

The following was presented at DMT'08  
(May 18-21, 2008).

The contents are provisional and will be  
superseded by a paper in the  
DMT'08 Proceedings.

See also earlier Proceedings (1997-2007)

<http://ngmdb.usgs.gov/info/dmt/>

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

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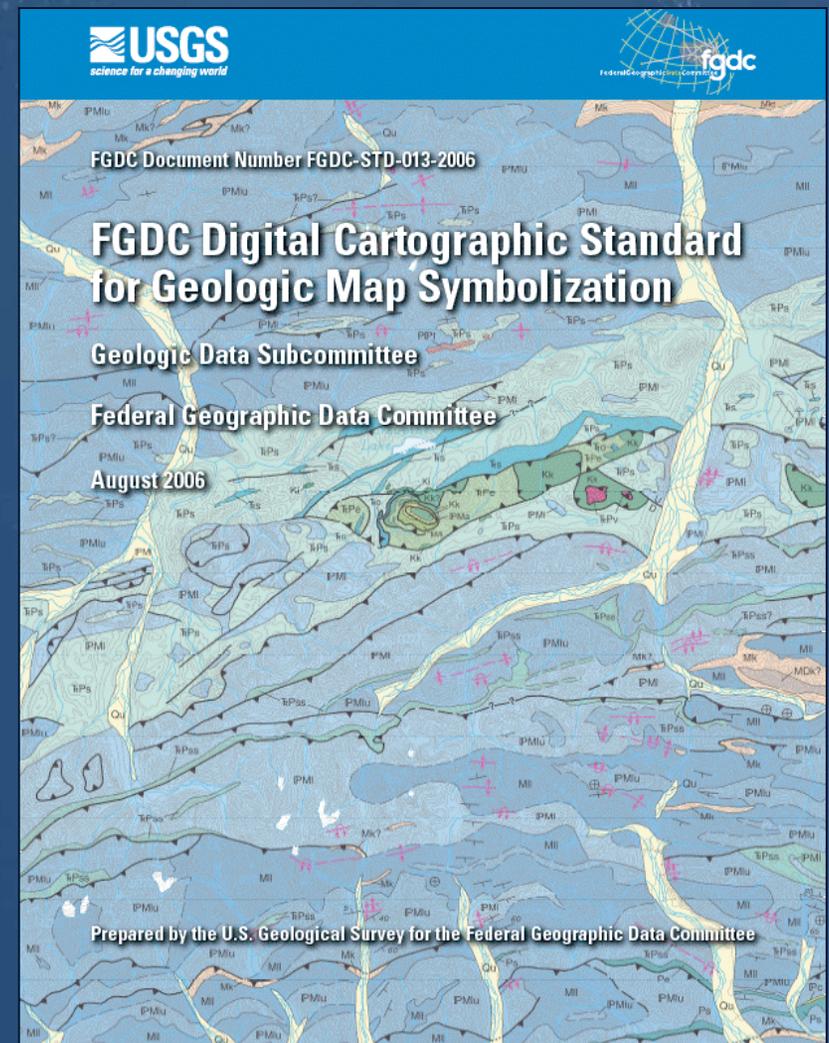
# Contents

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- Introduction to Cartographic representations
- Using representations
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- FGDC Geologic Map symbols as representations
- Demo 2
- Summary

# 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

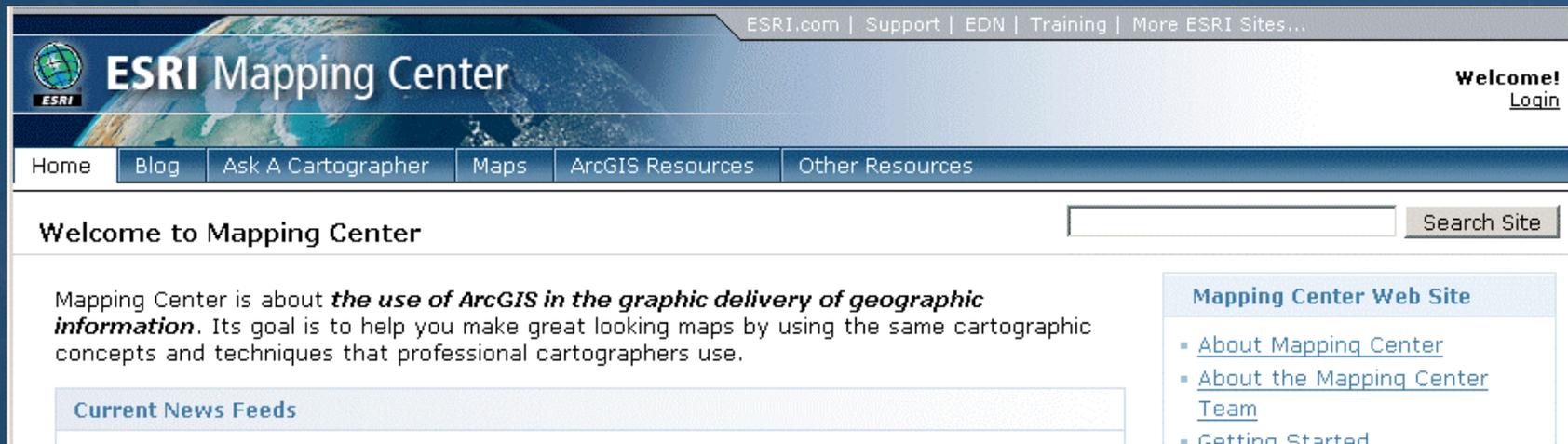
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- Better quality symbology
- Method to store feature symbols in the geodatabase
- Stored as feature class attributes and related tables
- Generic resources in ArcGIS Desktop Help

