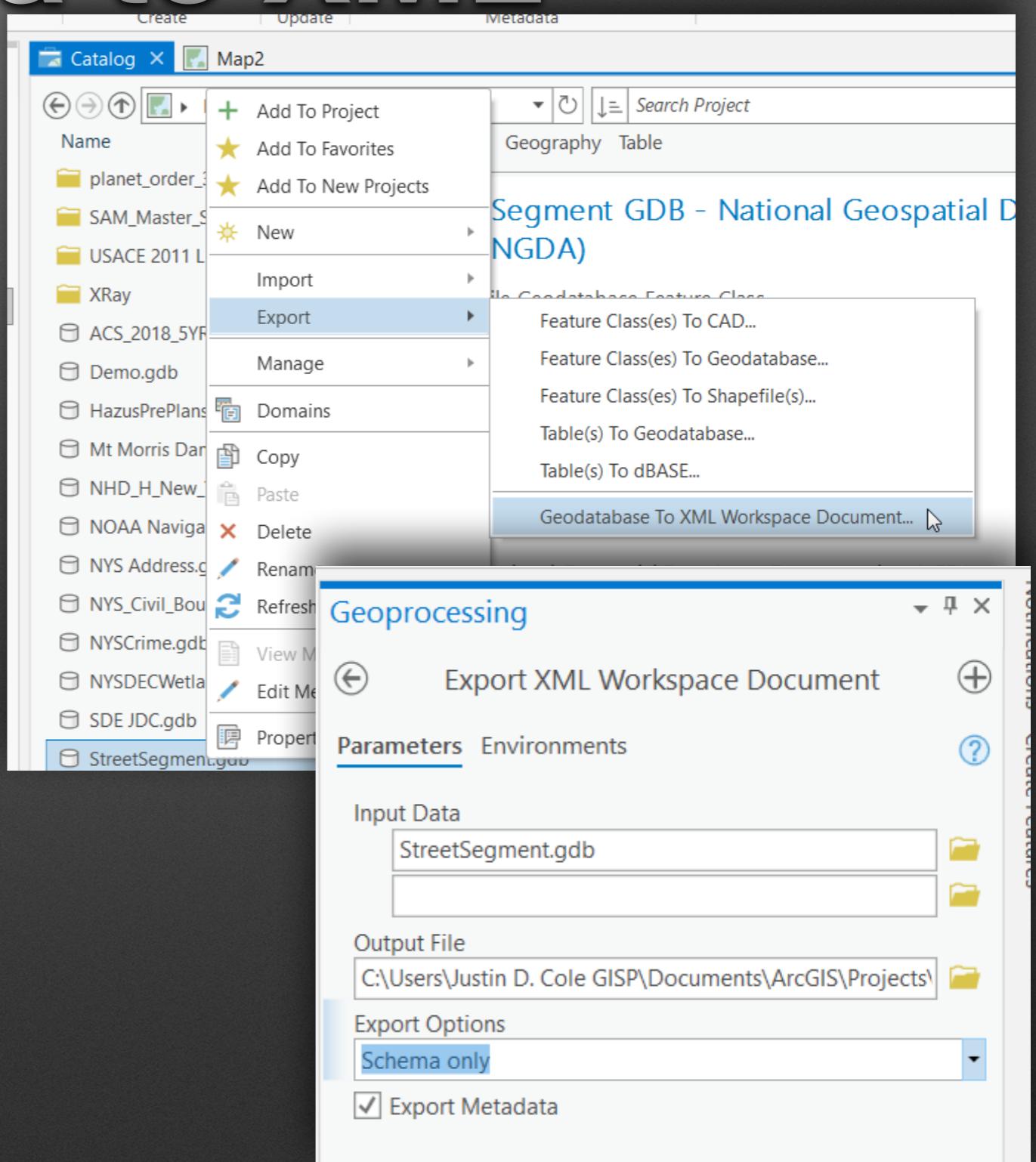
Exporting Data Into Your Geodatabase

- Simple Import and Export Commands to move your data around
- Can create CAD, Shapefiles, and move to geodatabases
- You will also notice an XML Workspace Document
- This is a way to work with the database schema outside of ArcGIS



Exporting your geodatabase Schema to XML

- If you want to share the geodatabase schema that you just created you can create an XML Workspace
- Using the XML a user can reconstruct the schema and even the geodatabase with just one step
- To create the XML Workspace right click on your geodatabase
- Then export Geodatabase to XML Workspace Document
- Your Input will be the geodatabase
- Save the output to somewhere you know and with a good name
- Then set it to Schema only
 - Data will export all of the data along with the schema



