The Attribute Assistant – Every Data Editor’s Best Friend

Jeff Ward
GIS Coordinator
Summit County, Utah
While attending Utah State University, I worked in a couple of local factories.

- **Proform** – an exercise equipment assembly plant in Logan, Utah – treadmills and step machines.
- **La-Z-Boy** – a furniture assembly plant in Tremonton, Utah.

Each of these jobs were paid on a “piece rate” with quality of the final product factored in.
Efficiency is key in production

- To produce the most machines/couches and thereby maximizing our paychecks it was essential to identify ways to improve efficiency while at the same time maintaining a high level of quality.
- A savings of minutes per unit could add up by the end of the night.
Creating GIS data is production work

- There may be no physical, finished product - but creating GIS features is the same as building a treadmill or a recliner.
  - It takes time.
  - It requires accuracy and precision.
  - A repeatable process should be followed.
  - It is often mind numbingly boring and tedious.
  - Efficient processes can decrease the time factor and increase accuracy, precision and quality of the final product.
Creating GIS Data cont’d

- The bottleneck in GIS data creation is usually attribute entry.
- Attribute entry is also the area where errors are most often introduced – typos, missed fields, etc.
- Some of these problems can be addressed by using feature templates with default values and required fields, but a feature template can’t gather information from nearby features, nor can it run an expression on other fields placing the result in another field.
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Where to get it.

- Download the add-in from solutions.esri.com
  - Tables are empty
- Download an editing template from solutions.esri.com
  - Address Data Management template
  - Water Utility Network Editing and Analysis template
  - Tables are populated with working examples.
  - Some fields already set up to work with the Local Government Information Model – Last Updated, Last Editor
  - I recommend this method.
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How to install it

• Simply double click on the add-in file
  - The file is located in a folder called Application that comes with the download.

  ![AttributeAssistant.esriAddln](image)

  - If ArcMap is open – you will need to close it and open it again to have access to the AA toolbar.
  - Add the AA toolbar – Customize -> Toolbars -> Attribute Assistant
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How it works

- Utilizes two attribute tables that need to be added to the map.
  - DynamicValue
  - GenerateID

- DynamicValue Table
  - This is where most of the work is done.
  - Each row contains a method to be performed on a single field, and in some cases many fields. Some methods copy features to another layer.

- GenerateID
  - Contains rows of named sequences to be used to generate unique IDs for features.
  - Used by the GENERATE_ID method in the DynamicValue table.
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How it works

