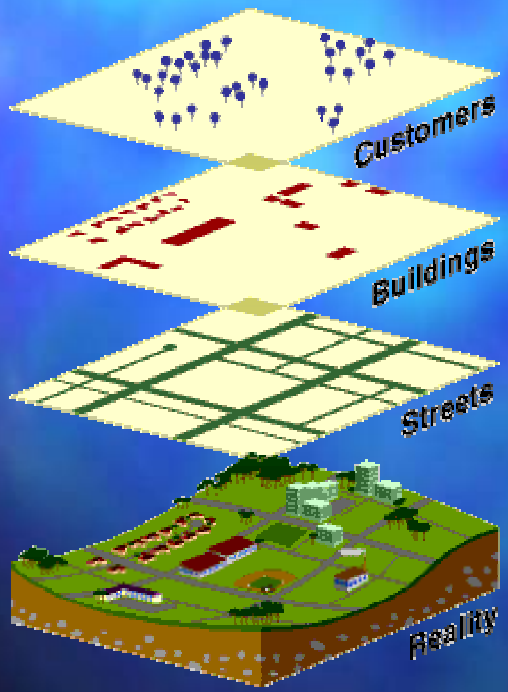
Geographic Information Systems (GIS) for Business



What are GIS?

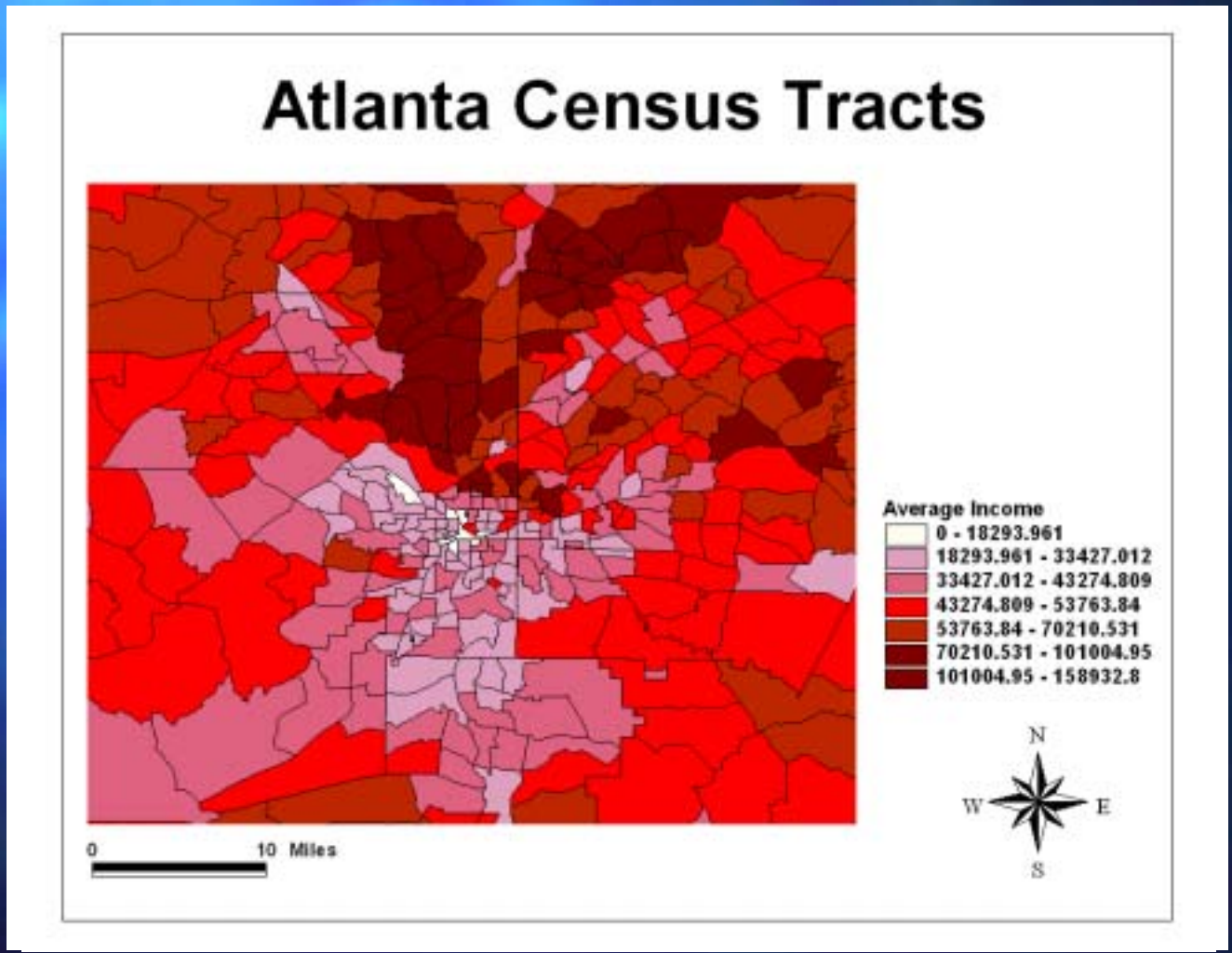
Geographic Information Systems are computer-based tools that facilitate mapping and spatial analysis of Earth's features and events.

