

Using Data Driven Pages to Accelerate Map Generation

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Introduction

Data Driven Pages (DDP) is a new feature of Arc GIS 10 that allows for quick generation of a map series from a single map document without a special extension. This poster demonstrates the use of DDP, as well as Data Frame Properties, Dynamic Text, and Page Definition Queries for a pipeline meter collection project.

During this project, a large number of meter locations have been captured in the field and uploaded into a Geodatabase for QA/QC processing. The DDP feature is then used to quickly generate maps that can be sent back to field personnel for meter location verification. DDP helps accelerate the QA/QC process for each incoming meter by reducing the time it takes to generate an individual map. In addition, the use of Dynamic Text and Page Definition Queries prevents any typos that could occur during the map generation process.

DDP has been easy to implement and we have realized true time savings in our workflows.

Methods

For the meter collection project MXD, two data frames were used. They were named Primary and Inset. In the Primary data frame, the old and new meter location feature classes were added, along with other relevant background layers. A definition query was applied to the incoming meter location layer so that only meters which have not been reviewed by GIS staff in the QA/QC process would display. The Inset data frame contained reference layers for location purposes. Both data frames were then set to an appropriate scale.

Next, the DDP toolbar was turned on and the Data Driven Pages Setup was configured to generate a page for each incoming meter (see 1a). On the definition tab, the parameters used were enable data driven pages. The data frame used was the Primary data frame, and the layer used to generate the pages was the incoming meter location. The name of the pages were based on the meter number, and the pages were sorted by the meter technician. None of the optional fields were used for this project. On the extent tab, center and maintain current scale was selected (see 1b).

Dynamic Text – text automatically generated from fields in the attribute table in the layer from which the DDP were based – was utilized for the majority of the text on the maps (see 2a and 2b). It's important to note that the actual name of the field has to be used as opposed to the alias. The text was left aligned and anchored in the lower left corner.

Dynamic Definition Queries were used to show only the meter in question in both the old and new meter layers (see 3). Page Definition Query was enabled under the Definition Query Tab in Layer Properties, and the query was set up to show only the features that matched the meter number field.

The photo area of the map can be either dynamic or non dynamic. The map without the image is automatically updated with the image name using dynamic text. The photo on the other map is not dynamic and the photo must be copied and pasted into the area. This photo is accessed using a hyperlink that is included in the meter Attribute Table.

Finally, the Inset map was set up to change dynamically based upon the extent of the Primary Data Frame (see 4). Under the inset's Data Frame Properties in the Data Frame tab, the extent was set to Other Data Frame and was derived from the extent of the Primary data frame. The margin used was 10,000%.

Each map takes approximately 1 minute to create and QA/QC.

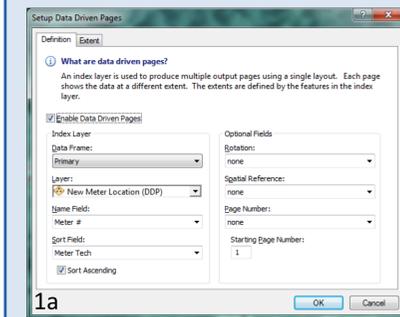
GATHERING SYSTEM	Barnett North GGS
METER NAME	4th Street PL M
METER NUMBER	1090600401
MEASUREMENT TECH	Taylor
COMMENTS	
LATITUDE/LONGITUDE	N 32.762268 W -97.313673

Examples of QA/QC maps for the meter collection project are shown above and below. The orange circles show where the older and less accurate meter locations were previously spotted. The green circles are the incoming meter locations that are being QC'd before they are adjusted in the other meter layer.

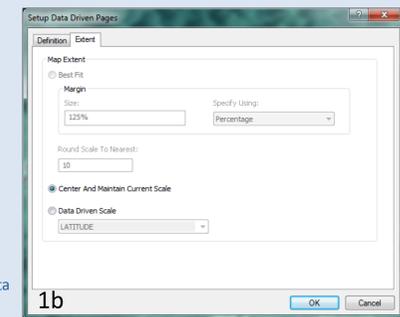
The use of dynamic definition queries clears up any potential confusion by eliminating all but the subject meter in both the new and old meter layers. Having the picture on the map in conjunction with the aerial imagery, helps GIS staff see if there was any error with the location identified through GPS.

