

unleash your geo



Geosemble

GeoPDF As a Historical Data Container

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PDF as an Archival Format

Adobe PDF/A is a standard developed to support the use of PDF as an archival format.

Learn all about it at:

<http://en.wikipedia.org/wiki/PDF/A>

<http://www.adobe.com/enterprise/standards/pdfa/>

Under PDF/A-2 GeoPDF may be compliant if properly tailored.

Standards:

OGC

[PDF Geo-registration Encoding Best Practice Version 2.2](#)

ISO 32000

http://www.adobe.com/devnet/pdf/pdf_reference.html

http://www.images.adobe.com/www.adobe.com/content/dam/Adobe/en/devnet/pdf/pdfs/adobe_supplement_iso32000.pdf

Functionally equivalent and the user cannot tell the difference.

Historical GeoPDFs

All GeoPDFs are a snapshot of the DB when made.

Databases change, GeoPDF content does not*.

USGS has produced 300,000 historic quads.

GeoPDF as a Spatial Data Container

Customers wanted to extend GeoPDF functionality.

AGC

Utilize the GeoPDF file as a container for recovery of source data.

USGS

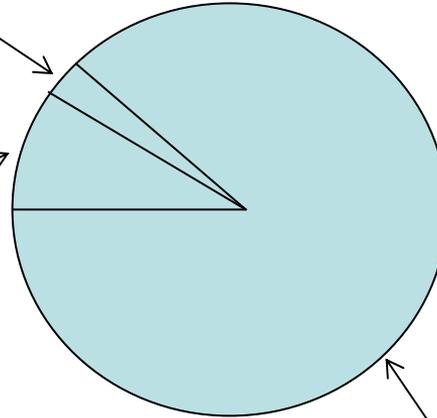
Enhance feature data display in GeoPDFs

GeoPDF file content

Geo-registration
data

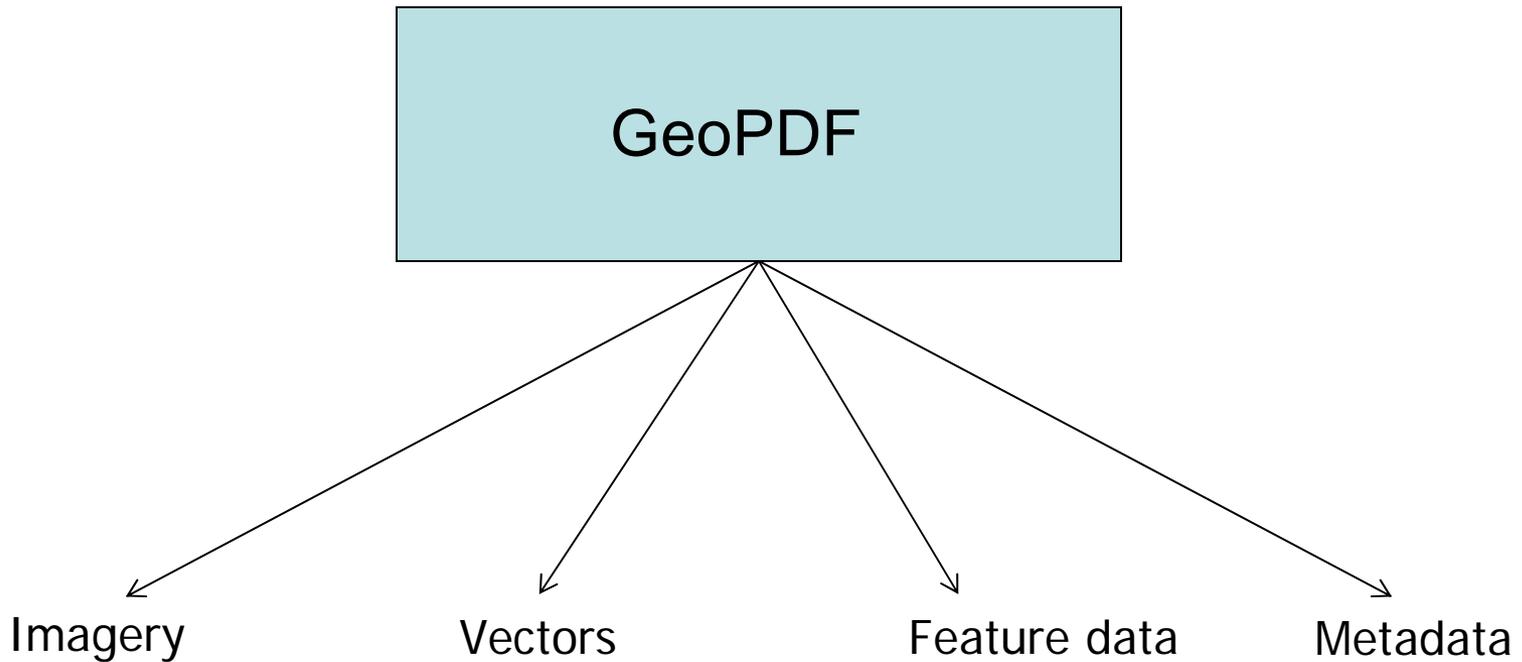
Applications and data:

