Geodatabases and Conversions

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What is a Geodatabase?

- storage mechanism for spatial and attribute data
  - contains specific storage structures for features
  - collections of features, attributes, relationships between attributes, and relationships between features.
    - All geodatabases, whether personal or ArcSDE can store tables, feature classes, feature datasets
    - functionality such as rules, relationships, and geometric networks.

History Of

- ShapeFiles & Coverages
- Shapefiles have attribute tables.
- .dbf's

Why do I want one?

- Uniform Repository of Geographic Data
- Data entry and edit more accurate (consistency)
- Users work with more intuitive data objects.
- Many users can edit data simultaneously (multi-user)
- Non spatial info can be stored in tables right along side.

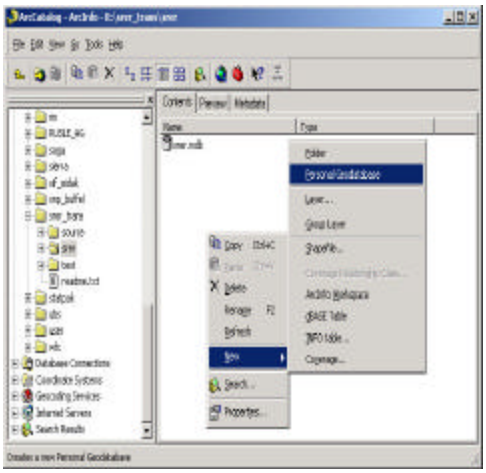
Advantages(2)

- Portability/Sharing
  - Between ArcGIS apps and ArcIMS
  - MSAcess etc..
- Manageability
- Speed
  - In some cases

Disadvantages

- Costs
  - Obvious
    - Oracle/sqlServer admin ($$)
    - Hardware/software
      - Networking AND servers
      - SDE
- Not so obvious
    - Development costs increase with complexity
    - Employee retraining/switch over to geodatabase must change applications (IMS/GIS)

Personal Geodatbases



- Supported Data Types
  - Coverages(arcInfo)
  - Shapefiles(arcGis)
  - CAD drawings
  - INFO tables
  - DBF tables
- Not Raster Data Supported

Personal continued

- Stored as Access .mdb file
- Can open in arcCatalog and Access
  - Use Access to see how the data is stored
    - SHOW EXAMPLE
- ARCCatalog is easiest method to create
  - Will go over latter how to create

Data Items that can be stored

- FEATURE DATASETS
  - Directory Structure with projection info for consistency
- FEATURE CLASSES
  - Your "old" shapefiles and coverages
- TABLES
  - Your information
- RELATIONSHIP CLASSES
  - Relates

Feature Datasets

- equivalent to a directory or folder in a computer
  - help organize the data into a logical structure. Contains:
    - feature classes
    - relationship classes
    - **not** tables.
- **Must** have a specified projection identical to the projections for the coverages/shapefiles to be stored inside of it.
  - What is a PROJECTION?

Projections/Geographic coordinate system

Select:

- Projection
  - Real world data(3d) mathematically projects to flat surface

OR

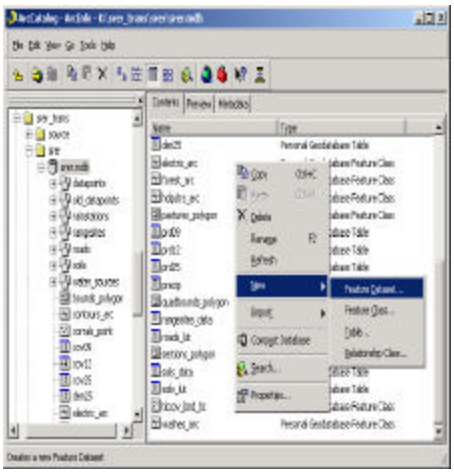
Geographic coordinate system (lat/long)

AND

- Datum
  - NAD 1983(part of mathematical projection formula)
  - Select this one when creating new Feature datasets

Feature Classes

- coverage, shapefile, or CAD drawing
  - stored at the root of the geodatabase OR inside of a feature dataset.
  - can create new feature classes or you can import coverages/tables/shapefiles as feature classes.
  - You can also create relationships (called relationship classes) between feature classes.

