# Building a GIS from the Beginning: Part 4: Simple Analytics and Outputs

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# Simple Analytics and Outputs Presentation Agenda

- Simple Analytics
  - Select by Attributes/Location
  - Calculate Mileage and Downstream Trace (w/ Geometric Network)
- Outputs
  - Building a Map Layout
  - Single Maps and Mapbooks
  - Exports
  - Reports
  - Web Services
  - KML (Google Earth)





#### Select by Attributes

- A selection method where one uses attributes contained in your GIS feature
  - SQL query expression
- This can be done in both the default map view and feature attribute table



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|   | _        |                 |                      |      |                |          |            |   |   |  |  |





## Simple Analytics Select by Attributes

- Select layer
- Select field
- Select operator
  - Equals, greater/less than, And/Or/Not, etc.
- Unique values
  - can help build query
- Verify query

| Select By Attributes                                    |  |  |  |  |  |  |  |  |
|---|--|--|--|--|--|--|--|--|
| Layer:  | TransformerBank           Only show selectable layers in this list |  |  |  |  |  |  |  |
| Method:   | Create a new selection   |  |  |  |  |  |  |  |
| [OBJECTID]<br>[subtypeCod<br>[PhaseCode<br>[Transformer | ]<br>]<br>1D]  |  |  |  |  |  |  |  |
|   | Like A - A, A<br>B - B, B<br>C - C, C                              |  |  |  |  |  |  |  |
| < <=<br>?• ()   | Not  |  |  |  |  |  |  |  |
| SELECT*ER   | OM TransformerBank WHERE   |  |  |  |  |  |  |  |
| [PhaseCode]   | = 'A'  |  |  |  |  |  |  |  |
| Clear   | Verify Help Load Save  |  |  |  |  |  |  |  |
|   | OK Apply Close   |  |  |  |  |  |  |  |
|   |  |  |  |  |  |  |  |  |

ESRI Utility Users Group

#### Select by Attributes

- Select by Attributes examples:
  - Select devices based on phase
  - Select poles based on height
  - OH/UG primary lines based on:
    - Phase
    - Conductor type
    - Has conduit
  - Select devices based on substation or circuit
  - Basically query anything based off attribute information contained in your features





## Simple Analytics Select by Location

- A selection method where one selects features based on their location relative to features in another layer
  - Many spatial relationship rules to use for your selection
    - Intersect
    - Are within a distance of
    - Are within
    - Are completely within
    - Contain
    - Completely contain
    - Have their centroid in
    - Share a line segment with
    - Touch the boundary of
    - Are identical to
    - Are crossed by the outline of







#### Select by Location

- Select by Location examples:
  - Number of consumers in a township/county/map grid/etc.
  - Searching for duplicate features
    - Ex. Two pole features from two sources
      - Apply search distance to see where duplicates are located

| Select By Location 83 Select features from one or more target layers based on their location in relation to the features in the source layer. Selection method: select features from  Target layer(s): ServiceLocation TaraformerBank SwitchDeviceBank OHPrimaryLine UGSreundaryLine UGSecondaryLine |  |
|--|--|
| Streets     MapGrid  Only show selectable layers in this list Source layer:  |  |
| Importing     Important       Use selected features     (1 features selected)       Spatial selection method for target layer feature(s):     intersect the source layer feature   |  |
| Apply a search distance<br>300.000000 Feet ···<br>About select by location OK Apply Close  |  |





**Calculate Mileage** 

- Ability to calculate mileages of line features
  - Overhead
  - Underground
  - Service Wire
- Distances summarized off of 'Mileage' field created within feature







**Downstream Trace** 

#### Electric data in a Geometric Network can be analyzed

- Perform a downstream trace to:
  - Select a number of devices attached
  - Calculate mileage
  - Find the number of customers





## Outputs

**Building a Map Layout** 

- When building a layout consider:
  - Page size
  - Reference scale
  - Title
  - Legend
  - Additional map text
    - Disclaimer
    - Document path info





## Outputs

**Building a Map Layout** 

Layout Toolbar



- Page zoom in/out
- Pan page, Zoom whole page, Zoom 1:1
- Fix zoom in/out
- Previous zoom, Zoom percent
- Data driven pages toolbar





## Outputs

**Building a Map Layout** 

• Draw Toolbar

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- Create simple shapes
  - Ex. Outline boxes
- Text
  - Map title
  - Supplemental text
- Insert Menu
  - North Arrow
  - Scale Bar/Text
  - Picture
  - Another Data Frame (map within a map)