Why GIS?

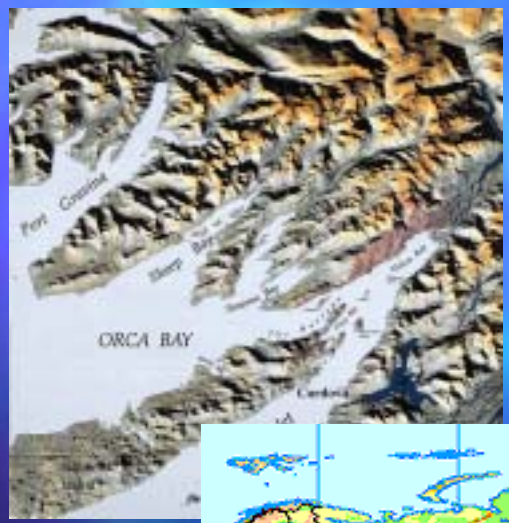
GIS provides a system for managing business information of any kind according to its location. Bringing together data with a shared spatial component can reveal trends and patterns that aren't apparent with tabular databases.

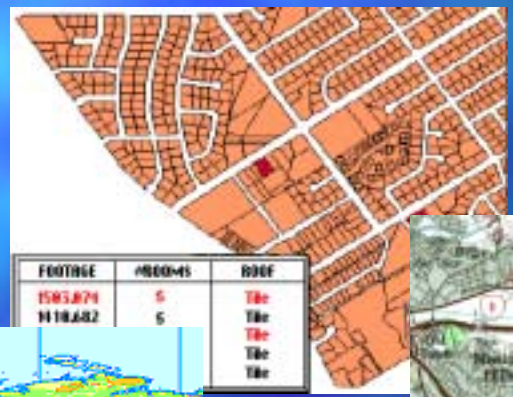
GIS enables you to better understand and evaluate your data by using cartographic tools to display information stored in your database.

You can change the display of your data by changing the symbols, colors, or legend classifications.