- Fields in the DynamicValue table –

<table>
<thead>
<tr>
<th>DynamicValue</th>
<th>Table Name</th>
<th>Field Name</th>
<th>Value Method</th>
<th>Value Info</th>
<th>Create</th>
<th>Change</th>
<th>On Manual</th>
<th>Comments</th>
<th>Rule Weight or Order</th>
<th>On Change (Geometry)</th>
</tr>
</thead>
<tbody>
<tr>
<td>OBJECTID: 52</td>
<td>INSTALLDATE</td>
<td>LAST_VALUE</td>
<td>&lt;Null&gt;</td>
<td>True</td>
<td>True</td>
<td>False</td>
<td>False</td>
<td>False</td>
<td>False</td>
<td>False</td>
</tr>
<tr>
<td>OBJECTID: 62</td>
<td>OWNEDBY</td>
<td>LAST_VALUE</td>
<td>&lt;Null&gt;</td>
<td>True</td>
<td>True</td>
<td>False</td>
<td>False</td>
<td>False</td>
<td>False</td>
<td>False</td>
</tr>
<tr>
<td>OBJECTID: 63</td>
<td>MAINTBY</td>
<td>LAST_VALUE</td>
<td>&lt;Null&gt;</td>
<td>True</td>
<td>True</td>
<td>False</td>
<td>False</td>
<td>False</td>
<td>False</td>
<td>False</td>
</tr>
<tr>
<td>OBJECTID: 100</td>
<td>FLOOR</td>
<td>LAST_VALUE</td>
<td>&lt;Null&gt;</td>
<td>True</td>
<td>True</td>
<td>False</td>
<td>False</td>
<td>False</td>
<td>False</td>
<td>False</td>
</tr>
<tr>
<td>OBJECTID: 109</td>
<td>INTERFLOOR</td>
<td>LAST_VALUE</td>
<td>&lt;Null&gt;</td>
<td>True</td>
<td>True</td>
<td>False</td>
<td>False</td>
<td>False</td>
<td>False</td>
<td>False</td>
</tr>
<tr>
<td>OBJECTID: 110</td>
<td>LASTUPDATE</td>
<td>TIMESTAMP</td>
<td>&lt;Null&gt;</td>
<td>True</td>
<td>True</td>
<td>False</td>
<td>False</td>
<td>False</td>
<td>False</td>
<td>False</td>
</tr>
<tr>
<td>OBJECTID: 111</td>
<td>LASTEDITOR</td>
<td>CURRENT_USER</td>
<td>&lt;Null&gt;</td>
<td>True</td>
<td>True</td>
<td>False</td>
<td>False</td>
<td>False</td>
<td>False</td>
<td>True</td>
</tr>
<tr>
<td>OBJECTID: 115</td>
<td>ADDRESSENTRY</td>
<td>ENTRANCEPT</td>
<td>GENERATE_ID</td>
<td>ADDRESSENTANCEDENT</td>
<td>True</td>
<td>False</td>
<td>False</td>
<td>False</td>
<td>False</td>
<td>False</td>
</tr>
<tr>
<td>OBJECTID: 116</td>
<td>ADDRESSENTRY</td>
<td>ENTRANCEPT</td>
<td>ADD</td>
<td>ADDRESSENTRYADD</td>
<td>True</td>
<td>False</td>
<td>False</td>
<td>False</td>
<td>False</td>
<td>False</td>
</tr>
<tr>
<td>OBJECTID: 117</td>
<td>BUILDINGFLOORPLAN</td>
<td>BUILDINGKEY</td>
<td>INTERSECTING_FEATURE</td>
<td>BuildingFLOORPLANBUILDINGKEY</td>
<td>True</td>
<td>False</td>
<td>False</td>
<td>False</td>
<td>False</td>
<td>False</td>
</tr>
</tbody>
</table>
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How it works – DynamicValue table

### Table (layer) and field names

- **Table Name field** -
  - An asterisk (*) indicates any table that has the named field
  - Table name must be the actual name – no aliases. NOT case sensitive

- **Field Name field** -
  - Field name must be the actual name – no aliases. NOT case sensitive

- **Value Method field** -
  - Domain of all methods in the file geodatabase that comes with the download.