#### **Outputs** Building a Map Layout

- Legend
  - Insert Menu Legend Legend Wizard
  - Choose which features participate in legend
  - After initial creation, best to go back to the properties of the legend and features in the legend to fix feature labels

| Legend Properties  |   |
|--|---|
| General tems Layout Frame<br>Apply settings to selected item(s)<br>Select All Select None<br>Service Jocation<br>TransformeEnak<br>SwitchDeviceBank<br>Poles<br>OHPrimaryLine<br>UGSrimaryLine<br>UGScondaryLine<br>Streets<br>Parcels | Size and Position Font Apply to all labels B X U Symbol Map Extent Options Only show classes that are visible in the current map extent Show feature count ( Count ) Show thousands separator Use current index feature as the map extent (data driven pages) |
| Style  | Item Columns Place item(s) in a new column Column count for item(s)   |
|  | OK Cancel Apply   |

| Legend Properties General tems Layout Frame Si Apply settings to select all mole General Select None Generation TransformeBank SuitchDeveBank | 22<br>te and Poston<br>ont<br>Apply to all abels<br>• • • • • • • • • • • • • • • • • • •  |
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|   | Une:     W Math:     36/2       Area:     W Height     24/2       Orly show classes from this heading     PhaseCode       Prevent tem from being spits access logond columns     OK       OK     Cancel  |



### Outputs Single Maps

#### Consider the message of the map







#### Outputs Mapbooks

- Utilize a Map Grid feature and the Data Driven Pages toolbar to create a map book
- Map Grid feature:
  - Helpful attributes: Page #, adjacent page #'s, scale, document path
- Data Driven Pages toolbar:
  - Define:
    - Layer, Name, Sort, Extent Scale

| Data Driven Pages 💽 🚺 👔 🚺 🚺   | ▼ ×  |
|---|--|
| Set Up Data Driven Pages           Definition         Extent           1         What are data driven pages?  |  |
| An index layer is used to produce multiple<br>shows the data at a different extent. The ex<br>layer.<br>Tenable Data Driven Pages<br>Index Layer<br>Data Frame: | output pages using a single layout. Each page<br>ktents are defined by the features in the index<br>Optional Fields<br>Rotation: |
| Layer:  | Spatial Reference:   |
| PageNumber   Sort Field:  PageNumber  V Sort Ascending  | PageNumber   Starting Page Number:  1  |
|   | OK Cancel  |



#### Outputs Exports

- Ability to export data from your maps/database to give to others
  - Shapefiles
  - Attribute Tables
  - Database Features





#### Outputs Reports

- Simple reports can be generated from your map document
  - View menu Reports Create Report
  - Select Layer/Table for report
  - Choose your fields
  - Select grouping/sorting

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|       |         | Serv      | iceLo    | catio        | n       |             |                    |          |             |      |        |      |            |   |
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|       |         | 28DBB10-0 | 12       | 12           |         | North Mani  | ato Reside         | nt 11 No | rth Mankato | Road |        |      |            | 1 |
|       |         | 28DBB10-0 | 121      | 21           |         | North Mani  | ato Reside         | nt 12 No | rth Mankato | Road |        |      |            | 1 |
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|       |         | 28DBB10-0 | 127      | 27           |         | North Man   | ato Reside         | nt 15 No | rth Mankato | Road |        |      |            | 1 |
|       |         | 28DBB10-0 | 125      | 25           |         | North Man   | ato Reside         | nt 16 No | rth Mankato | Road |        |      |            | 1 |
|       |         | 28DBB10-0 | 128      | 28           |         | North Man   | ato Reside         | nt 17 No | rth Mankato | Road |        |      |            | 1 |
|       |         | 28DBB10-3 | 00       | 300          |         | North Mani  | ato Reside         | nt 18 No | rth Mankato | Road |        |      |            | 1 |
|       |         | 28QCC03-  | 207      | 207          |         | North Man   | ato Reside         | nt 19 No | rth Mankato | Road |        |      |            | 1 |
|       |         | 28DBB10-3 | 16       | 316          |         | North Man   | ato Reside         | nt 20 No | rth Mankato | Road |        |      |            | 1 |
|       |         | 28DBB10-0 | 08       | 8            |         | North Man   | ato Reside         | nt 21 No | rth Mankato | Road |        |      |            | 1 |
|       |         | 28DBB10-2 | 194      | 294          |         | North Mani  | ato Reside         | nt 22 No | rth Mankato | Road |        |      |            | 1 |
|       |         | 28DBB10-0 | 15       | 15           |         | North Man   | ato Reside         | nt 23 No | rth Mankato | Road |        |      |            | 1 |
|       |         | 28DBB10-3 | 12       | 312          |         | North Man   | ato Reside         | nt 24 No | rth Mankato | Road |        |      |            | 1 |
|       |         | 28DBB10-3 | 08       | 308          |         | North Mani  | ato Reside         | nt 25 No | rth Mankato | Road |        |      |            | 1 |
|       |         | 28DBB10-3 | 04       | 304          |         | North Mani  | ato Reside         | nt 26 No | rth Mankato | Road |        |      |            | 1 |
|       |         | 28DBB10-0 | 16       | 16           |         | North Man   | ato Reside         | nt 27 No | rth Mankato | Road |        |      |            |   |
|       |         | 28DBB10-2 | 93       | 293          |         | North Man   | ato Reside         | nt 28 No | rth Mankato | Road |        |      |            |   |
|       |         |           |          |              |         |             |                    |          |             | -    |        |      |            | 1 |







#### Outputs Web Services

 The creation of web services allows for your data to be utilized on ArcGIS Online and seen over web maps and apps





#### Outputs KML

If you want to export a particular feature, or all feature in an mxd, you can use ArcToolbox to export a KML that can be utilized in Google Earth and other applications.





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