You can use GIS to create many different kinds of maps

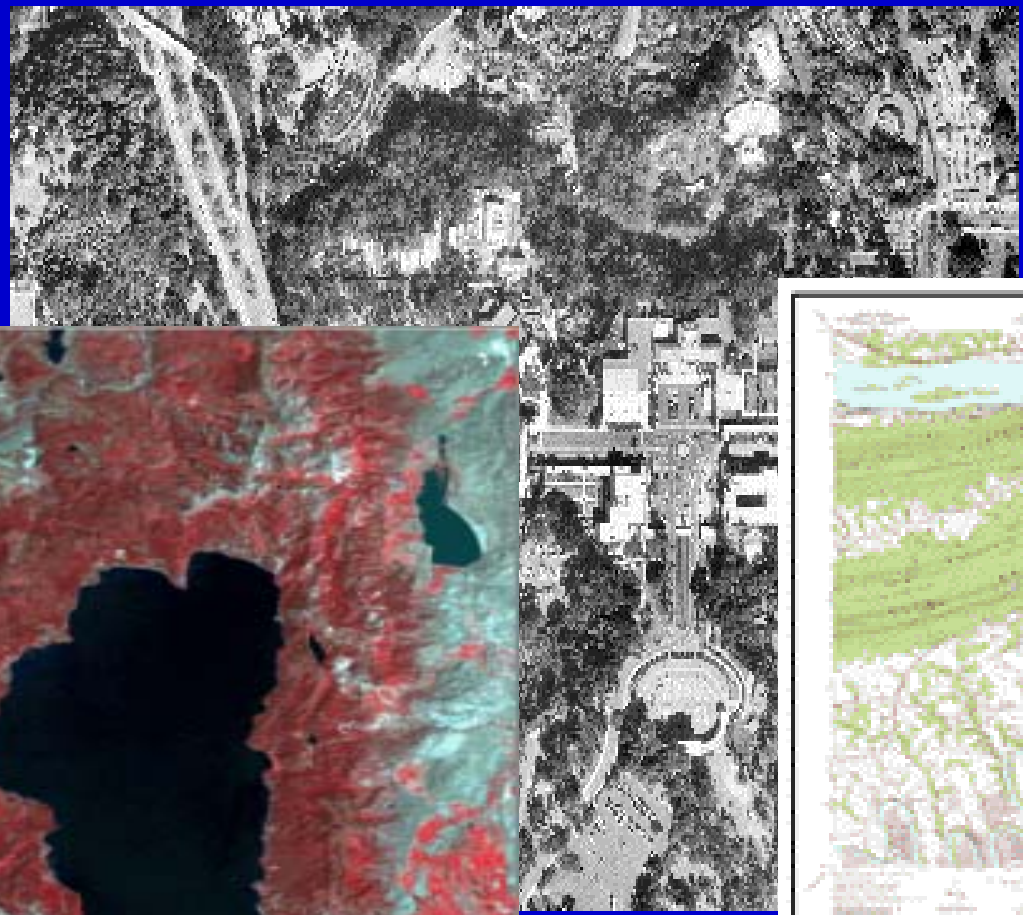


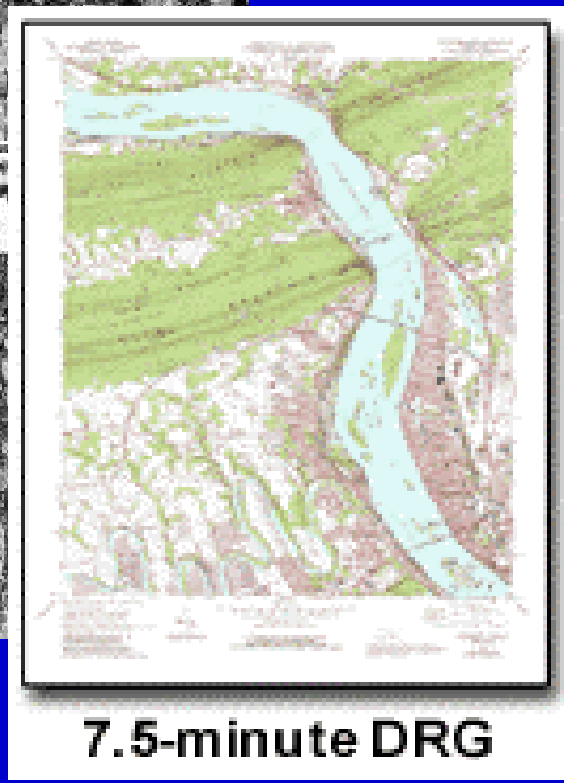


GIS Data

Thematic layers containing features

Imagery

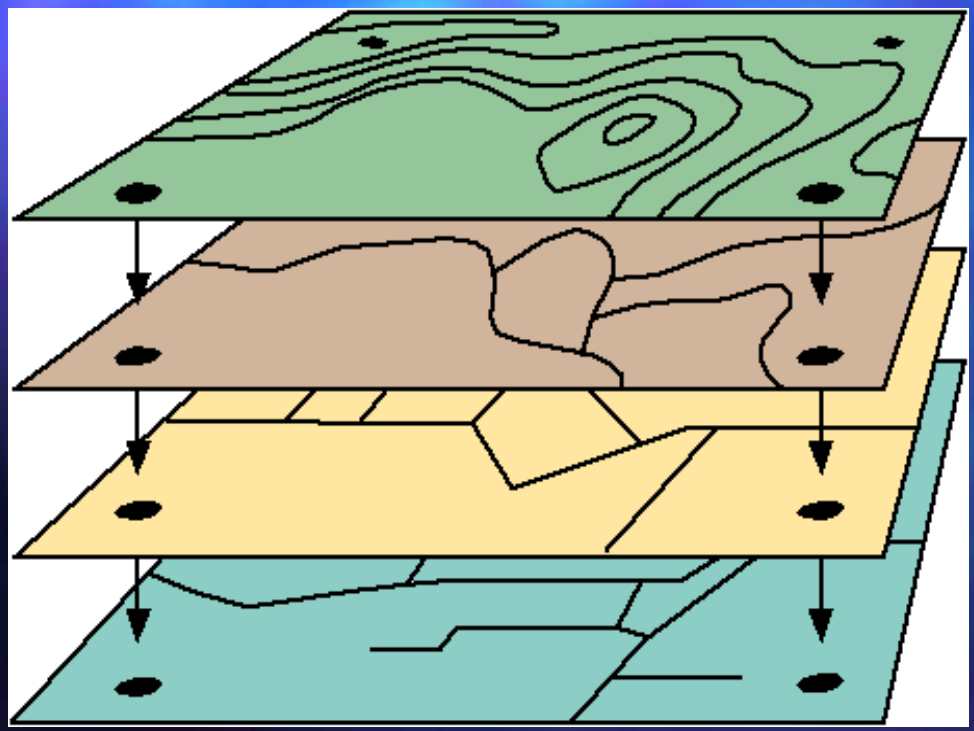




7.5-minute DRG

GIS Data Structure

STACKED MAP LAYERS: Each layer represents a unique phenomenon. These geo-referenced layers can be superimposed and queried.