RITMaster - Catalog - ArcGIS Pro

Project Catalog Insert Analysis View Imagery Share Databases

New Map New Layout New Report Import Map New Notebook Import Layout Connections Add Folder Task Add Item Styles Favorites

Project

Contents

Catalog

Project > Databases > RITMaster.gdb

Name: RITMaster.gdb

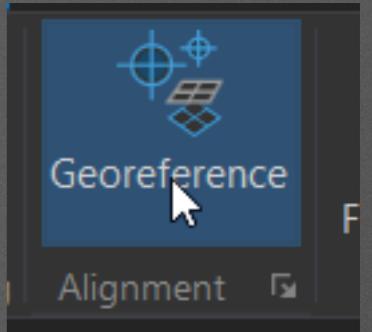
This item cannot have metadata.

1 Item 0 Items Selected

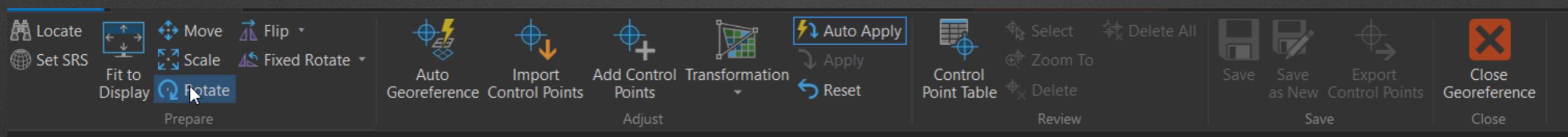
Notifications Create Features

A screenshot of the ArcGIS Pro Catalog interface. The window title is "RITMaster - Catalog - ArcGIS Pro". The ribbon menu includes "Project", "Catalog", "Insert", "Analysis", "View", "Imagery", "Share", and "Databases". Below the ribbon are various icons for creating new items like "Map", "Report", "Notebook", "Toolbox", and "Task". The "Project" tab is selected. On the left, the "Contents" pane shows a tree view with "Project" expanded, showing "Toolboxes", "Databases" (which is selected), "Styles", "Folders", and "Locators". Below "Project" is a collapsed "Portal" section with links to "My Content", "My Favorites", "My Groups", "My Organization", "ArcGIS Online", and "Living Atlas". At the bottom of the Contents pane, it says "1 Item 0 Items Selected". The main catalog area shows a breadcrumb path "Project > Databases > RITMaster.gdb". The catalog table has a single row for "RITMaster.gdb" with a "Name" column value. A note "This item cannot have metadata." is displayed next to the row. The bottom right of the catalog area has buttons for "Notifications" and "Create Features".

