Getting the most from the Maplex Label Engine

Craig Williams
Wendy Harrison
Presentation Overview

• What are the types of text in ArcGIS?
  - Labeling vs. Annotation - role of the Maplex Label Engine

• Position properties

• **Demo - Street labeling**

• Fitting strategies

• Label density control

• Conflict resolution properties

• **Demo - Maximizing text placement**

• Annotation

• Summary and Questions
What Are The Types Of Text in ArcGIS?

• What are Labels?
  - Dynamically placed text by a label engine
  - Map refresh generates new text locations
  - Placed text can be “locked” after placement

• What is Annotation?
  - Stored
    - Geodatabase
    - Map document
  - Editable
Labels to Annotation Cycle

ESRI Label Engines
- Maplex Label Engine
- Standard Label Engine

Convert to annotation

Geodatabase annotation editing tools

Dynamic, tiled, or printed maps

Label maps
Labeling In ArcMap

• Unified user experience for both label engines
  - Labeling toolbar
    - Label Manager
    - Feature weights
    - Label priorities
    - Lock labels, view unplaced labels

• Integration of the Maplex Label Engine
  - Plugs in to standard tools
  - Uses ArcGIS text symbol
  - Uses standard label expression and label class organization
Maplex Label Engine

- Advanced high-quality cartographic text placement engine
- Fully integrated with ArcGIS
  - Shared tools
  - Full annotation support
- Numerous placement options
  - End goal of reducing map production time and costs
- Licensing
  - ArcGIS 9.0 – 10.0, an extension (Maplex for ArcGIS)
  - Starting with 10.1, all functionality is included with all license levels of ArcGIS
Labeling Toolbar

- Central location for labeling needs
- Extra commands enabled with Maplex

Common tools for both label engines

Quality placement for Maplex for ArcGIS

Maplex Specific Commands

- Abbreviation Dictionaries...
- Key Numbering...
- Use Maplex Label Engine
- Options...
Label Manager

- Central location for label classes
- Easy access to common parameters
Label Summary

- Highlights potential problems in labeling properties
Label Weights

- Define weights to control behavior when labels and features overlap

- Maplex weighting is based on values from 0 – 1000
- A value of 1000 is always treated as a barrier
Label Priority

- Order of label placement priority
- Label class level property
- Also serves as the deletion priority for conflict resolution
Line Label Position
Line Label Offset

[Diagram of Label Offset settings]
Street Placement

- Street placement mode
  - End of street clearance
  - Strategies optimized for placing street labels
Contour Placement

- Contour placement mode
  - Page or Uphill alignment
  - Label laddering
Street Labeling

- Street placement
- Overrun features
- Abbreviation dictionary
- Font reduction
- Strategy order
Point Label Positioning

![Image of Maplex Label Engine interfaces showing positioning options for point labels.]
Point Label Rotation
Polygon Label Positioning

Getting the most from the Maplex Label Engine
Fixed Position Within A Polygon
Positioning Outside Of A Polygon
Polygon Border Labeling

- Opposing labels are placed together
- Option to repeat labels at a distance
- Single sided boundaries optionally labeled
Polygon Leader Anchor Points

• Multiple options for placement of leader line anchor point when labeling polygons
Label orientation

- Align to the graticule
- Available to any label placed horizontally

- East Asian vertical text placement
  - Font must have vertical text metrics
Label Fitting Strategies
Strategy Order

- Select the order which fitting strategies are tried
Label Stacking

- Dynamic stacking
  - Automatic stacking
  - Space, comma
  - Automatic alignment
  - Left, right, center

- Controlled stacking
  - User-defined characters
  - Forced stacking
  - Control justification
Label Reduction

- Font size reduction
  - Stepped decreases in font size to fit a label
- Font width reduction
  - Stepped decreases in width of characters to fit a label
Label Abbreviations

- Imported and exported to / from files or database tables
- Multiple dictionaries per map
- *Translation*, *Keyword*, and *Ending* types
- Truncation option not tied to a dictionary
- See [KB 30494](#) for US streets example
Key Numbering

- Labels that don’t fit are replaced with a number
- Label text then placed in a list
- Key numbering groups can span multiple label classes
Label Density
Conflict Resolution

- Additional access to label weights
- Specify background labeling
- Last resort
  - Never remove (place overlapping) option
Labeling Process

Labeling occurs after features draw

1. Properties are gathered from layers
2. Properties are sorted by priority
3. Barriers are gathered from the map
4. Properties and barriers are then passed to the label engine
5. Result is placed text drawn to screen
Maximizing text placement

Boundary labels
Contour labels
River labels
Internal/External zones
Street addresses
Callouts
Key Numbering
Converting Labels to Annotation

- Convert Labels to Annotation dialog
  - WYSIWYG conversion
  - Grid showing all target annotation feature classes
  - Unplaced labels written as annotation to the database
    - Unplaced Annotation Window

- Geoprocessing Tools
  - Tiled Labels to Annotation tool
    - Batch conversion
  - Contour Annotation tool
Annotation Licensing

- Feature Linked Annotation
  - ArcEditor license to edit

- Annotation created with Maplex
  - No additional restrictions
    - Graceful downgrade to the Standard Label Engine for feature-linked updates without a Maplex license
      - Newly created features
      - Updates to geometry
Annotation Feature Class

• Graphic text stored in the Geodatabase
• Each feature class has a symbol collection
  • Improves productivity
  • Promotes standardization
  • Created when converting from labels
• Control over feature-linked annotation behavior
  • Creation of new features
  • Modification of feature geometry
Managing Annotation: Annotation Classes

- Feature class can have multiple annotation classes
  - Reduces the number of feature classes
  - Big performance gain in drawing and relationship logic
  - Created from label classes when converting to annotation

- Each annotation class has:
  - An expression
  - A symbol
  - A scale range
Managing Annotation: Features

- Annotation properties are exposed as individual feature attributes
  - Supports queries against text symbol information
  - Allows for bulk updates to symbol properties
Editing Annotation - Overview

- Tightly integrated with feature editing environment
- Efficient experience when working with placed annotation
- Supports editing of multi-word annotation and leader lines
Constructing New Annotation

- **WYSIWYG construction tools**
  - Provide visual feedback
  - Place annotation where you want it the first time

- **Productivity shortcuts**
  - Hotkeys
  - Templates allow for predefined symbol / attribute choices
  - Use of expression to derive text (Ctrl-W)
Maplex help and resources

- Examples
- Detailed explanations of options
- Help now integrated with the rest of labeling help
- Common labeling tasks

- See Esri templates for examples of Maplex in use
Summary

- Maplex is an advanced high-quality cartographic text placement engine
- Integrates with the existing labeling and annotation experience
- Provides numerous placement properties and strategies to define the location of labels
- Efficient tools to edit annotation
Related Presentations

• Converting Labels to Annotation: Getting Started
  - Hall G: 2  Wednesday 9:30AM-10:00AM

• Efficient and Effective Labeling with ArcGIS
  - Hall F: 1 Wednesday 3:00PM-3:30PM

• Managing and Editing Annotation
  - Hall G: 2 Thursday 11:30AM-12:00PM

See us at the Mapping and Visualization island in the Esri Showcase
Thank you...

Please fill out the session evaluation

*Tuesday Offering ID: 1214*

*Thursday Offering ID: 1405*

**Online** – www.esri.com/ucsessionsurveys

**Paper** – pick up and put in drop box