GATHERING SYSTEM	Converse GGS
METER NAME	Hunter Mannies 25 H-1
METER NUMBER	1094997701
MEASUREMENT TECH	shubbard
COMMENTS	Meter run and check valve
LATITUDE/LONGITUDE	N 32.00549 W -93.78151

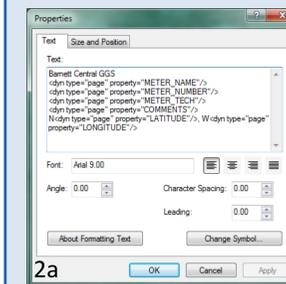
The areas highlighted in yellow indicate where dynamic text has been used. The data frames are also dynamically panned to the correct meter location



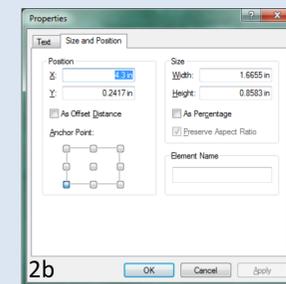
1a. The Definition tab under the Data Driven Pages Setup is where the Layer and Field are selected to create the data driven pages.



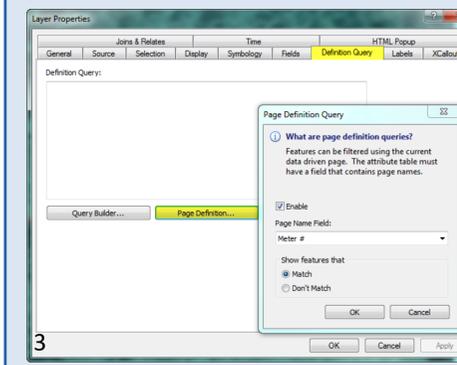
1b. The Extent tab under the Data Driven Pages Setup is where the map extent options are. "Best Fit" will center the data frame on the index feature and zoom out to make the entire feature visible. "Center and Maintain Current Scale" will keep the scale consistent across all maps. "Data Driven Scale" looks at a field in the index feature's attribute table to scale the page.



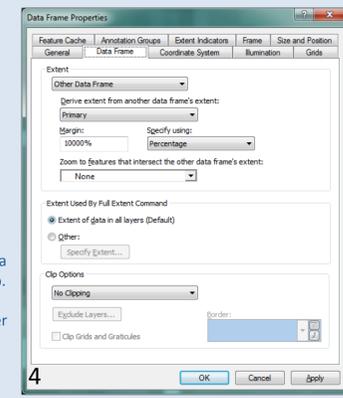
2a. Data Driven Page Text can be inserted in the map using DDP toolbar. Text can be pulled from attributes in the index feature's attribute table.



2b. Text can be anchored to eliminate movement on the map from page to page and to keep text from overlapping.



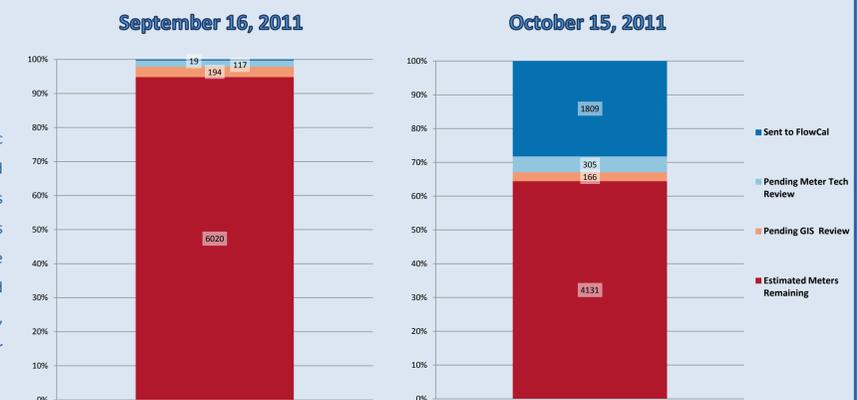
3. Dynamic Definition Queries can be set up in other layers based on the Name Field selected in the Data Driven Pages Setup. It can display the features that either match or don't match the index feature.



4. Other data frames' extents can be derived from another's extent. A margin can be selected using a percentage, page units, or map units.

Conclusions

Data Driven Pages and the other dynamic elements in ArcGIS 10 allow for efficient and accurate map generation. The time savings realized in generating and QA checking has eliminated a potential bottleneck because incoming corrections can be QA'd and updated in the database in a timelier manner. Overall, this quick turnaround has allowed us to better serve our customers.



The first week of the meter collection project, 330 meter locations were collected. 136 locations were QA/QC'd by GIS staff and sent on to be updated in the meter database. 194 locations were waiting on GIS to QA/QC. As of October 15, 2011, 2,280 locations had been received, with 2,114 having been QA/QC'd by GIS. Only 166 of 471 locations were waiting on GIS.