Georeferencing

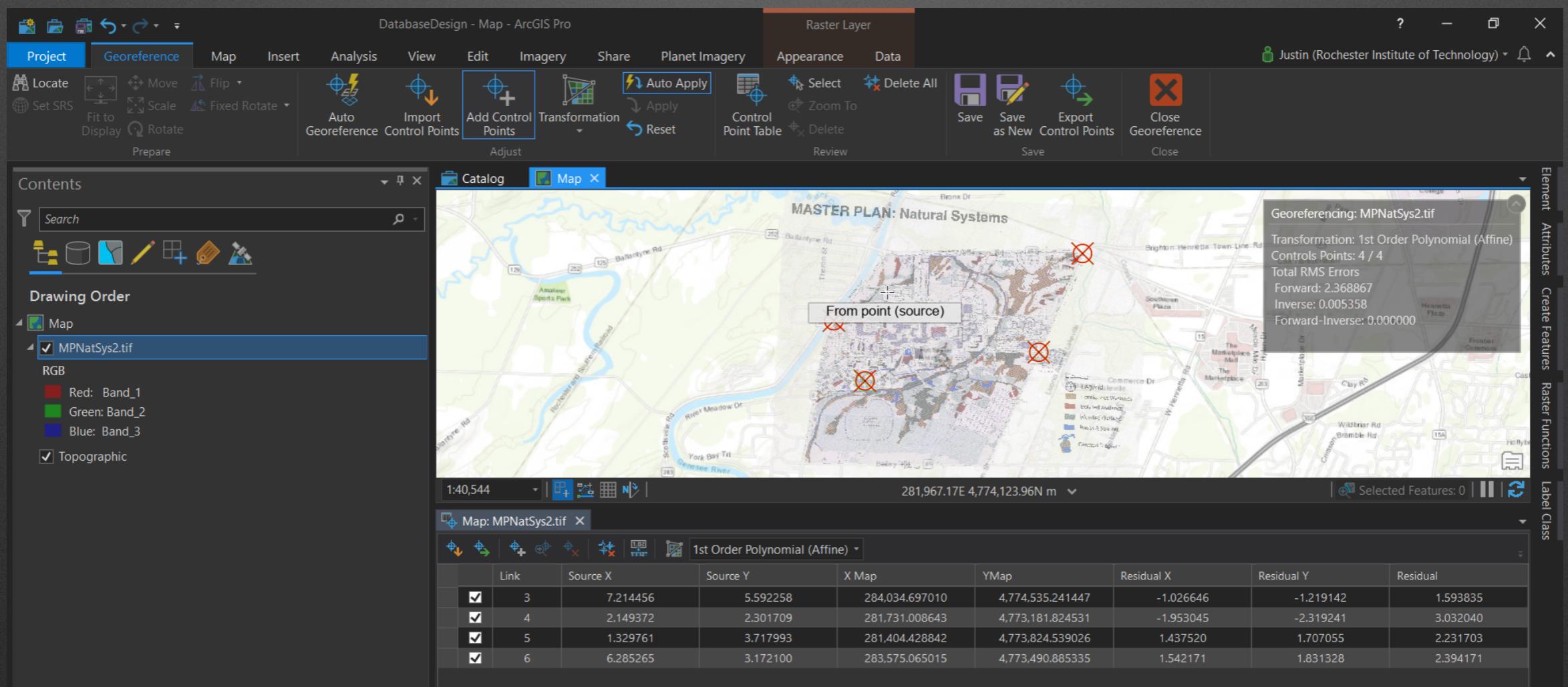


- Georeferencing is using an unprojected image and using known landmarks in a GIS placing that image in its projected space
- It is done through the Georeferencing Ribbon (found in the Imagery Ribbon)
- You can use the toolbar to roughly fit the drawing to the space
- You can use the add control points to help line up the data



Georeferencing

- One thing to always know, when adding control points always go from the image to the map to line up your data
- You can use the Link Table to see your error
 - For this example, your error should be very close to zero
 - Many times your scanned image is not going to be as clean so you will need to get as low as possible, but about half the resolution is recommended
- When you finish (more than 4 points) Click Save in the Georefrencing Ribbon and that will save the data to the image



RITMaster - Map - ArcGIS Pro

Project Map Insert Analysis View Edit Imagery Share

Cut Copy Copy Path Paste Add Preset Add Graphics Layer Basemap Add Data Select By Attributes Select By Location Measure Locate Infographics Coordinate Conversion Pause Lock View Unplaced More Convert Sync Remove Explore Bookmarks Go To XY Clipboard Navigate Layer Selection Inquiry Labeling Offline

Justin (Rochester Institute of Technology)

Contents Catalog Map

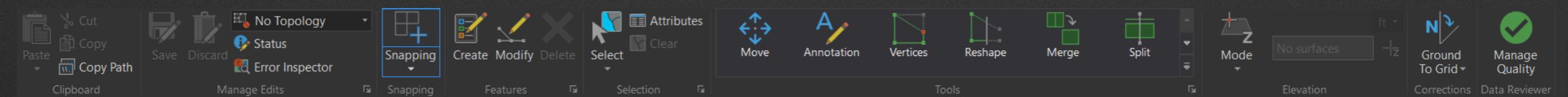
Search Drawing Order Map Topographic

Notifications Create Features

Black Creek
Ballantyne Rd
Scottsville Rd
Bronx Dr
Jefferson Rd
Park Point at Rit
Southtown Plaza
CSX Trans
125
252
383
84
266
15
263
Marketplace Dr
Hill Dr
W. Main St
Andrews Memorial Dr
Reynolds Dr
Rochester Institute of Technology
River Meadow Dr
York Bay Trl
Genesee River
Scottsville Rd
John St
John St
Lionia Avon & Lakeville
Beckwith Rd
Galway Dr
Vollmer Pkwy
Wine Ter
Calkins Rd
625 ft
1:36,927
77.6611991°W 43.0757064°N
Selected Features: 0