- GeoJavaScripts
- Hyperlinks
- Bookmarks
- Other data



PDF Content: graphics,
imagery and object data
(ISO 32000)

What the AGC would like to do



Do this is such a way that each source type could be consumed by a GIS for map reconstruction or repurposing.

Recovering source data from a GeoPDF

Raster – possible by exporting the JPEG as a GeoTIFF, but there will be some lossyness

Feature data – possible, but only for features included as object data

Meta data – limited practicality, since it is just not there

Vectors – only if the maps were to include object data for each feature in the map. Unfortunately this would result in PDF files that would be unusable because of poor performance.

What the USGS would like to do

- USGS Topos contain thousands of features, each with many fields.
- When these features are written as PDF object data, the files become too slow to be useful.
- The USGS would like to write feature data in some method so they can be displayed with sub-second response time when a user clicks on a feature

What is Object Data?

A method of associating non-graphics data with geometric elements in PDF files.

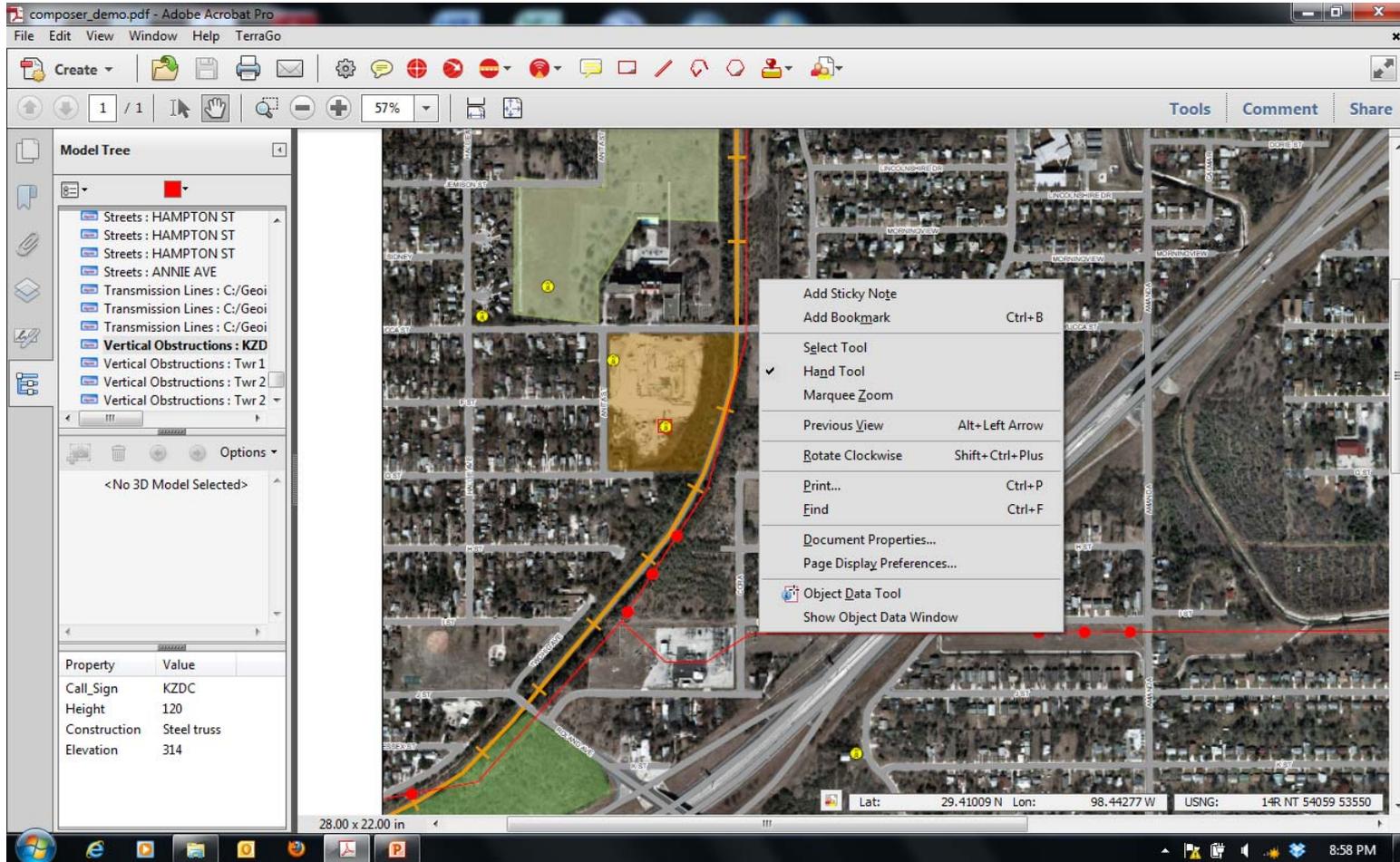
Linked to geometric figures which overlay vector pen commands.

