



**Esri International User Conference | San Diego, CA**  
**Technical Workshops | Wednesday, July 13, 2011**  
**Thursday, July 14, 2011**

# **ArcGIS ArcMap: Printing, Exporting, and ArcPress**

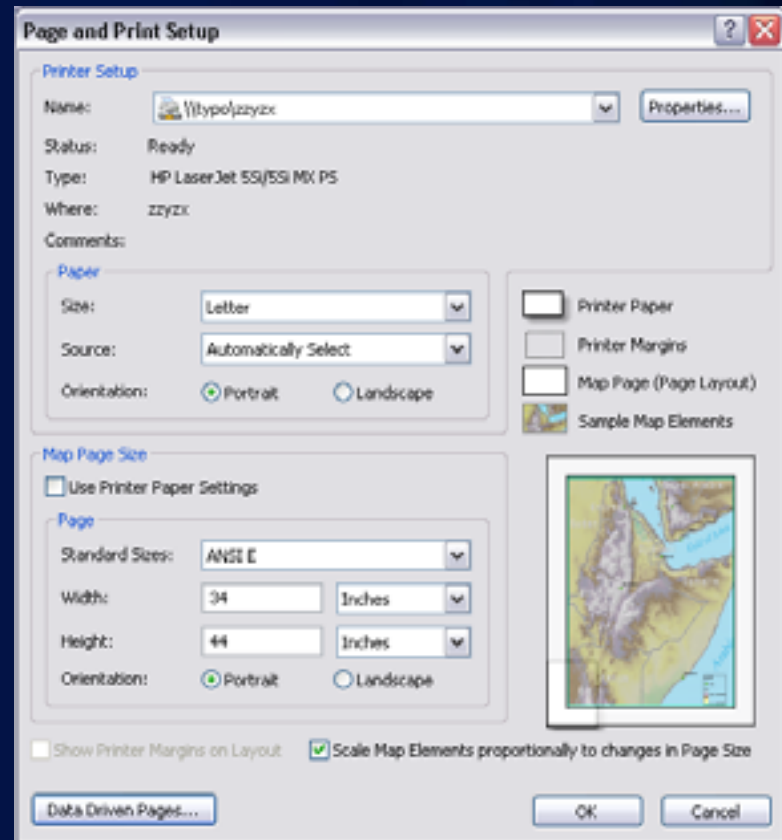
Michael Grossman  
Jeremy Wright

# Workshop Overview

- **Output in ArcMap**
  - Page Setup
  - Printing
  - Map Export and Export troubleshooting
  - Advanced PDF features
  - New PDF compression options at 10
- **What's new in ArcGIS 10?**
  - Data Driven Pages – new Batch Output features
  - arcpy.mapping – automation of mapping workflows
- **Questions & Answers**

# Printer Paper vs. Map Page

- **Layout Preview**
  - Shows how your map page fits on the printer paper
- **Settings**
  - Understanding Printer Paper vs. Map Page
  - Marking the Use Printer Paper Settings checkbox
  - Setting a custom printer paper size
  - Tiling preview



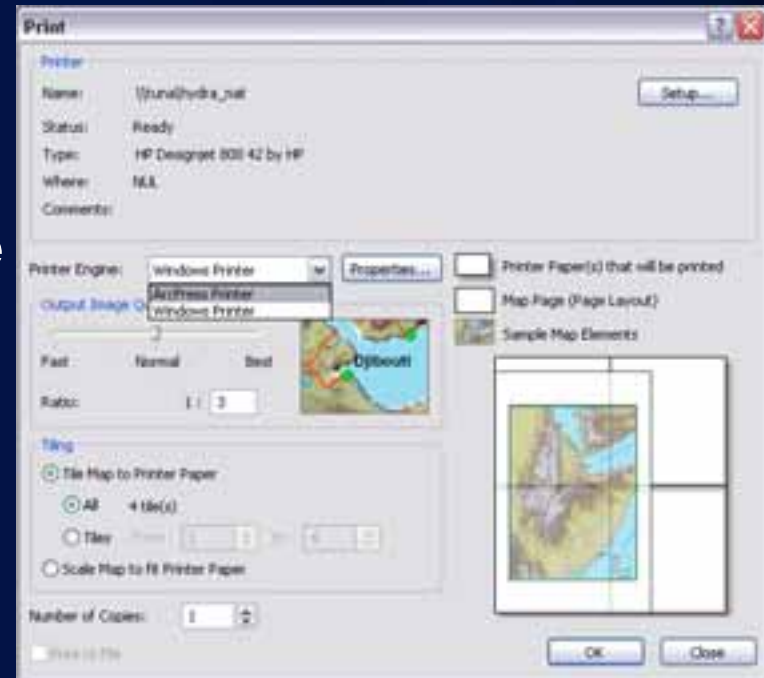
# Printing – choosing a Printer Engine

- **Printer Engine**
  - Each engine is a collection of drivers
  - **Windows Engine**
    - Best possible output
  - **PostScript Engine**
    - Color separates
    - Not required for PS printer!
  - **ArcPress Engine**
    - Big raster, complex vector symbology, or low end printer
- **Page Tiling**
  - Enabled when “Use Printer Paper” is off and one copy is selected.