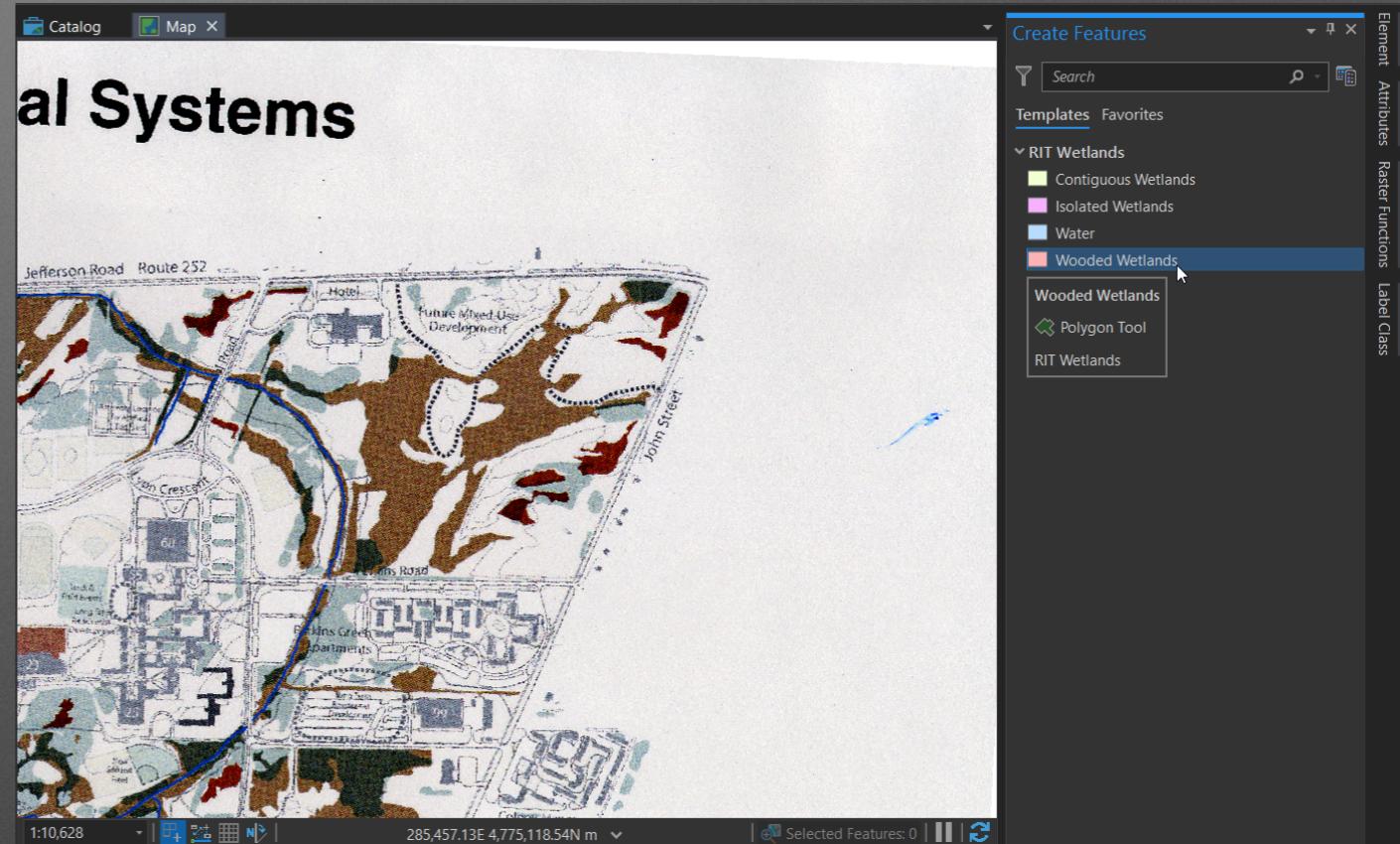
Editing

- To create data you will need to use the Edit Ribbon
- This can be found like any other toolbar or in the main menu as the pencil with some dots and lines
- To edit you need layers to edit (the vector data you are working on)
- The editor will activate when you specify the start editing command
- Anything you do in an edit session will be temporary until you save your edits



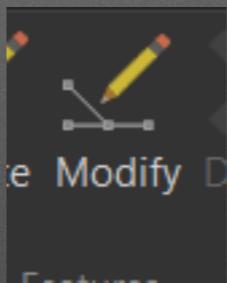
Editing

- If you have your symbology set before you start editing it will add it to your feature template
- To add a new feature, click on the one you want to add and then draw it on the map
 - To finish a line feature you can either double click or hit f2
- Once you have a feature you can click on the attribute button and type in the attributes into the table