Data is displayed with the Reader Object Data Tool, accessed by right clicking with the hand tool.

Very difficult to create without a complete PDF renderer like ArcMap or Bentley Microstation.

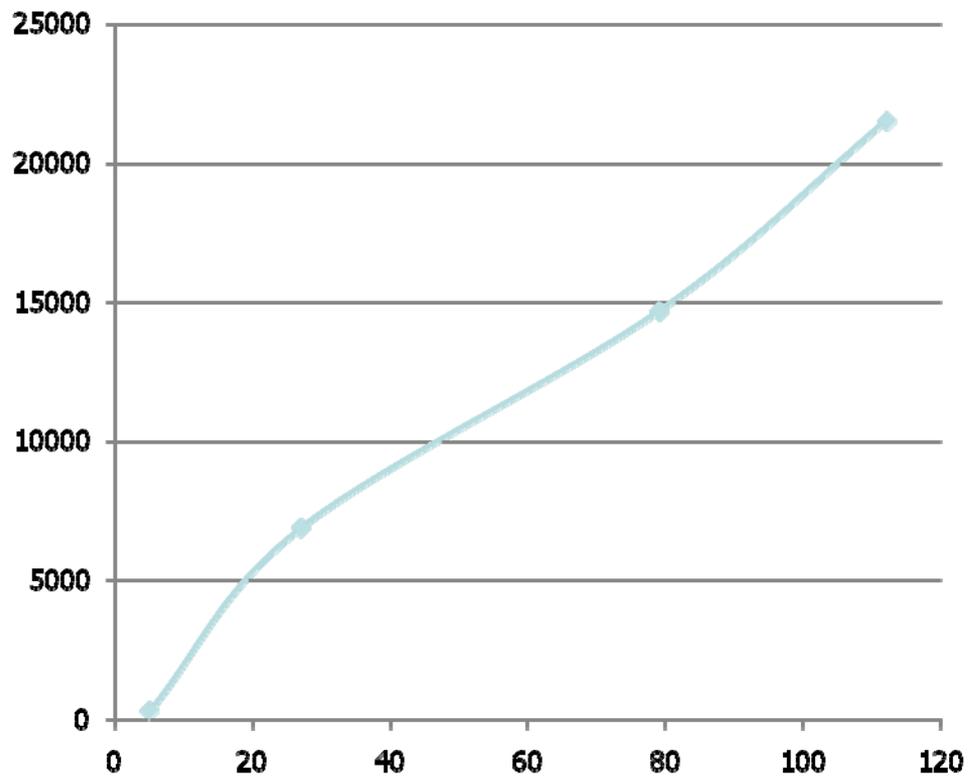
Usage problems too numerous to cover.

Object Data Example



Object data performance

Objects vs Display Time



The GeoPDF DB Concept

Embed a SQLite DB in the GeoPDF

SQLite is the most widely deployed SQL database engine in the world.

Will allow use of Reader for

- Data discovery
- Query
- Display
- Extraction

The GeoPDF DB Implementation

Development Tasks:

- Store the database
- Find a feature
- Highlight the feature
- Select the desired feature
- Display the feature attributes
- Extract the features

Implementation will require major enhancements to:

- TerraGo Publisher for ArcGIS
- TerraGo Composer
- TerraGo SDK
- TerraGo Mobile
- TerraGo Toolbar

The GeoPDF DB

Currently an R&D project

Proof of concept demonstration being developed

Potential solution for

- Recovery of source data
- Enhanced feature data display in GeoPDFs
- Search for things like addresses and widgets
- Display of elevation in 2D GeoPDFs
- Provision of feature data display in 3D GeoPDFs
- Allow 3rd party SDK users to write feature data