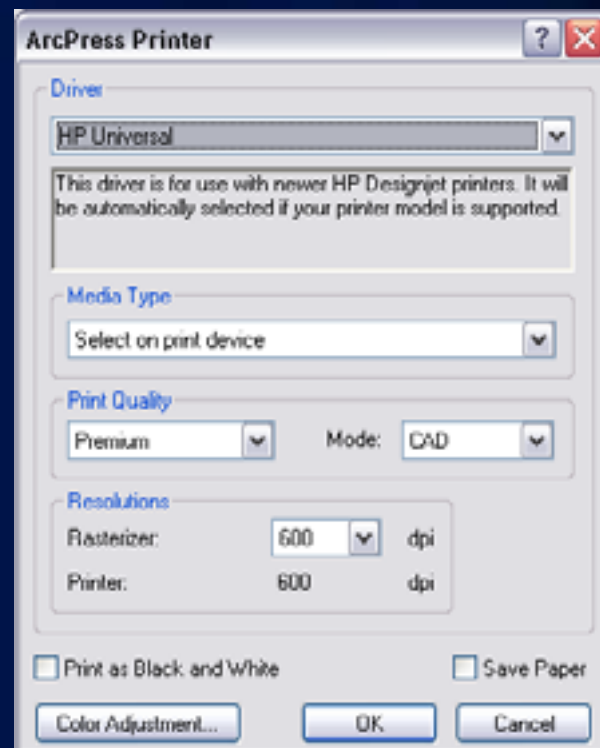
# ArcPress Printer Engine

- Use ArcPress when printing big rasters, complex vector symbology to a plotter
- Access ArcPress functionality by selecting the ArcPress Printer Engine in ArcMap's Print dialog
- Compatible with specific list of large format printers only
- Not an extension anymore
- Included in ArcView, ArcEditor, and ArcInfo



# ArcPress Properties

- **ArcPress Driver selection**
  - Usually automatic selected based on printer model name
  - See the ESRI Support website
    - KB32745
    - FAQ: What printers are supported by ArcGIS Desktop?
- **Resolution**
- **Save Paper option rotates output image to use less roll paper**
- **Color Adjustment**
  - usually only necessary with older printers that use the “HP RTL (CMYK/B+W) Halftone” driver



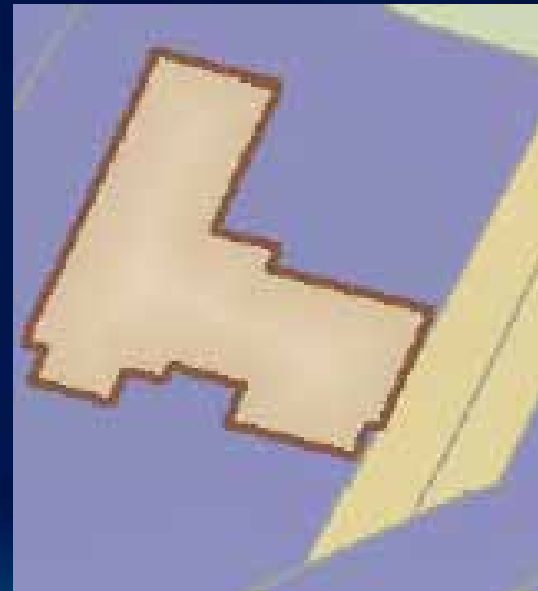
# Output Image Quality

- OIQ controls the down-sampling of raster layers
- Vector layers below a raster, or any layer with transparency, are converted to raster on output, and down-sampled. This effect is called **rasterization**.

**Fast**



**Best**



# Rasterization on Output

- **Causes of rasterization**
  - Layer transparency
  - Picture marker symbols
  - Raster Layer on top in the TOC
- **At ArcGIS 9.x: “Detect Complex Output” SDK sample**
  - <http://esriurl.com/ucprinting1>  
Use batch script included with it to install
- **At ArcGIS 10: “Detect Rasterizing Layers”**
  - Included in the help for printing and exporting
  - Cut and paste into Python window and execute