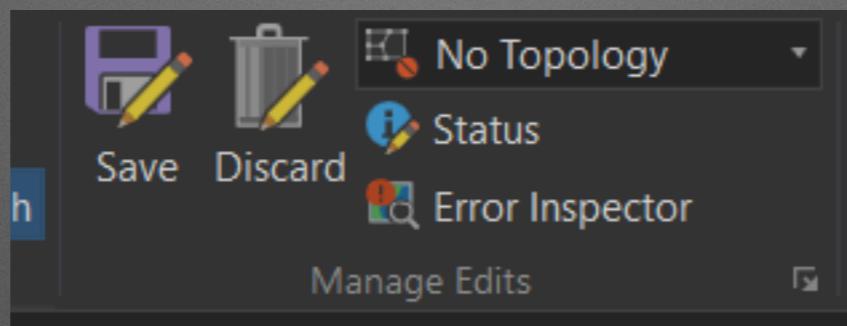


Editing

- To edit an existing feature, you can use the modify tool
- Just single click to edit the attributes or double click to edit the geometry
- Once you are done you will start to see your features appear on your map document



Save Edits



- Make Sure to Save Your Edits

Raster Layer RITMaster - Map - ArcGIS Pro

Project Map Insert Analysis View Edit Imagery Share Appearance Data

Cut Copy Copy Path Paste Add Preset Add Graphics Layer Basemap Add Data Select By Attributes Select By Location Clear Measure Locate Infographics Coordinate Conversion Pause Lock View Unplaced More Convert Sync Remove Explore Bookmarks Go To XY Navigate Add Data

Add Preset Add Graphics Layer Basemap Add Data

Select By Attributes Select By Location Clear Measure Locate Infographics Coordinate Conversion Pause Lock View Unplaced More Convert Sync Remove

Clipboard

Contents Catalog Map

Search

Drawing Order

Map

MPNatSys2.tif

RGB

Red: Band_1
Green: Band_2
Blue: Band_3

Topographic

MASTER PLAN: Natural Systems

Legend

- Contiguous Wetlands
- Isolated Wetlands
- Wooded Wetland
- Ponds & Streams

Concept Diagram

1:20,914

283,254.61E 4,773,295.03N m

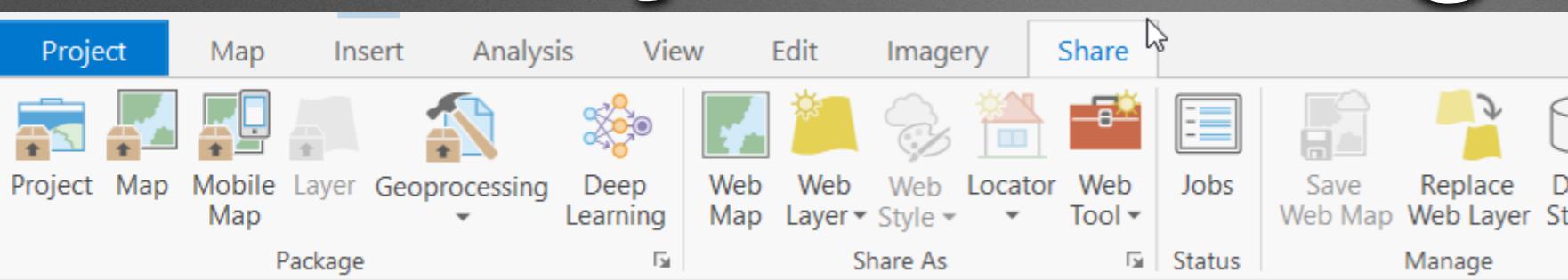
Selected Features: 0

Notifications Create Features

Data Creation Lab

- This lab is 2 parts
- Part 1 is a database creation and data management assignment. You will be making a GIS Layer for the Old RIT Masterplan (MPNatSys2.tif). To do this you will need to have a geodatabase setup with the required 3 feature classes (Wetlands, Buildings, and 1 layer of your choice) each with attributes, domains, and anything else needed. Your deliverable for this part will be the XML database schema and a brief writeup on your reasoning how you setup your third layer. Also in the writeup explain if there is enough information in the scan to populate the all of the layers in the database and if not where would you go to get it. Due November 4th
- Part 2 is adding data to your geodatabase. You will have to digitize the wetlands, buildings, and the third layer of your choice with the attributes and domains you selected in part 1. Your deliverable for this part will be the project file (ppkx). Due November 18th

Reminder How to Create the Project Package PPKX



- Go to the share ribbon and then Project
- Save the Package to file
- Save the file
- Give it a Summary and Tag
- Then Package

Package Project

Share RITMaster As A Project Package

Package Attachments

Start Packaging

Save package to file

Item Details

Name: C:\Users\Justin D. Cole GISP\Documents\ArcC

Summary: Digitizing Project

Tags: RIT, Digitizing

Share outside of organization i

Include Toolboxes i

Include History Items i

Finish Packaging

Analyze Package Jobs