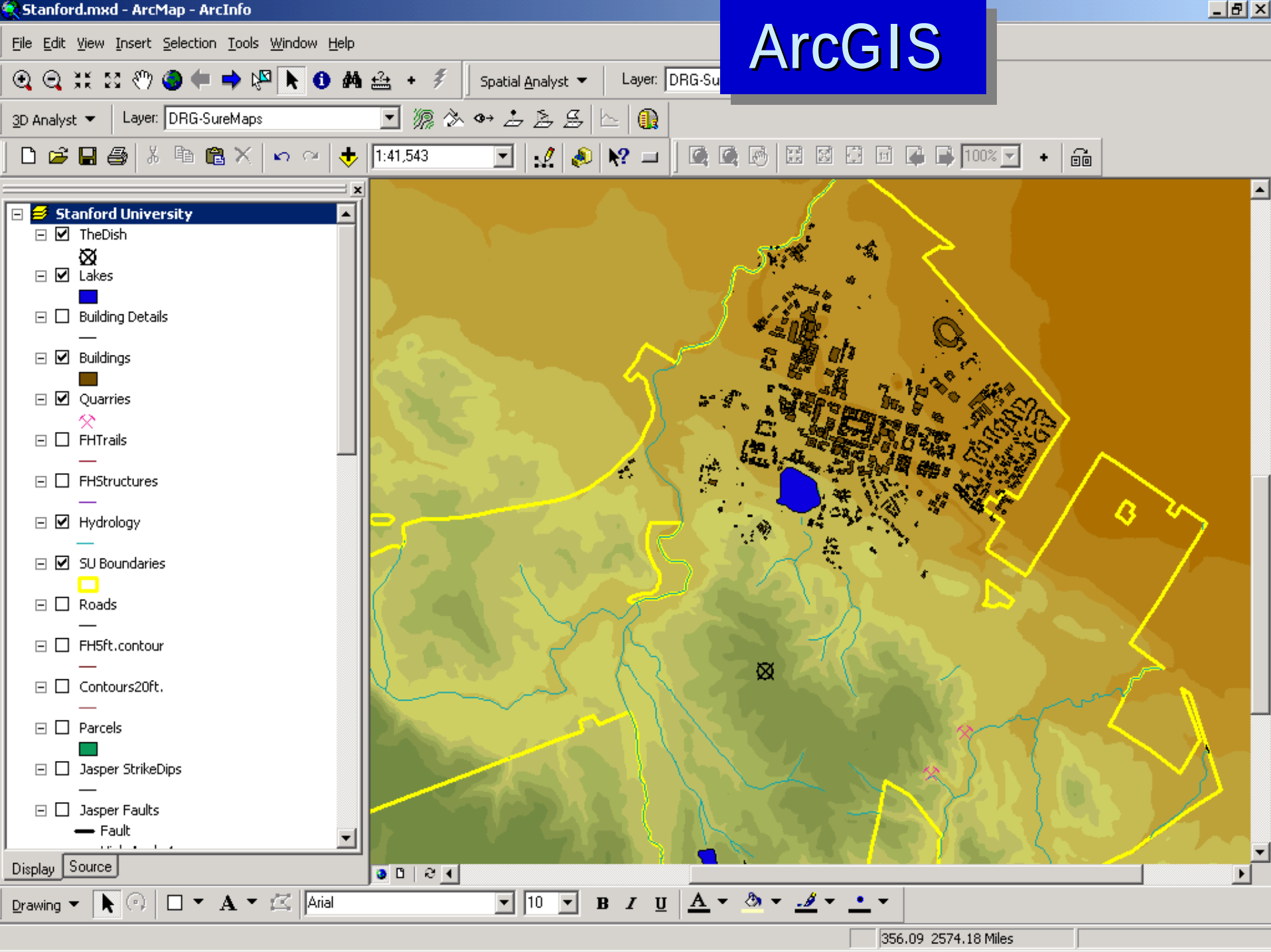


Topography

Sales Territories

Demographic Information

Street Network


Stanford.mxd - ArcMap - ArcInfo
ArcGIS
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Layer: DRG-Su
3D Analyst
Layer: DRG-SureMaps
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TheDish
Lakes
Building Details
Buildings
Quarries
FHTrails
FHStructures
Hydrology
SU Boundaries
Roads
FH5ft.contour
Contours20ft.
Parcels
Jasper StrikeDips
Jasper Faults