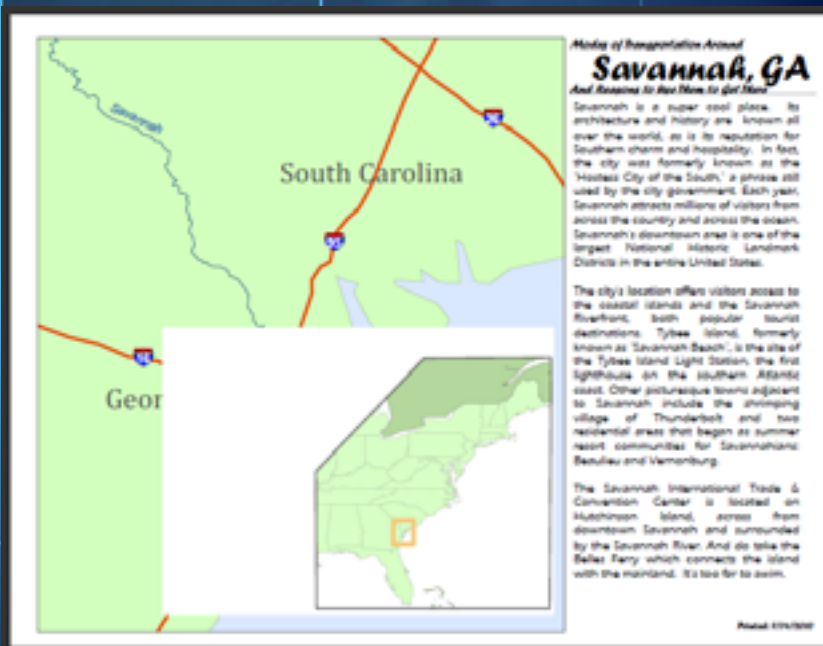
# Printing Troubleshooting Strategies

- **Maps with large raster layers**
  - **Output Image Quality setting**
  - **Raster Layer Properties: Display Quality setting**
  - **ArcPress**
- **Maps with complex vector symbology**
  - **ArcPress**
  - **Limit use of text halos and variable depth masking**
  - **Use data appropriate for scale**
  - **Use scale ranges to cull “too detailed” content**

# Demo

Layer Rasterization

Font Embedding



# Image Export Formats

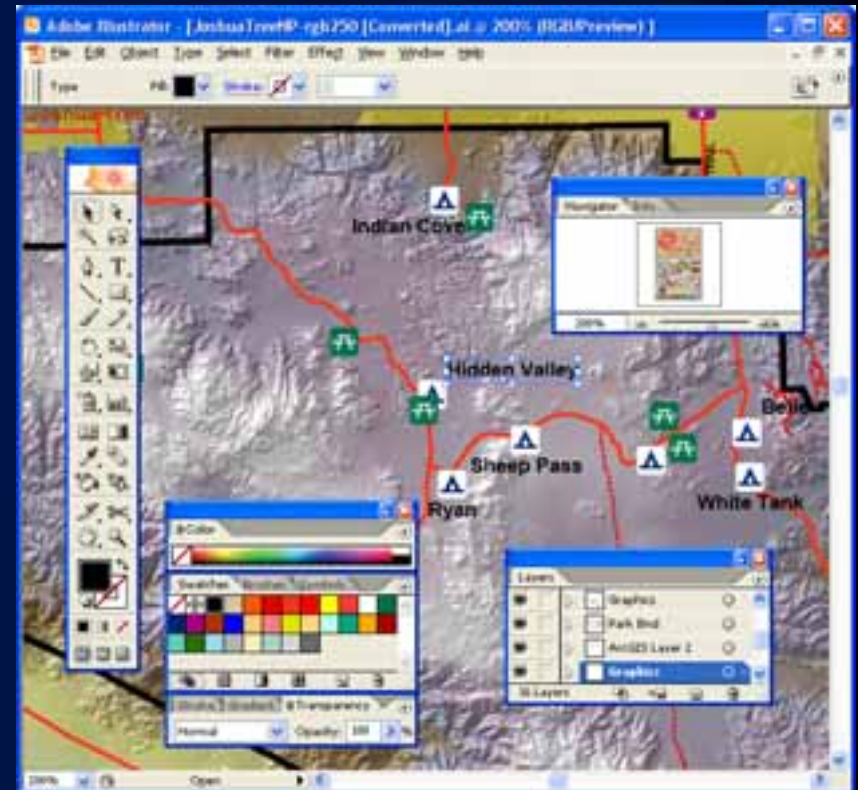
- Image = Raster
- ArcMap supports BMP, JPEG, PNG, TIFF, and GIF
- True encoding of DPI for all formats
- Image size only limited by system resources
- Extensive set of compression and color depth options

# PostScript Export Formats

- **PostScript Family Formats**
  - Encapsulated PostScript (EPS)
  - Portable Document Format (PDF)
  - Adobe Illustrator (AI)
- **Shared PostScript Export library**
  - TrueType and Type 1 Font Embedding
  - Consistent PostScript output across formats
  - Adobe Illustrator layer and group element support in PDF and AI formats
  - Option to convert RGB raster to CMYK, supporting true CMYK output

# Adobe Illustrator Format

- Special kind of PostScript
- Adobe Illustrator Procedures encoded into file
- ArcMap creates AI version 6 files
- ArcMap Illustrator does not support font embedding

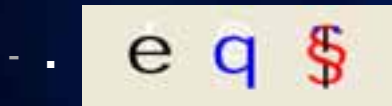


# Font Embedding

- Available for EPS, PDF, and SVG
- Embed fonts when your audience may not have your fonts installed
- Character Marker Symbols