# Introduction to Cartographic Representations

- Better quality symbology
- Method to store feature symbols in the geodatabase
- Stored as feature class attributes and related tables
- Generic resources in ArcGIS Desktop Help
- Additional information on ESRI Mapping Center

<http://mappingcenter.esri.com>



The screenshot shows the ESRI Mapping Center website. At the top, there is a navigation bar with links for Home, Blog, Ask A Cartographer, Maps, ArcGIS Resources, and Other Resources. The main content area features a welcome message and a search box. A sidebar on the right contains a section titled 'Mapping Center Web Site' with links to 'About Mapping Center', 'About the Mapping Center Team', and 'Getting Started'. The main text describes the center's focus on the use of ArcGIS in the graphic delivery of geographic information.

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**ESRI Mapping Center** Welcome! [Login](#)

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Welcome to Mapping Center

Mapping Center is about ***the use of ArcGIS in the graphic delivery of geographic information***. Its goal is to help you make great looking maps by using the same cartographic concepts and techniques that professional cartographers use.

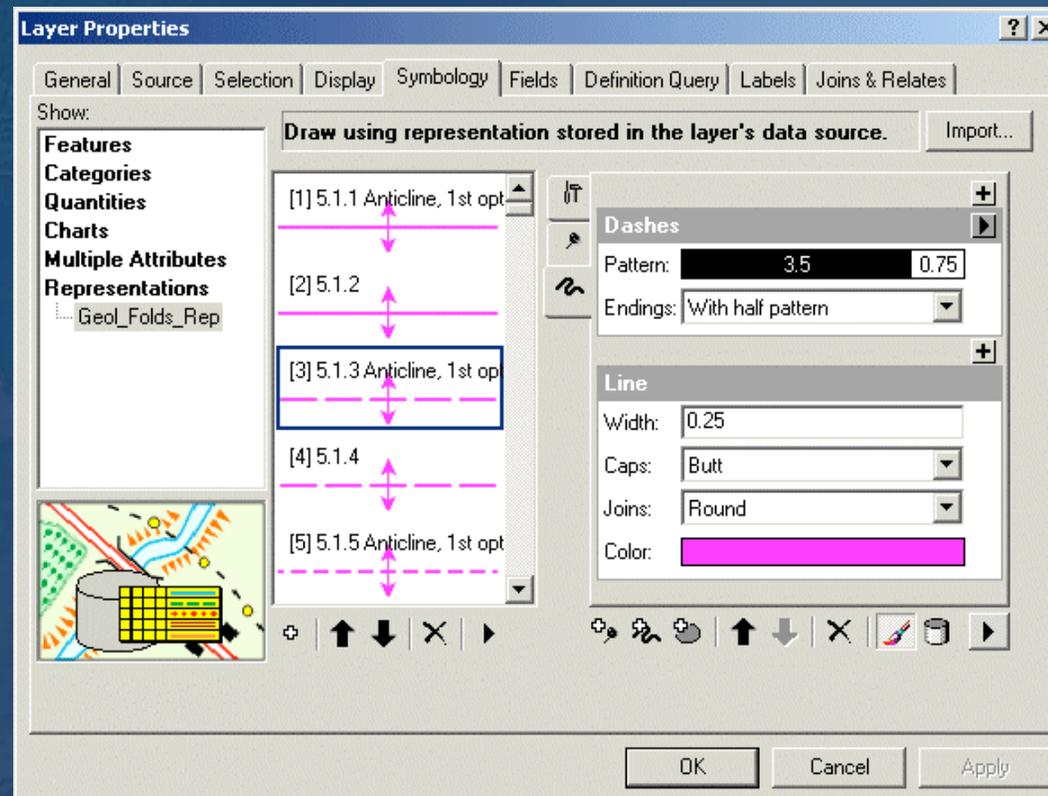
[Current News Feeds](#)

**Mapping Center Web Site**

- [About Mapping Center](#)
- [About the Mapping Center Team](#)
- [Getting Started](#)