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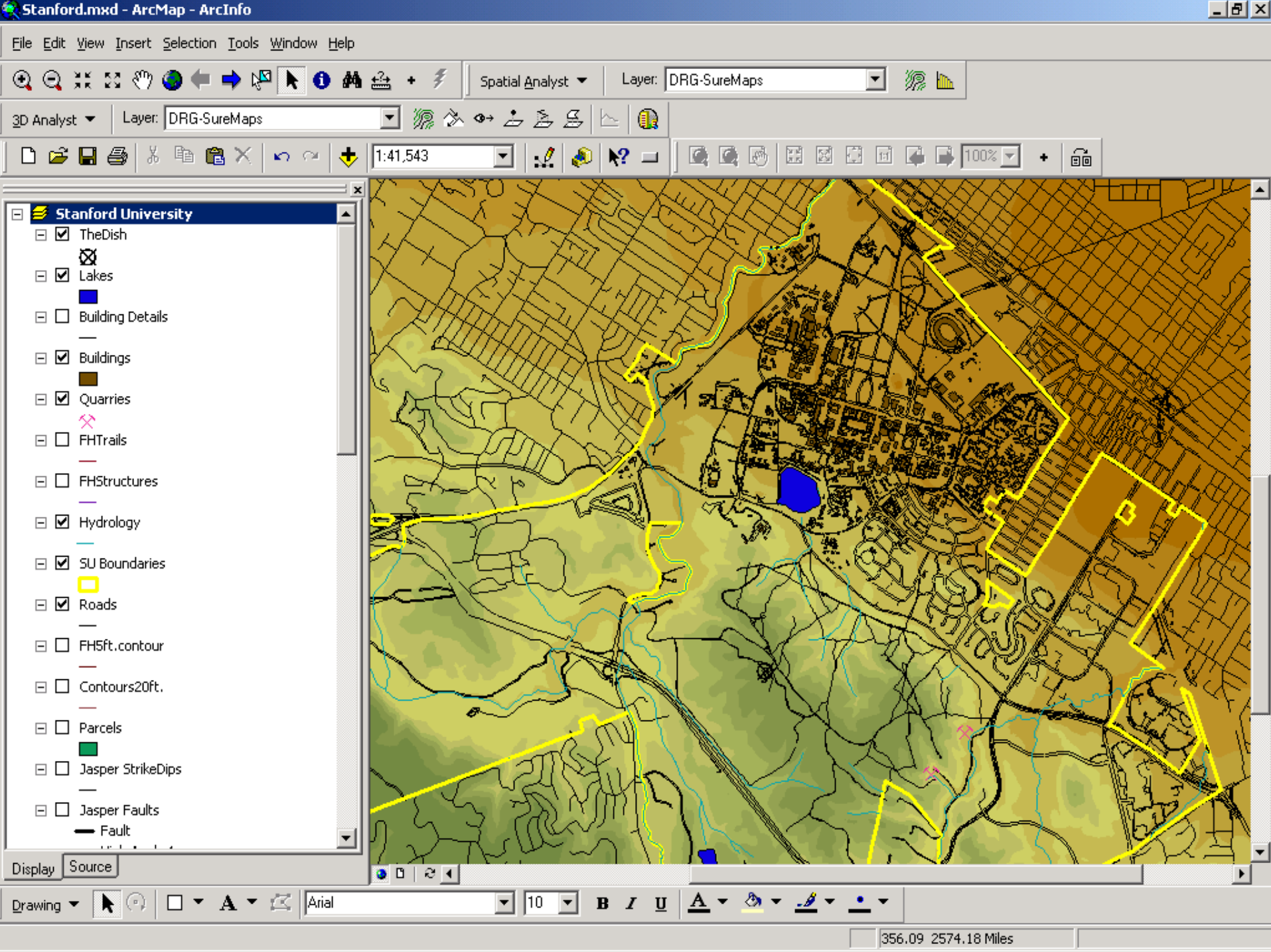
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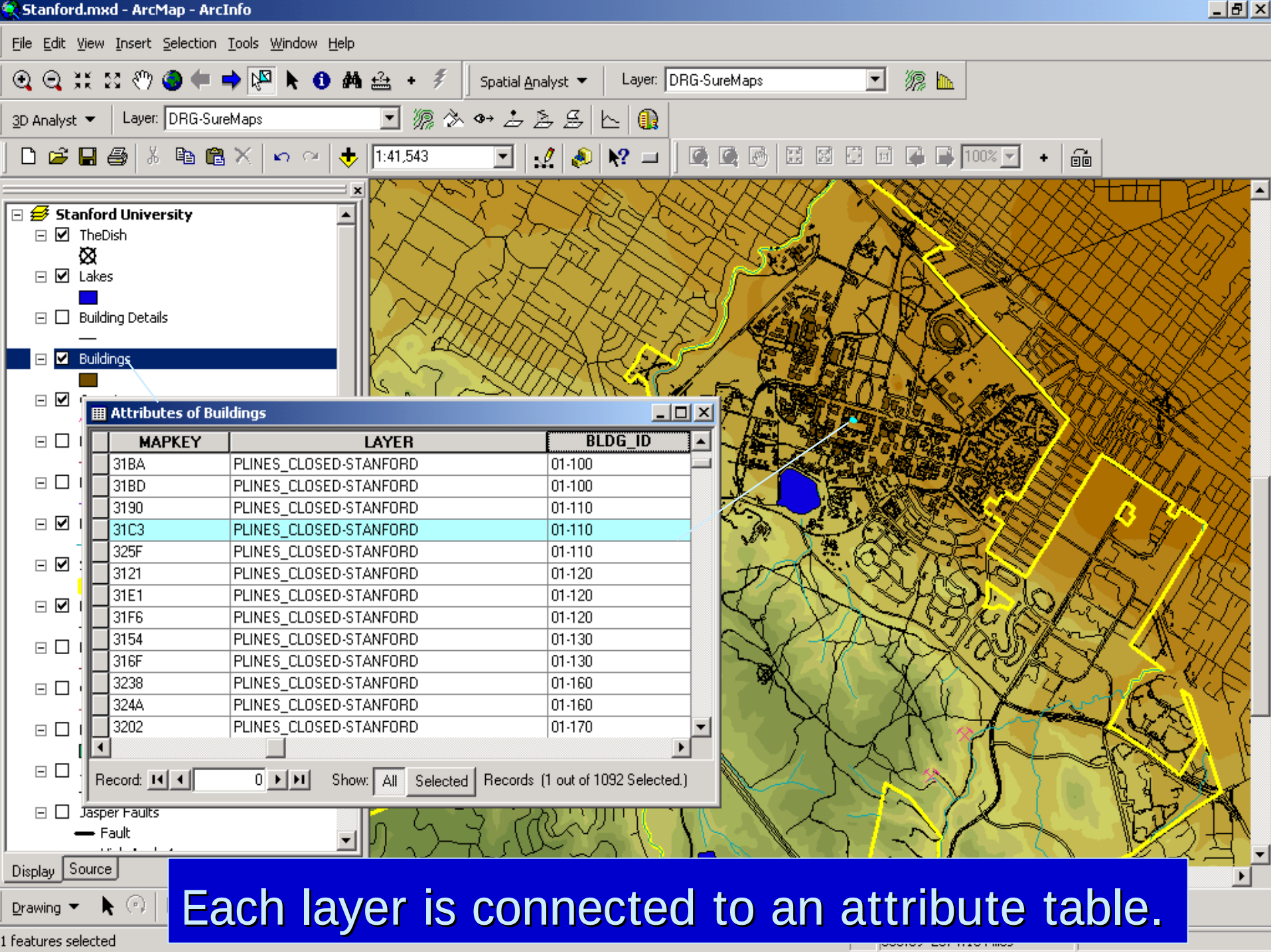
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Spatial Analyst
Layer: DRG-SureMaps
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Lakes
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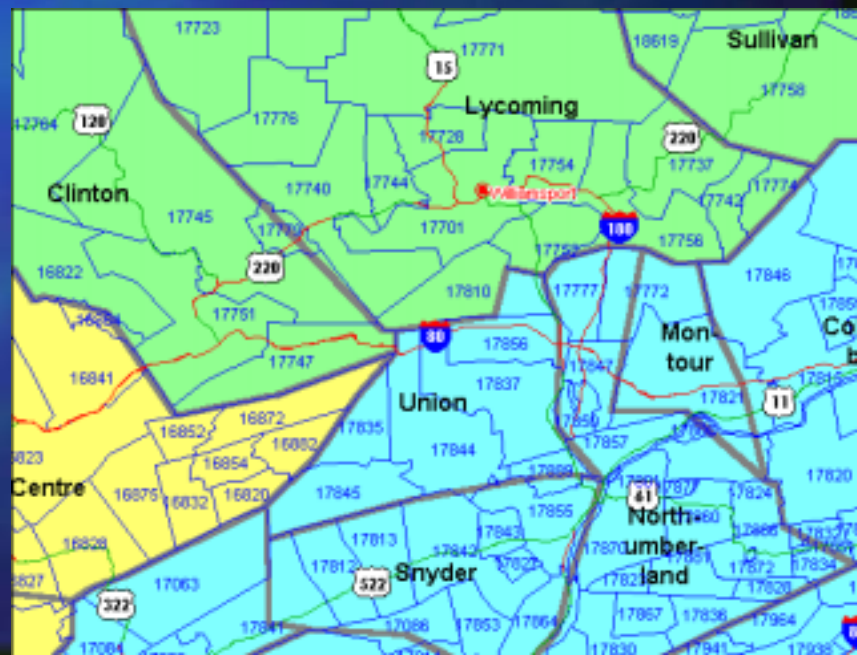
3190 PLINES_CLOSED-STANFORD 01-110
31C3 PLINES_CLOSED-STANFORD 01-110
325F PLINES_CLOSED-STANFORD 01-110
3121 PLINES_CLOSED-STANFORD 01-120
31E1 PLINES_CLOSED-STANFORD 01-120
31F6 PLINES_CLOSED-STANFORD 01-120
3154 PLINES_CLOSED-STANFORD 01-130
316F PLINES_CLOSED-STANFORD 01-130
3238 PLINES_CLOSED-STANFORD 01-160
324A PLINES_CLOSED-STANFORD 01-160
3202 PLINES_CLOSED-STANFORD 01-170
Record: 0
Show: All Selected
Records (1 out of 1092 Selected.)
Display Source
Drawing
1 features selected
Each layer is connected to an attribute table.