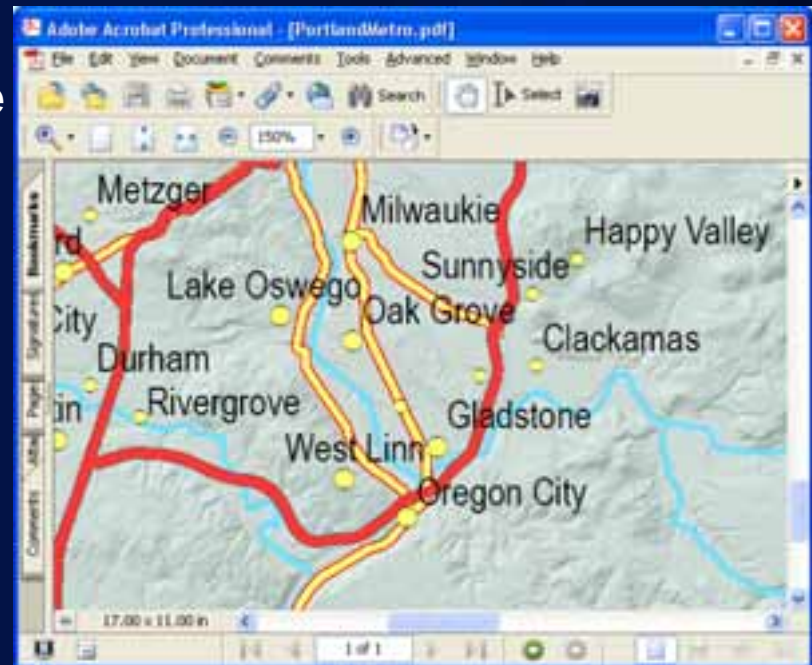


- Character markers are font characters, usually from the ESRI or other custom fonts
- Recipient of export file often does not have font



# PDF – Portable Document Format

- **Is not really PostScript**
  - Not a programming language
  - Not editable in standard text editor
- **But is very similar**
  - Created by Adobe
  - Similar feature set
  - Many operators (functions) identical to PostScript





# Adobe Acrobat / PDF versions

- **Not a file format**
  - Acrobat is a toolkit for creating and editing PDF
- **PDF vs. Acrobat versions**
- **ArcMap 9.2 exports PDF 1.5**
- **ArcMap 9.3 exports PDF 1.6**
- **PDF Export preserves layers**
- **For 9.2 see KB [Article 30882](#)**  
*“Layers in ArcGIS 9.2 PDF don't match the layers of the map”*
- **For 9.3 and later, this information is integrated into the help.**

Acrobat	PDF Version
3.0	1.2
4.0	1.3
5.0	1.4
6.0	1.5
7.0	1.6
8.0	1.7 (ISO 32000-1)
9.0/10.0	1.7 + Adobe Extension Level



## Other Export Formats

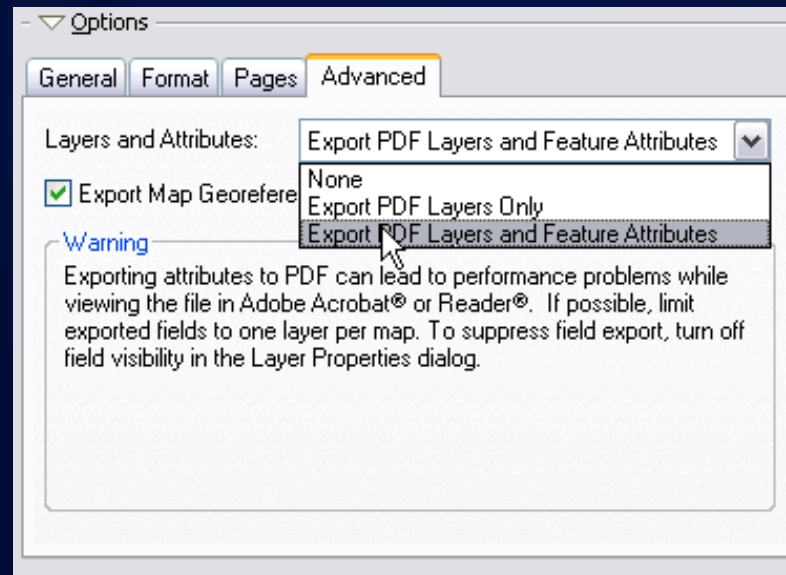
- **Enhanced Metafile Format (EMF)**
  - MS Windows' native graphics format
  - Can be used for inserting maps into Office documents
  - Does not support font embedding
    - Use “Convert Marker Symbols to Polygons” instead
  - Raster is not compressed
    - To avoid huge files, decrease Output Image Quality when map contains large raster layers
  - Map output troubleshooting
    - Helps identify location of problem
    - Data Frame and Layer settings, OR Print/Export settings?

## **Other Export Formats, cont'd.**

- **Scalable Vector Graphics (SVG)**
  - XML-based, WWW Consortium (W3C) recommendation for vector graphics on the Internet
  - Capabilities similar to Macromedia Flash™
  - Viewed in free browser plug-in from Adobe
  - ArcMap SVG export provides basis for a standalone web map or interactive map
    - SVG export creates simple map graphic
    - Post-process to add interactivity & animation