### Method name and parameters

- When method is run

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### DynamicValue Table

<table>
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<tr>
<th>OBJECTID</th>
<th>Table Name</th>
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<th>Value Info</th>
<th>Create</th>
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<th>On Manual</th>
<th>Comments</th>
<th>Role Weight or Order</th>
<th>On Change (Geometry)</th>
</tr>
</thead>
<tbody>
<tr>
<td>52</td>
<td>ADDRESS</td>
<td>ADDRESS_T</td>
<td>LAST_VALUE</td>
<td>-Nul</td>
<td>True</td>
<td>True</td>
<td>False</td>
<td>True</td>
<td>False</td>
<td>False</td>
</tr>
<tr>
<td>69</td>
<td>ADDRESS</td>
<td>ADDRESS_T</td>
<td>LAST_VALUE</td>
<td>-Nul</td>
<td>True</td>
<td>True</td>
<td>False</td>
<td>True</td>
<td>False</td>
<td>False</td>
</tr>
<tr>
<td>100</td>
<td>ADDRESS</td>
<td>ADDRESS_T</td>
<td>LAST_VALUE</td>
<td>-Nul</td>
<td>True</td>
<td>True</td>
<td>False</td>
<td>True</td>
<td>False</td>
<td>False</td>
</tr>
<tr>
<td>110</td>
<td>ADDRESS</td>
<td>ADDRESS_T</td>
<td>LAST_VALUE</td>
<td>-Nul</td>
<td>True</td>
<td>True</td>
<td>False</td>
<td>True</td>
<td>False</td>
<td>False</td>
</tr>
<tr>
<td>111</td>
<td>ADDRESS</td>
<td>ADDRESS_T</td>
<td>LAST_VALUE</td>
<td>-Nul</td>
<td>True</td>
<td>True</td>
<td>False</td>
<td>True</td>
<td>False</td>
<td>False</td>
</tr>
<tr>
<td>120</td>
<td>ADDRESS</td>
<td>ADDRESS_T</td>
<td>LAST_VALUE</td>
<td>-Nul</td>
<td>True</td>
<td>True</td>
<td>False</td>
<td>True</td>
<td>False</td>
<td>False</td>
</tr>
<tr>
<td>130</td>
<td>ADDRESS</td>
<td>ADDRESS_T</td>
<td>LAST_VALUE</td>
<td>-Nul</td>
<td>True</td>
<td>True</td>
<td>False</td>
<td>True</td>
<td>False</td>
<td>False</td>
</tr>
<tr>
<td>140</td>
<td>ADDRESS</td>
<td>ADDRESS_T</td>
<td>LAST_VALUE</td>
<td>-Nul</td>
<td>True</td>
<td>True</td>
<td>False</td>
<td>True</td>
<td>False</td>
<td>False</td>
</tr>
<tr>
<td>150</td>
<td>ADDRESS</td>
<td>ADDRESS_T</td>
<td>LAST_VALUE</td>
<td>-Nul</td>
<td>True</td>
<td>True</td>
<td>False</td>
<td>True</td>
<td>False</td>
<td>False</td>
</tr>
<tr>
<td>160</td>
<td>ADDRESS</td>
<td>ADDRESS_T</td>
<td>LAST_VALUE</td>
<td>-Nul</td>
<td>True</td>
<td>True</td>
<td>False</td>
<td>True</td>
<td>False</td>
<td>False</td>
</tr>
</tbody>
</table>
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How it works – DynamicValue table

- Value Info field-
  - List of parameters needed for selected method.
  - Pipe separated (some commas between pipes for field lists and such).
  - Currently 71 methods.
  - Many used in geometric network editing. (AA started out in Water Utility Network Editing)
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How it works – DynamicValue table

- Create/Change/On Manual fields-
  - Boolean fields.
  - Indicate when the method is triggered-
    - Create – When a feature is created.
    - Change – When an attribute for a feature is changed.
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How it works – Dynamic Value table

- **Rule Weight field** -
  - A number that indicates the run order of each record in the Dynamic Value table.
  - Higher numbers are run first.
  - Useful if another method in your Dynamic Value table relies on this field already being populated.
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How it works – DynamicValue table

- **On Change (Geometry) field** –
  - Boolean field
  - Indicates the method will be triggered if the geometry of a feature is changed.
- Field order is different if you download the AA by itself.
- This order and field naming scheme make the table a bit more intuitive.
- You can always append the records from one of the templates into this table to test out the samples.
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- Things to keep in mind-
  - DynamicValue and GenerateID tables need to be added to your map.
  - GenerateID table can not be used with multiple editors.
  - Methods can be run on existing points using the other tools on the toolbar – Change Rules, Geometry Change Rules, Manual Rules, and Create Rules.
  - The AA is fully supported by ESRI Tech Support.
  - Geonet in the Local Government group for help.
  - Quality Control checks are still needed
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- Resources –
  - Geonet
  - solutions.arcgis.com
  - Follow Michael Miller on Geonet
  - Documentation tab on the above link to the AA
  - The documentation is much better than it was in 2011 when I first started using the AA
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Questions?