GIS Applications

Today, people in marketing, advertising, real estate, and retail are using GIS to...

- Analyze markets
- Model spending patterns
- Analyze parcels of land
- Optimize media campaigns
- Create sales territories
- Select future business sites

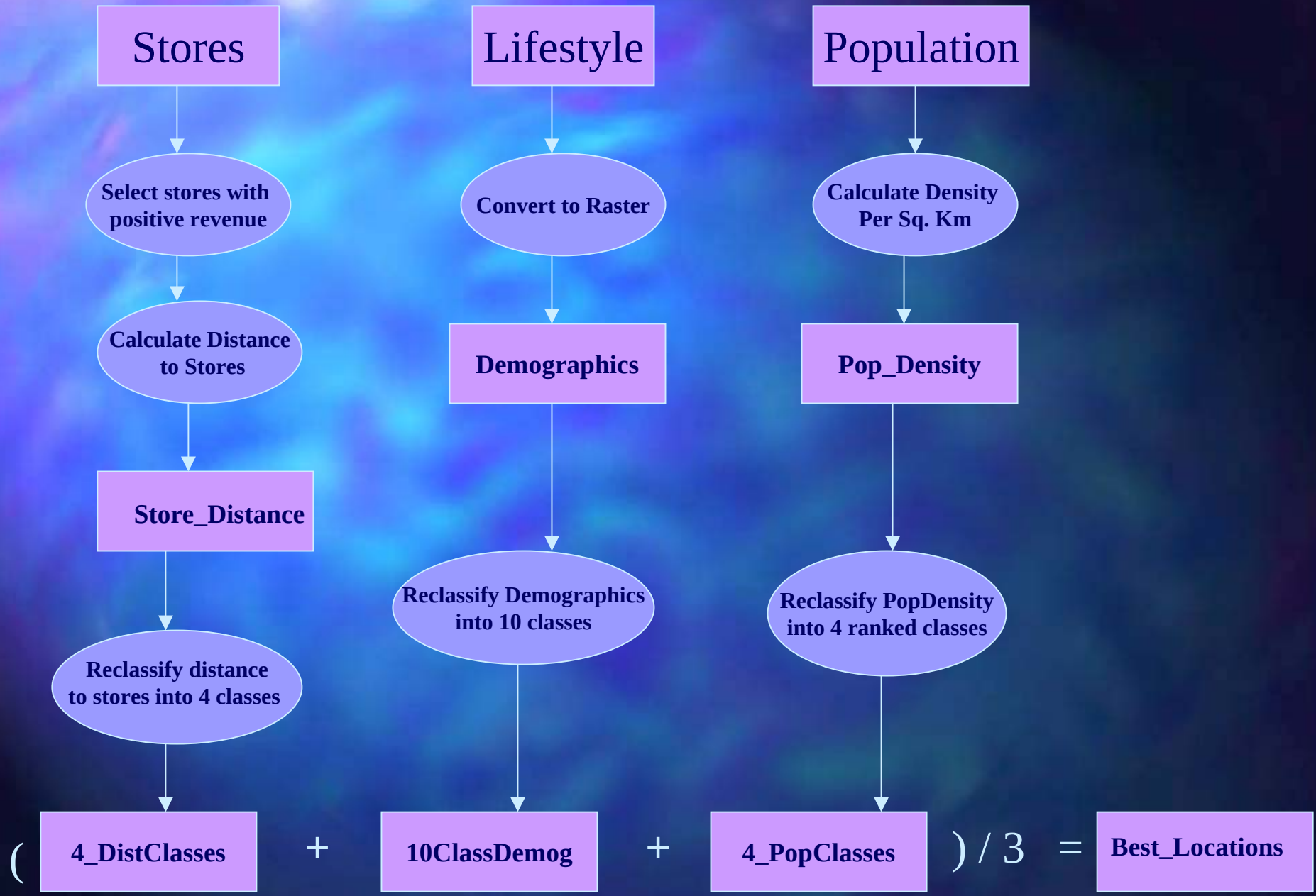


Site Analysis Example

- Use ArcGIS with the Spatial Analysis extension to find the best locations for a new branch of a gourmet coffee store.

- Combine demographics and population data from customer surveys and the Census to visualize market penetration, market share, and trade areas for existing stores.

- Ideal locations for a new branch will have a high population density, a large percentage of our target demographic, and will be adequately far from our existing profitable stores.


Stores
Lifestyle
Population
Select stores with positive revenue
Convert to Raster
Calculate Density Per Sq. Km
Calculate Distance to Stores
Demographics
Pop_Density
Store_Distance
Reclassify Demographics into 10 classes
Reclassify PopDensity into 4 ranked classes
Reclassify distance to stores into 4 classes
(4_DistClasses + 10ClassDemog + 4_PopClasses) / 3 = Best_Locations

ArcGIS Demonstration

Components of Stanford's GIS

- Hardware
  - 4 networked Windows 2000 workstations
  - Student project storage space
  - Large monitors
  - Color and B/W printers, 36" plotter
  - 40" Scanner
- Software
  - ESRI campus site license
  - ENVI license for remote sensing analysis

ESRI Software for Business

- ArcGIS
- ArcView
- Spatial Analyst
- Network Analyst
- Business Map3
- ArcLogistics
- ArcIMS
- RouteMap IMS
- Business Analyst*