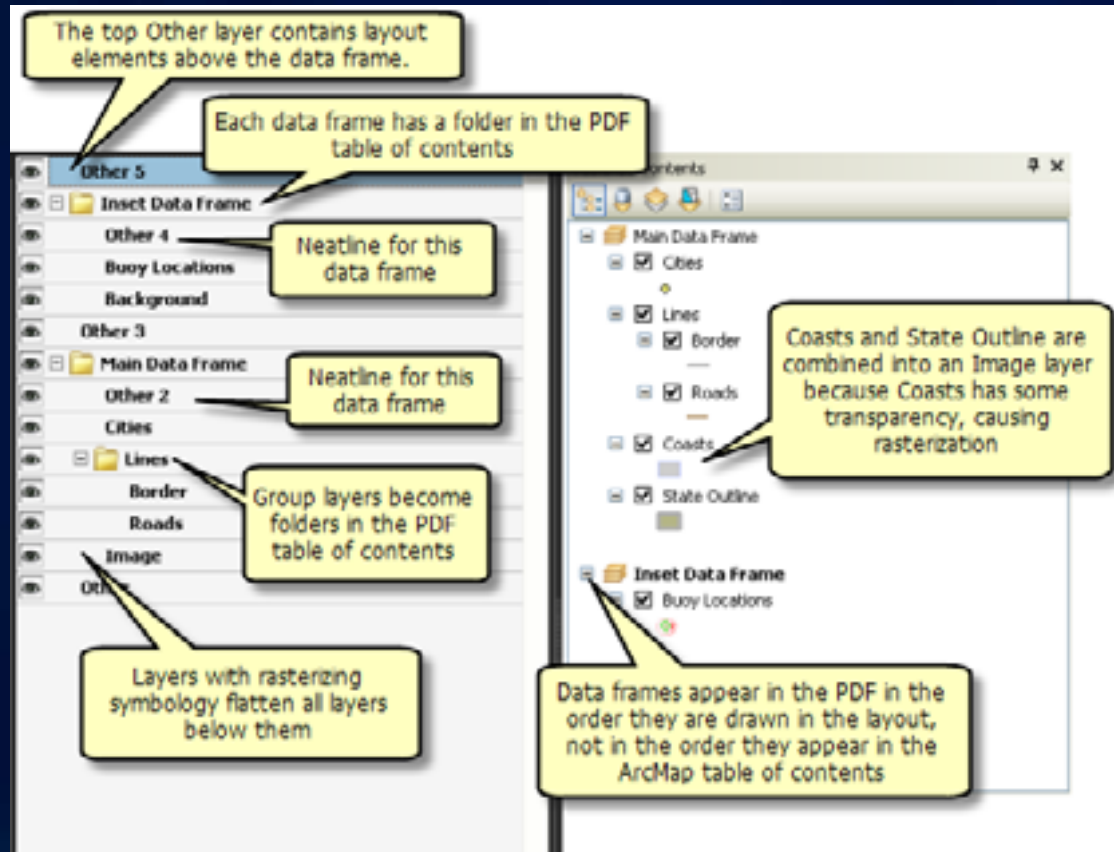
# Advanced PDF Features

- Advanced tab on the Export Map dialog for PDF
  - Layers and Attributes can be exported to PDF, or disabled.
  - Allows export of georeferencing information readable in Adobe Reader and Acrobat 9.x.



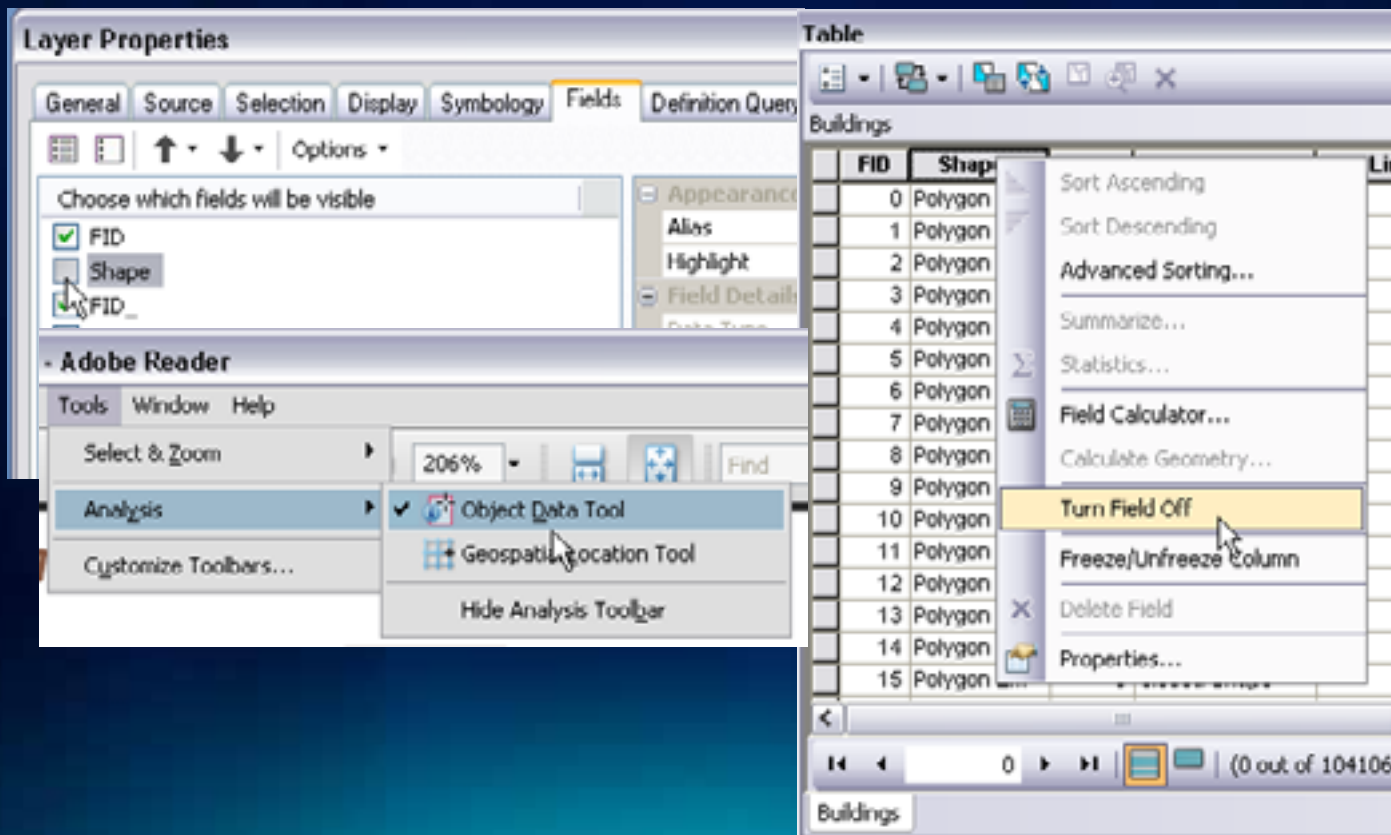
# Advanced PDF Features (cont'd)