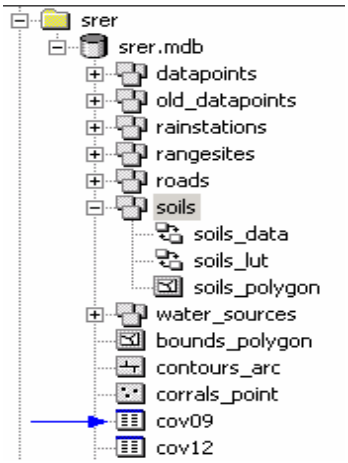


Feature Class Continued

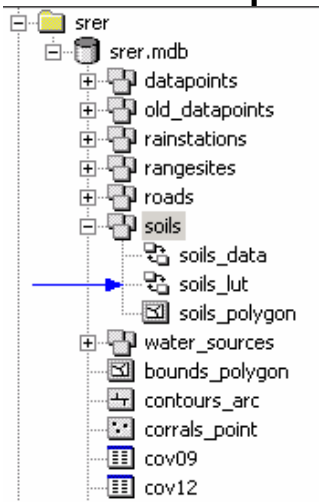
- *The feature class stores both the geometry and attributes from the input data. The feature class is automatically registered with the geodatabase s ystem tables so that it can participate in relationships and geometric networks, have validation rules, and so on. Similarly, when a table is imported, a table is created in the geodatabase and automatically registered with the geodatabase system tables. Coverages, shapefiles, and CAD feature classes are imported into ESRI® simple feature c lasses. INFO and dBase tables are imported into ESRI simple row tables.*
- *Any table, shapefile, or coverage that is imported by some other mechanism will not be registered with the geodatabase system tables and therefore will not be a true geodatabase feature class or table. The ArcGIS system has tools to register these feature classes and tables with the geodatabase.*
- *NOTE: I stole this from a website who in turn ripped this off from help documents on how data is converted*

TABLES

- Tables can only be stored at the root of the geodatabase. You can store the following table formats: INFO, dBase, VPF, or OLE DB.
- You can create relationships (called relationship classes) between tables and feature classes.



Relationship Class



- two items to be related must have a common attribute (primary and foreign keys).
  - The related information will show up in ArcMap if you do an *Identify* on a feature, and the related data can be edited w/ArcMap
- To use the related information for symbology purposes in ArcMap, you must create a join in ArcMap, but you will be able to choose the relationship class on which to base the join instead of defining it again.

MultiUser Geodatabase

- Need ARCSDE
  - See last weeks lecture on ARCSDE (shameless plug)
- Many people can edit same data
- Can store raster data
  - Actually, just about any kind of data
- Uses and RDBMS such as SQL Server

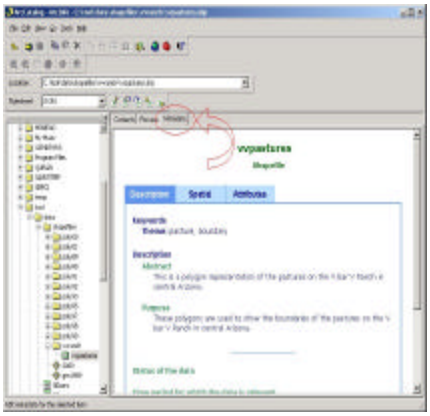
	ArcView/Map	ArcEditor	ArcInfo
Read, Display, Query, & Use	Any geodatabase	Any geodatabase	Any geodatabase
Editing	Edit simple personal geodatabases1 Can edit simple feature classes, annotation, tables, and simple feature datasets	 Can edit simple feature classes, annotation, tables, and simple feature datasets Edit all geodatabases Multiuser geodatabase editing requires ArcSDETM	Edit all geodatabases Multiuser geodatabase editing requires ArcSDE
Schema management and database design	Create simple schemas for personal geodatabases1 Supports: points, lines, polygons, annotation, and tables No topology No geometric networks No relationship classes No feature-linked annotation No dimension classes No raster support No custom feature classes	Create all schemas for any geodatabase Multiuser geodatabase support requires ArcSDE	Create all schemas for any geodatabase Multiuser geodatabase support requires

VISC Geo database

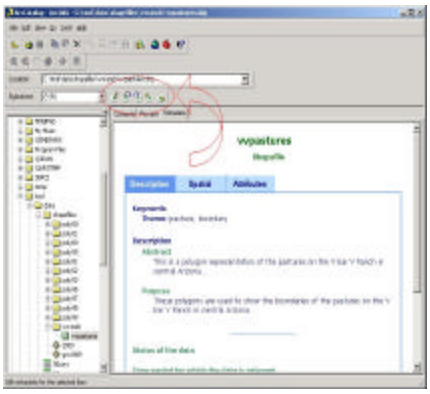
- Organize data with all sources in same place
  - County
  - Survey
  - City
  - Others
- INSERT NICE SLIDE HERE of our databases
  - Ltl6 has our databases (went BOOM)

BONUS: MetaData in ARCGIS

- Data ‘bout y’inz data
- Metadata tab in ArcCatalog>>>>
- Five views
  - ESRI Metadata Format
  - FGDC Metadata Format
  - FGDC FAQ Metadata Format
  - Geography Network Metadata Format
  - XML Metadata Format

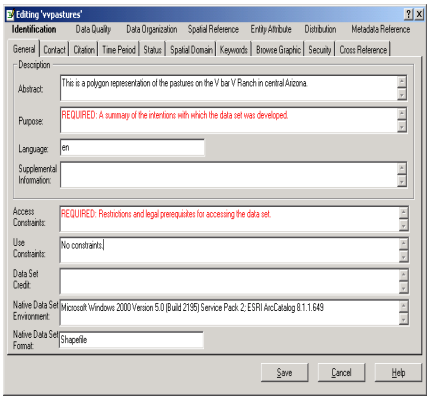


Editing MetaData



- Buttons
  - Edit
  - View properties
  - Create/edit
  - update
  - Export/import

Metadata Editor in ArcCatalog



- Edit Options
- Reds are required
  - **Have a nice day**

THE END

1: EAT PIZZA

2: MOVE Furniture

3:Go Home

NOTE: I took ALMOST all the pictures from a tutorial at the university of Arizona's art group knowledge base.