GIS Support in Branner

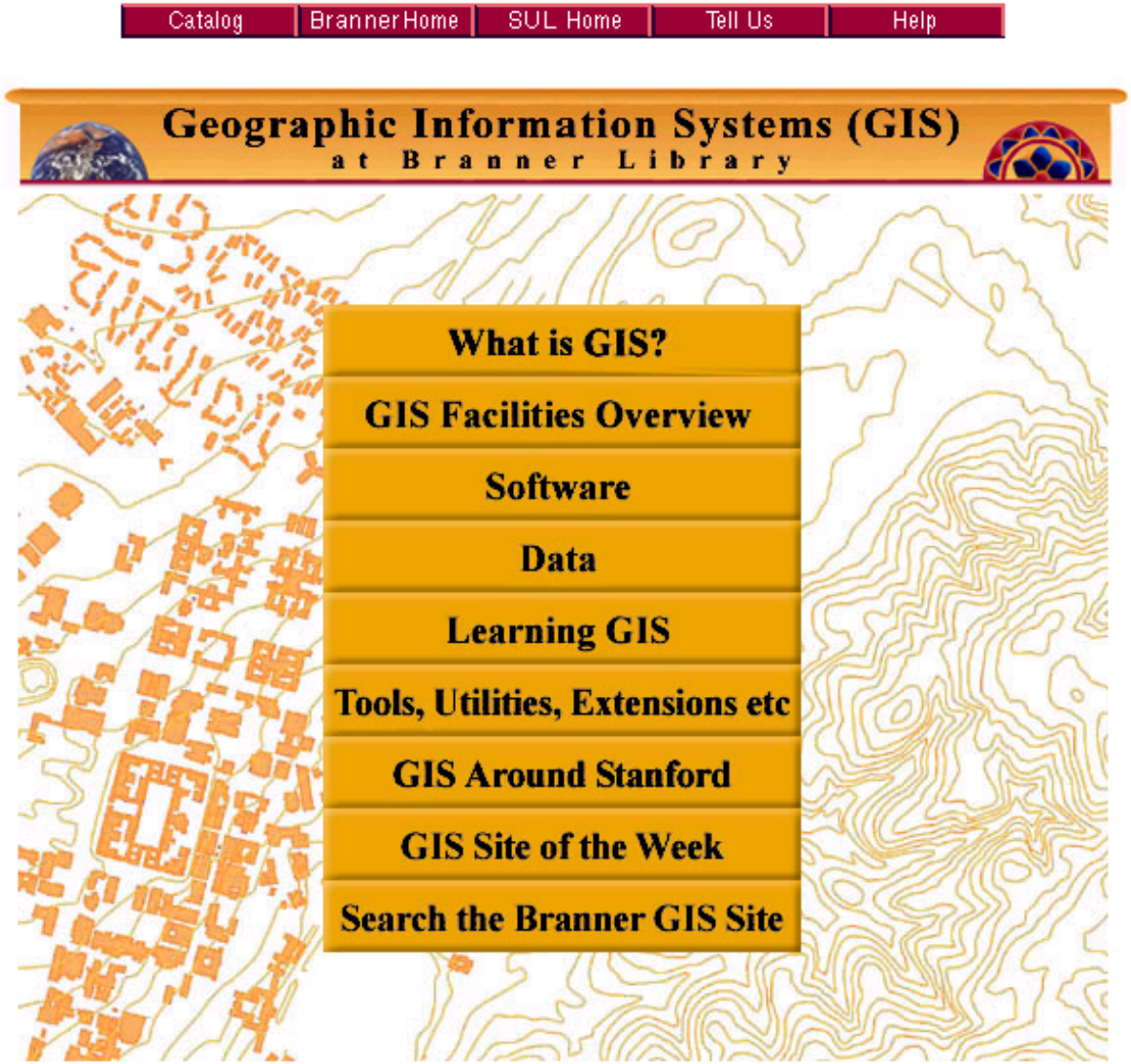
- Training
  - Virtual Campus, tutorials, 3rd party books
- GIS Books and Journals
  - Software manuals, case study books from ESRI, and conference proceedings
- Technical Support Contacts:
  - Meredith Williams, GIS Manager
    mjwilliams@stanford.edu
  - Julie Sweetkind-Singer, GIS and Map Librarian
    sweetkind@stanford.edu

Data Types in Business

- Base Map Data
  - Foundation of the GIS system
  - Geographic boundaries, transportation lines, utilities
- Decision-Making Data
  - Sales figures associated with stores, regulatory facts that impact your business, demographic or lifestyle segmentation information

GIS Data in Branner Library

- Data from ESRI is included in Stanford's Site License
  - ESRI Data and Maps
- Data from commercial vendors
  - ESRI BIS
  - Rand California
  - Sales figures
- Data from government agencies
  - Census 2000
  - Economic Census 1997
  - Bureau of Economic Analysis
  - CASIL: California Spatial Information Library



http://gis.stanford.edu