ESRI Cartographic Representations for the FGDC Digital Cartographic Standard for Geologic Map Symbolization

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Project overview – ‘problem’

- Support automation in ArcGIS for producing geologic maps with consistent symbology
- “FGDC Digital Cartographic Standard for Geologic Map Symbolization”
  - Very large symbol set
  - Many complex symbols
  - Detailed, specific symbol specifications (i.e. sub-millimeter)
Project overview – ‘solution’

• Cartographic geodatabase with representations
  – single “master” source for all FGDC symbols
  – more flexible control over data organization
  – ability to create complex symbols and effects
  – leverage native geodatabase functionality (i.e. domains, subtypes)

• Maplex for ArcGIS 9.3
  – Strike and dip labeling problem solved
  – New solution for labeling contours

• Documentation for using representations for geologic mapping

• Now possible to create high-quality geologic map with more automation for major mapping tasks
Introduction to Cartographic Representations

- Better quality symbology
- Method to store feature symbols in the geodatabase
- Stored as feature class attributes and related tables
- Generic resources in ArcGIS Desktop Help
Introduction to Cartographic Representations

- Better quality symbology
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- Additional information on ESRI Mapping Center

http://mappingcenter.esri.com
Why use representations?

- Share data = share symbols
- Eliminate reliance on layer files, map documents, fonts
- Easier-to-navigate symbol management user interface
Why use representations?

- Share data = share symbols
- Eliminate reliance on layer files, map documents, fonts
- Easier-to-navigate symbol management user interface
- Use geoprocessing tools for feature symbol QA/QC
  - Geoprocessing tools to create cartographic effects
  - Supports graphics-based workflows in GIS environment
Using representations

- Data must be stored in a geodatabase (9.2 or later)
- Representations can be created from existing symbols
- Feature class can have multiple representations to support:
  - Different map types
  - Map scale – e.g. inset / overview
  - Hierarchies – e.g. province, terrane, unit
  - Functions – e.g. surficial, sub-surficial

Q: Do you use geodatabase topology? subtypes? domains?
- These required new thinking for spatial data management
- Representations are similar = new way to manage symbols
Typical implementation workflows

• Convert existing ArcMap symbols
  – use existing geodatabase feature classes, map documents, layer files

• Assign existing representation rules to new data
  – Append new data to existing representation class
  – Copy existing representation rules to new feature class
  – Create new rules from scratch

• Feature-level symbol editing – “overrides”

• **DEMO 1** – Mount Baker 30-by-60 Quad (USGS I-2660)
FGDC Geologic Map Symbol Standard

- Schema / taxonomy challenge
- Single source document = very large ‘flat’ table
- Translate the symbols from graphics to representations
- How do geologic feature symbols ‘behave’ on a map?
  - Base map features
  - Geologic features
Progress to date

• Prototype schema
  – “Base” and “Geology” feature datasets
  – Geologic feature classes defined
    • representation rule associated with each feature
    • ~10% of symbols defined

• Implementation issues identified by testing:
  – FGDC “RefNo” as text field
  – Incorporating new, local, or modified symbols
  – Consistent symbol / feature type descriptive text
  – Feature class organization

• **DEMO 2** – FGDC ‘MasterSchema.mdb’ cartographic geodatabase
Future

• How will you move your data to our symbols?
• Plan to migrate your data
  – representations not stored with shapefiles or coverages
  – define your local symbol library
  – add, collect, define feature codes for symbology
• Create Maplex rules for labels

• Initial release – Fall 08
  – Top 500 most commonly used symbols
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  – Heather Armeno
  – Jim Branch
Interested?

- Additional symbol completion and workflow testing needed
  - Limited capacity for additional participants
  - Contact David Soller if interested
Questions?

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