GIS/CAD Interoperability

Don Kuehne
ESRI, CAD Product Management
Agenda

• What ESRI thinks you think is important
• What’s New
• What do you think is important?
GIS/CAD Interoperability

• GIS provides spatial context of existing world to designers
• CAD provides GIS with new content
Semantic Differences

CAD Drawing Files

- Entity Type: LINE
- Color: RED
- Layer: WATER_LINE
- Linestyle: STANDARD
- Geometry: [LINE]

GIS Layers

- Entity Type: TEXT
- Color: BYLAYER
- Layer: PIPE_TEXT
- Font: STANDARD
- Value: 8"

Multiple CAD Objects And Properties

- Pipe ID
- Owner
- Date Installed
- Material Type
- Geometry
- Diameter

Single GIS Pipe Feature With Attributes

- Pipe ID
- Owner
- Date Installed
- Material Type
- Geometry
- Diameter

8"
Typical Workflows

- Cyclical/Bi-Directional Translation
- Direct Read CAD data in GIS
- Direct Read GIS data in CAD
- Legacy CAD to GIS Data Migration
New ArcGIS 9.0 Tools

- CAD Data Sets*
- Geoprocessing
- CAD Specific GP Tools
- Data Interoperability Extension
CAD Translation in Geoprocessing Demo
The ArcGIS IMPORT FROM CAD Staging Geodatabase

Schema Map

The CAD Staging Geodatabase is the output of the IMPORT FROM CAD Geoprocessing tool. Included here is a map of the schema of the CAD Staging Geodatabase. Lines drawn show the relationship between the various primary and secondary foreign keys. You can use this information to join the tables in different combinations.

Often CAD data schemas may not be conducive to using the predefined database view of the direct file read CAD feature data set. In such cases you need the flexibility of to assemble the CAD information depending on the desired result. Unlike the direct file read CAD Feature data set, you can create your own database view of one or more CAD files using the normalized tables contained in a CAD Staging Geodatabase.
Export To CAD Demo
Data Interoperability Extension
Geoprocessing
ArcGIS Data within CAD

- ESRI’s, ArcSDE CAD Client
- Bentley Systems’ *ArcGIS Connector*
- Haestad Methods’ *GIS Connect*
GIS/CAD Interoperability Panel Discussion

Wednesday morning from 8:00 am - 9:30 am

- Ian Fitzgerald, Truckee Donner PUD, EGUG president,
- David Reed, Dominion
- Don Kuehne, from ESRI
- Christopher Kelly, Origin GeoSystems
- Brett Hauf, Arizona Public Service
CAD Versions Supported by ArcGIS 9.0

ArcGIS Direct Read (R/O)
  Autodesk DWG/DXF R14-2004/2005*
  Bentley DGN V7, V8

ArcSDE CAD Client
  Autodesk DWG/DXF R2000-2004/2005*
  Bentley DGN V7, V8

Data Interoperability Extension (R/W)
  Bentley MGE/Geographics, DGN V7, V8

Geoprocessing Translation (R/W)
  Autodesk DWG/DXF R14, R14-2004/2005*
  Bentley DGN V8(R/W), V7 (R/O)
CAD Solutions by User Requirement

“ArcGIS User” Wants to Use a CAD file without Conversion As Data Source
Native CAD file read (ArcView)
DIE (Extension $2500)

“ArcGIS User” Wants to Merge Multiple CAD Files without Conversion As Data Source
DIE (Extension $2500)

“ArcGIS User” Needs to Extract Simple Features from CAD files
Native CAD file read with Simple Data Loader

“ArcGIS User” Needs to Build Geodatabase from CAD Data
DIE with or without Geoprocessing depending on need of translation task (Extension $2500)
Native CAD file read used in Geoprocessing (ArcView)
[Import from CAD] tool in Geoprocessing for more flexibility (ArcView)

“ArcGIS User” Needs to Create CAD Files from GIS Data
DIE (Extension $2500)
Geoprocessing tool [Export to CAD] (ArcInfo)

“CAD User” Wants Access to ArcSDE Enterprise Geodatabase
ArcSDE CAD Client (Read/Only)
Read/Write for ArcSDE Simple Feature Layers not registered with the Geodatabase

“CAD User” Wants to Edit Geodatabase and other ArcGIS Data
Haestad’s GIS Connect for AutoCAD (Requires ArcInfo)
Bentley’s ArcGIS Connector for Microstation (Requires ArcInfo)