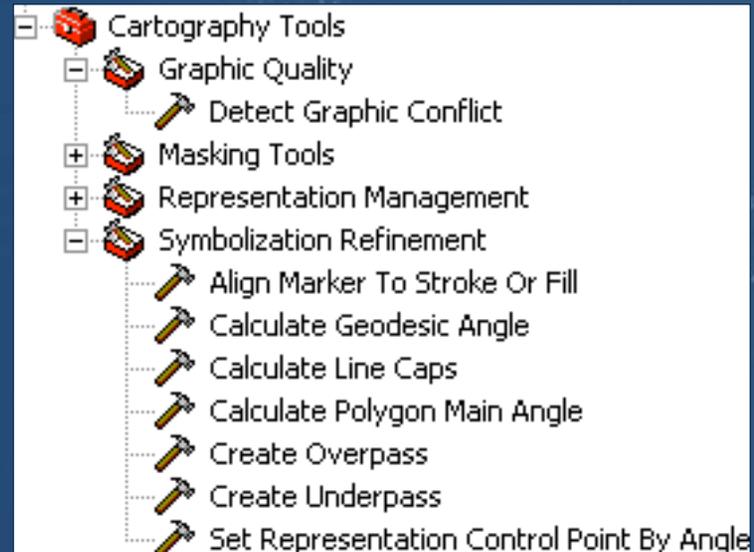
# Why use representations?

- 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

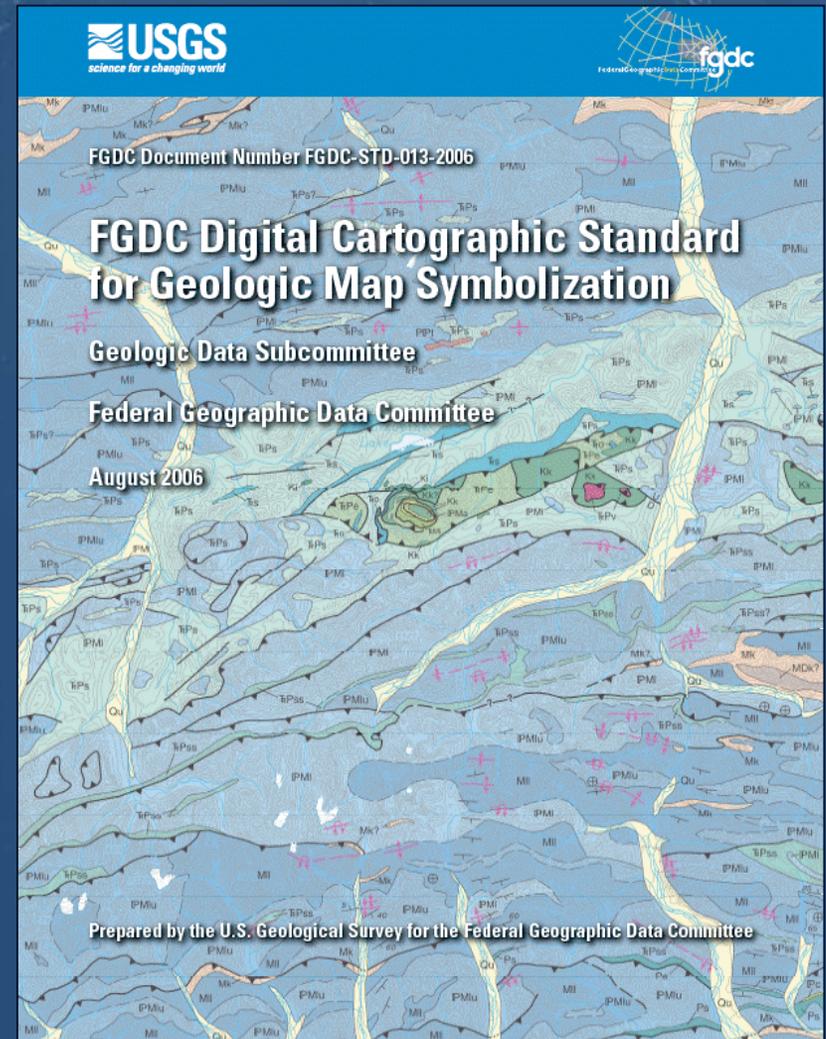
*Q: Do you use geodatabase topology? subtypes? domains?*  
*– these required new thinking for spatial data management*  
*– representations are similar = new way to manage symbols*

# 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)
  - Data retrieved from <http://pubs.usgs.gov/ds/2006/205/>

# 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

# Acknowledgements

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- USGS
  - Dave Soller
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  - Jordan Hastings
  - Jennifer Mauldin
  - Christine Arritt
  - Heather Armeno
  - Jim Branch

# Interested?

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

# Questions?

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