- Layers in PDF
  - Tree view closely matches ArcMap document structure



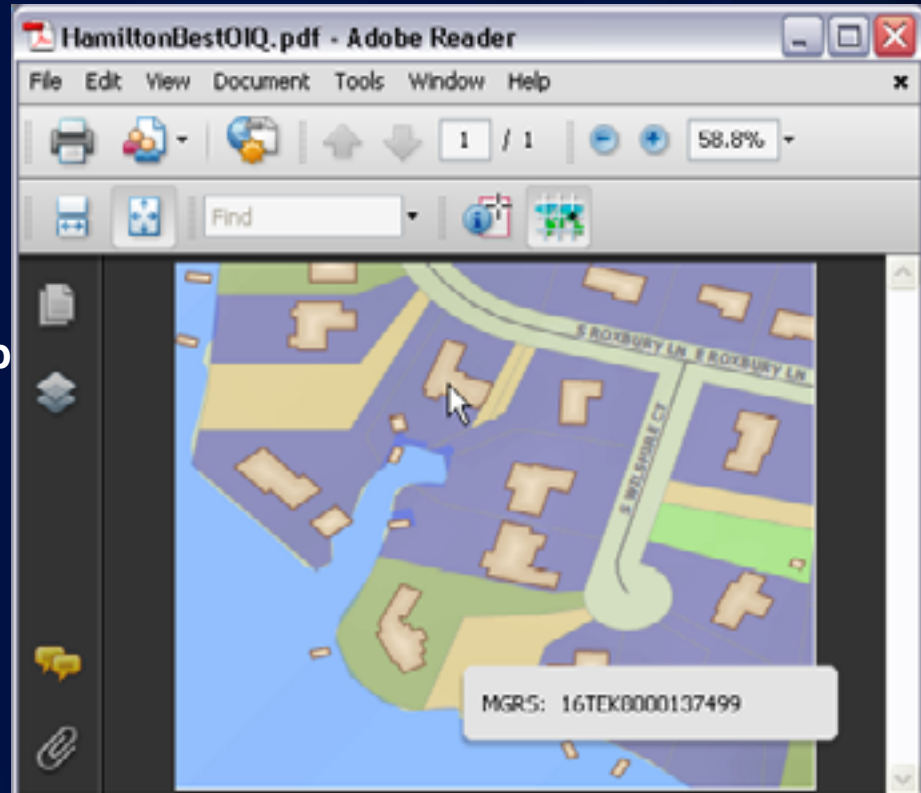
# Advanced PDF Features (cont'd)

- ArcMap Feature Layer Attributes can be exported and read using Object Data Tool in Adobe Reader and Acrobat 7 or higher.
  - Control which attributes are exported using the Fields tab in Layer Properties or by using “Turn Field Off” in Attribute Table.



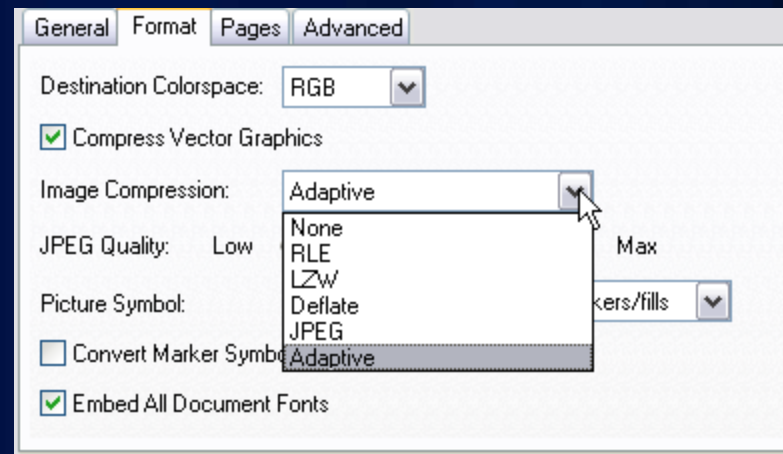
# Advanced PDF Features (cont'd)

- Export PDF with georeferencing for use in Adobe Reader or Acrobat 9.x (requires 9.3 SP1 or higher).
- Capabilities for Reader 9:
  - Coordinate Readout
  - Find XY
- Acrobat 9 Standard or Pro:
  - Above features, plus:
  - Measurement and Markup
- Acrobat 9 Pro Extended:
  - Above features, plus:
  - Advanced Authoring
  - Ability to add Shapefiles, GeoTiffs and JPEG2000
- Pro and Extended:
  - Can enable analysis for Reader 9 (allows measure and markup)



# New Compression options at ArcGIS 10

- PDF is a great interchange format, but too large for many uses.
- At ArcGIS 10, we added new compression options to PDF, EPS
  - JPEG Compression
    - Image streams in the PDF are JPEG compressed
    - Control quality/filesize using the “JPEG Quality” slider
  - Adaptive Compression
    - Images in PDF are compressed with either Deflate or JPEG, depending on the content and size.
- Depending on content, can result in 80% reduction in size!





