

Map Automation Using Data Driven Page Tools

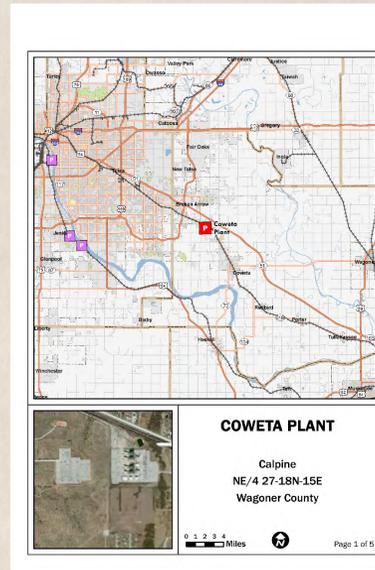
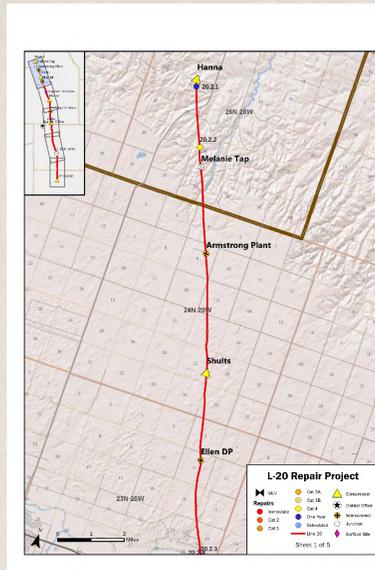
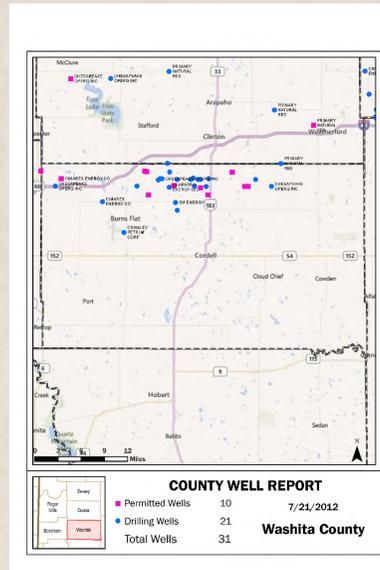
Overview

- Data Driven pages are designed to save time by automating the process of making a series of similar maps using one layout.
- The map extent can have a fixed or a variable scale and can be defined by point, line, or polygon features.
- Text and features can be static or dynamic if driven by the index feature class.
- Multiple tools can be used to generate and enhance the functionality of the index layers.

Design the Page Layout

- The data driven page tool works for any size page layout, not just letter, tabloid and legal sizes. Design the map at a page size appropriate for the data to be legible.
- The primary data frame at the focus of your page layout will be driven by the index layer. The extent of the map can change dynamically based on the index layer so choose an appropriate size, orientation, and placement.
- Add relevant text fields to the page layout. Dynamic text fields can include date, author, user, and file paths which can increase automation for future exports.
- Several Data Driven text fields can be added to show the page name, page number, or any attribute from the current index feature but will only be available after the Data Driven pages are enabled and generated.
- A locator map and/or inset map can be set up to provide additional context for the map in relation to the other maps in the series.
- Center and leave space for dynamic text fields, the legend if dynamically enabled, and the scale bar to change length.

Examples



Data Driven Pages Toolbar

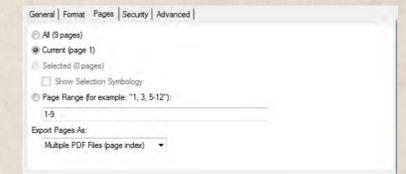
- The Data Driven Pages toolbar has a built-in preview feature that steps through each index feature. It works in both layout view and data view.



- The blue arrows scroll through the index features and the center drop down indicates the current index feature's name or page number.
- Any dynamic Data Driven Page text field present on the layout will adjust as the pages scroll. Insert a text field by clicking on the **Page Text** drop down on the toolbar.
- Using a feature's text fields, it is possible to add the adjacent page name generated in the Calculate Adjacent Fields tool to the page layout.
- If the index layer is preprocessed using a geomodel, other statistics fields that need to be updated on a routine basis can be shown on the map or can be added from a table joined to the index layer.

Exporting Data Driven Pages

- Data driven pages can only be exported in PDF format. From the Export Map window, click on the Pages tab to select the options available for data driven pages.

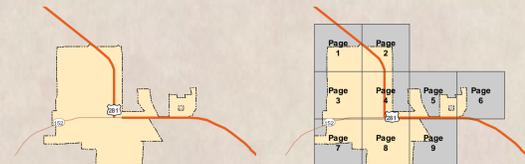


Prepare an Index Layer

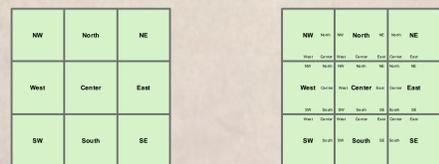
- An index layer should include features that will define an extent for each map included in the series. Each feature should have a column for each dynamic text field that is shown on the page layout. The index layer can be a point, line, or polygon.
- The name field must be a unique field as the map series can only have one page per unique name; spaces can be used at the end of a name to generate unique names.
- An optional field can be added for file naming and/or sorting purposes and another field can be used to specify a set scale used to fix the extent of the map.
- The Strip Map Index Features and Grid Index Feature tools can generate an index layer.



- The **Strip Map Index Feature** tool creates a set of rectangular polygons that follows a linear feature. It is useful for identifying a fixed area surrounding a river, highway, or pipeline.



