Desktop Mapping: Getting the Most from the Maplex Label Engine
Craig Williams & Sam Troth
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

- Geodatabase annotation editing tools

- Convert to annotation

- Label maps

- Dynamic, tiled, or printed 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
Setting The Default Label Engine

- Standard Label Engine is the default
- Can be changed to Maplex Label Engine
- Also can change default font and size for labeling
Labeling Toolbar

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

Common tools for both label engines
Maplex Specific Commands
Quality placement for Maplex for ArcGIS
Label Manager

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

- Highlights potential problems in labeling properties
  - More serious issues in red
Label Weights

- Define weights to control behavior when labels and features overlap
- Maplex weighting is based on values from 0 – 1000
- 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

Getting the most from the Maplex Label Engine
Line Label Offset
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
Point Label Rotation

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

- Place label outside polygon boundary
- Horizontal within the polygon
- Try horizontal position first
- Place label at fixed position within polygon

External Zones:

- Zones Around Polygon
- Preference: 0 = Blocked, 1 = Highest, 2 = Lowest

These preferences are taken into account when placing a label at the best position around 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
  - Standard license or higher to edit due to use of a relationship class

• Annotation created with Maplex:
  - No additional restrictions
  - ArcGIS 10.1 or higher, no downgrades during placement updates
  - Prior to 10.1: graceful downgrade to the Standard Label Engine for feature-linked updates without a Maplex license
    - Newly created features
    - Updates to geometry
Managing Annotation: Annotation Subclasses

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

• Each annotation class has:
  - An expression
  - A symbol
  - A scale range
  - Placement properties when using feature-linked annotation
Editing Annotation - Overview

- Tightly integrated with feature editing environment
- Efficient experience when working with unplaced annotation
- Supports editing of multi-word annotation and leader lines

Edit Annotation tool on the main Editor toolbar

Feature templates for efficient feature creation

Enter text for next construction

San Diego
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
What’s new?

- **ArcGIS 10.3**
  - Improved performance and placement quality

- **ArcGIS Pro**
  - Maplex is the default label engine
  - Same placement and properties
  - Improved text symbol drawing
  - New but familiar user experience
  - Multi-threaded drawing
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

• Labels and Annotation: Efficient And Effective Use of Text On Your Map
  - Tuesday, 15 Jul 2014, 5:30pm - 6:00pm
  - Location: Demo Theater - Mapping & Visualization Exhibit Hall B

• Desktop Mapping: Managing and Editing Annotation
  - Wednesday, 16 Jul 2014, 11:00am - 11:30am
  - Location: General Theater 2 Exhibit Hall A

• Editing and Maintaining Parcels
  - Thursday, 17 Jul 2014, 10:15am - 11:30am
  - Location: Room 14 B

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

- Please fill out the session survey:

  Tuesday Offering ID: 1124
  Thursday Offering ID: 1695

Online – www.esri.com/ucsessionsurveys
Paper – pick up and put in drop box