DeKalb County Board  
Fulton County Dept. of Health and Wellness/District 3, Unit 2, 06/11/2011

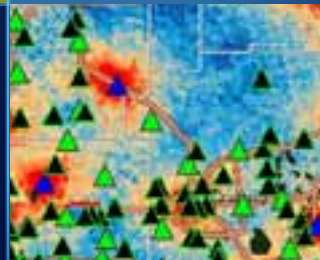
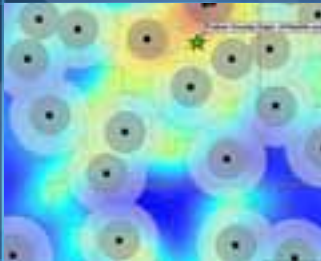
# PDF Features Demo

PDF Layers

Georeferencing

Attribute Export

Adaptive Compression





# Batch Output at ArcGIS 10

- **New at 10:** Data Driven Pages
  - GP tools to create index features
  - Pages are created based on indices
  - Traditional grid or “Strip Map” based on a linear features
  - Can also create index based on map features (e.g. U.S. States)



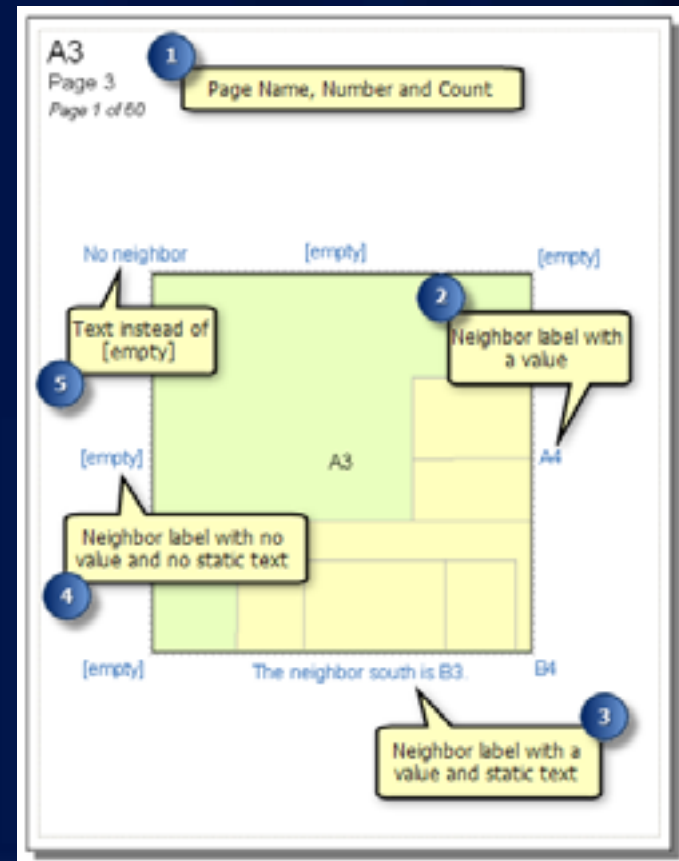
# Batch Output at ArcGIS 10 (cont'd)

- **Dynamic elements change based on index features:**

- Map Scale
- North Arrow
- Scale Bar
- Scale Text
- Dynamic Text
- Layers containing dynamic queries