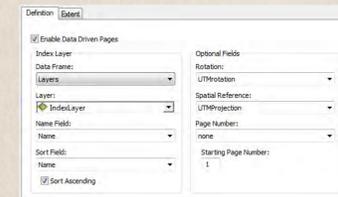
- The **Grid Index Feature** tool generates a grid of polygon features. It should be used when an existing fixed grid, such as a PLSS township or survey, does not exist within the area being mapped.
- Additional tools can be used to generate adjacent map labels, rotation, and projection information. It is not necessary to run both Calculate Central Meridians and Parallels and Calculate UTM Zone as only one projection will be used in the final map.



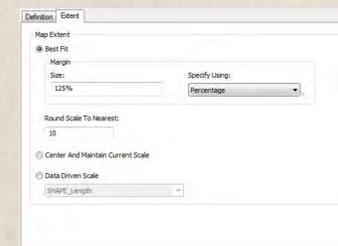
- The **Calculate Adjacent Fields** tool generates eight new fields that can be used to show the adjacent page in each direction (N, S, E, W, NE, NW, SE, SW) using dynamic text on the layout or labels. This tool should only be used on polygons and the polygons must be touching for the tool to work correctly. For non-grid polygons such as counties, states, and countries, unexpected results may occur so check the output.
- Specify the index layer as the input feature and the name field of the adjacent polygons in the Field Name.

Data Driven Pages Setup

- There are two dialog boxes used to set up the data driven pages. The first dialog box, **Definition**, allows the user to define the index layer and the optional fields used in the map series. The second dialog box, **Extent**, allows the user to specify the extent and scale used in the map series.



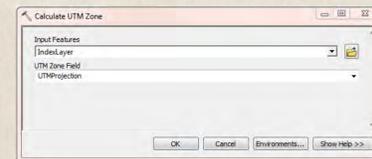
- Check the box next to **Enable Data Driven Pages**.
- Specify the **Data Frame** that the index layer is located in.
- Select the index layer's name from the **Layer** drop down.
- Select the field that the name is located in from the **Name Field** drop down.
- Select the field that the pages will be sorted on from the **Sort Field** drop down. This can be a page number field, a name field, or a separate text field/numeric field.
- Select the rotation field calculated in the Calculate Grid Convergence Angle tool from the **Rotation** dropdown.
- Select the projection field calculated in the Calculate Central Meridians and Parallels or Calculate UTM Zone tool from the **Spatial Reference** dropdown.
- Select the page number field calculated in the Strip Map Index Feature Tool or Grid Index Feature Tool from the **Page Number** drop down or a custom page number field stored in the index.



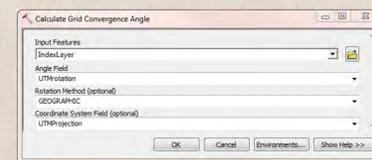
- There are three options to use when specifying the page extent behavior.
- Best Fit** will vary the page scale based on the extent of the data. It should not be used on simple point features. The Margin specifications will increase or decrease the area shown around the extent of the index feature. It can be given in percentages, map units, or page units.
- Center and Maintain Current Scale** will use the current scale from the primary data frame. This option is useful for point features and when the scale must stay consistent throughout the map series.
- Data Driven Scale** drop down can be used when the index table contains a field to set the extent of the map based on the index feature through manual calculation.



- The **Calculate Central Meridian and Parallels** tool calculates the central meridian and standard parallels of the center point of an index feature's extent. Prior to using this tool, a projection field (Type-Text Length-800) must be added to the index feature's tablespace. The field will be used to specify a spatial reference in the Data Driven Page Setup dialog and can be used to show the Coordinate System in the layout view using dynamic text.
- Specify the index layer as the input feature, the new text field to store the projection as the Coordinate System Field, and a Standard Parallel Offset if desired (25% is the default).



- The **Calculate UTM Zone** tool calculates the UTM zone of the center point of an index feature's extent. Prior to using this tool, a projection field (Type-Text Length-800) must be added to the index feature's tablespace. The field will be used to specify a spatial reference in the Data Driven Page Setup dialog and can be used to show the Coordinate System in the layout view using dynamic text.
- Specify the index layer as the input feature and the new text field to store the projection as the UTM Zone Field.



- This tool calculates the rotation necessary to point the map data frame to North. Prior to using this tool, a rotation field (Type-Double) must be added to the index feature's tablespace. The field will be used to specify a rotation angle in the Data Driven Page Setup dialog.
- Specify the index layer as the input feature and the new double field to store the rotation as the Angle Field. The Coordinate System field should be the projection field generated in either the Calculate Central Meridians and Parallels tool or the Calculate UTM Zone tool.

Next Steps...

- Additional query options on the other layers in the map become available when data driven pages are in use. In the Definition Query tab of a layer's Properties window, click on the Page Definition button. After enabling, select the field in the current table that contains data that matches the data in the page name field in the index layer. Match (=) and Don't Match (<>) can be used to query the data appropriately. This can be used to differentiate symbology and labeling for layers with features that match the index feature.
- The Page Definition queries can be extended to other data frames. This can be used to identify the current index feature in a locator map without relying solely on the extent indicator. With some planning and additional queries, even the control of an inset map can become more dynamic with Page Definition queries.
- With Data Driven pages, the control of the extent used in locator and inset maps becomes more important. In the Data Frame tab of the Data Frame Properties window, the extent of a data frame can be controlled by the extent in the primary data frame by selecting Other Data Frame in the Extent dropdown. This option can be used to show the adjacent index features when it is not appropriate to show the entire area included in the index layer and to focus inset maps on the feature at the center of the map.
- The Data Driven Page tool is limited to a single layout. Arcpy scripting can be used to automate the export of multiple layouts, for example a cover page, index page, and the data driven pages, into a single document. Arcpy PictureElements can also be used to dynamically change photos used in map series.



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