- **Data driven pages export**

- To individual files
- To combined multipage PDF
- Subsets or ranges of pages

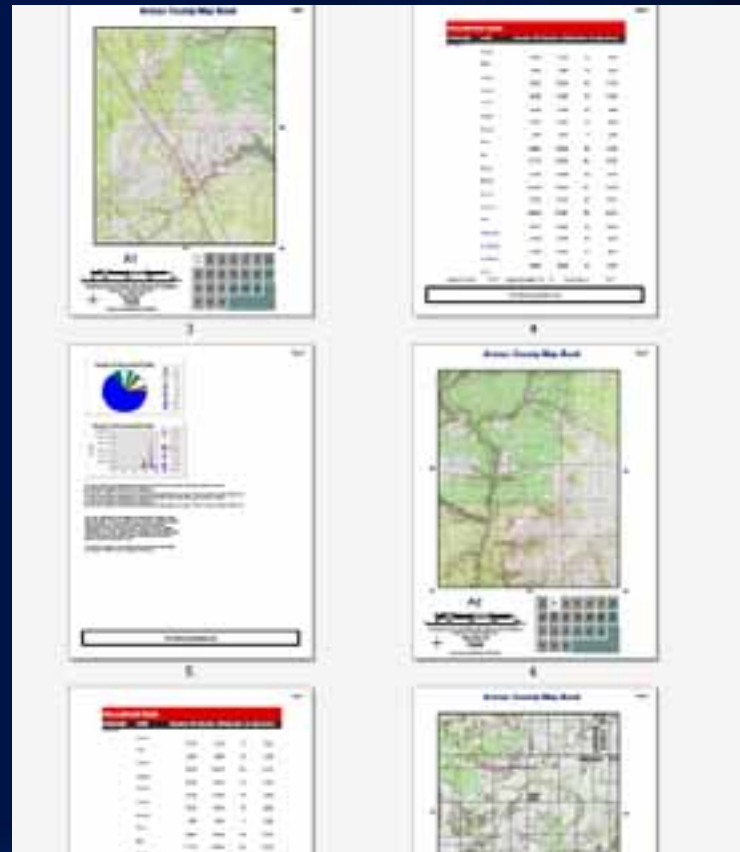


# What is map scripting (arcpy.mapping)?

- A new mapping module that is part of the geoprocessing ArcPy site-package
- A python scripting API that allows our users to:
  - Manage map documents, layer files, and the data within them
    - Find a layer with data source X and replace with Y
    - Update a layer's symbology in many MXDs
    - Generate reports that lists document information
      - Data sources, broken layers, spatial reference info, etc.
  - Automate the exporting and printing of map documents
  - Automate map production and create PDF map books

# Scripting Map Books with arcpy.mapping

- Allows creation of map books with more complex properties
  - Multiple page sizes
  - Insert title pages, map index page
  - Append or insert ancillary documents
  - Create one multipage PDF
- Create map books from more than one map or layout
- Export PDF layout from ArcGIS Server
  - Sample:  
<http://esriurl.com/ucprinting2>
- arcpy.mapping help included in desktop install

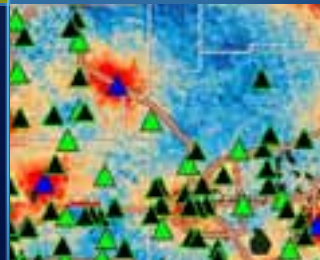


# Demo: Batch Output at 10

Data Driven Pages

Multipage Output

arcpy.mapping automation



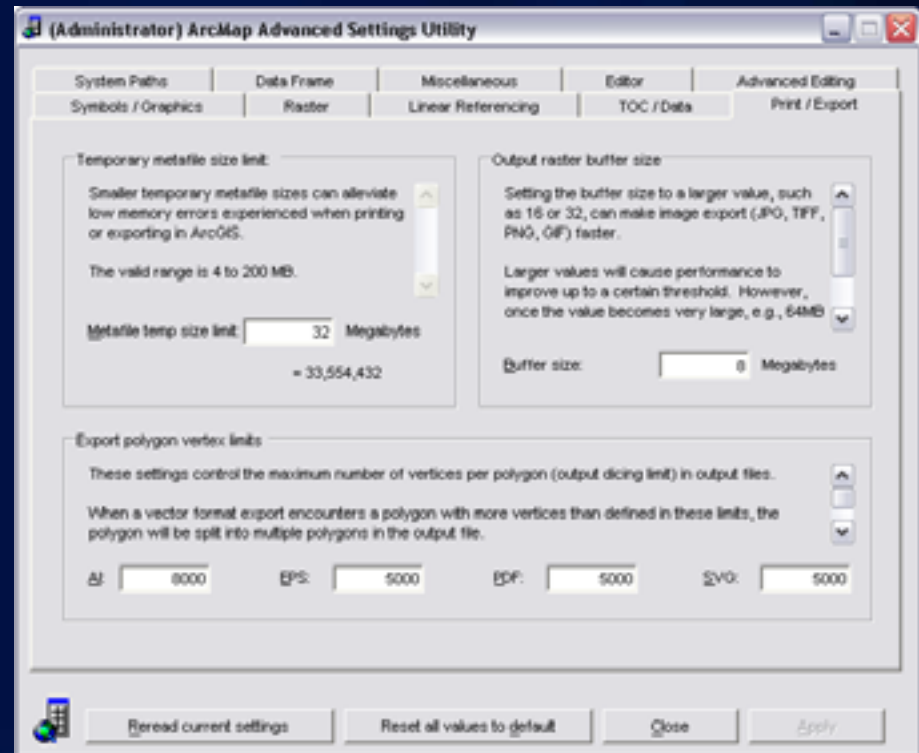


# Export Troubleshooting Strategies

- **Font embedding problems**
  - Verify that font is embeddable. Fonts can be checked with “OpenType Font Properties shell extension,” downloadable <http://www.microsoft.com/typography/TrueTypeProperty21.msp>
- **When file size too large, verify that vector layers are not rasterizing on output.**
- **Use the Picture Symbol option to Vectorize Bitmap Marker or Fill Symbols.**
- **Maps with a large number of character marker symbols**
  - Avoid the “Convert Marker Symbols to Polygon” option, use font embedding instead

# AdvancedArcMapSettings tab for Print/Export

- Located in %ARCGISHOME%\Utilities
- Print / Export tab has troubleshooting settings
- Metafile Size Limit
  - Decrease to solve some export issues
  - Already changed at 10
  - For 9.2 users: see [KB33659](#) for the same procedure via registry edits
- Other settings:
  - Consult document in the same folder for information.



# Questions?

**Please complete a session evaluation. Thank You!**

[www.esri.com/sessionevals](http://www.esri.com/sessionevals)