SDE
A Beginner's Perspective

Eileen Battles

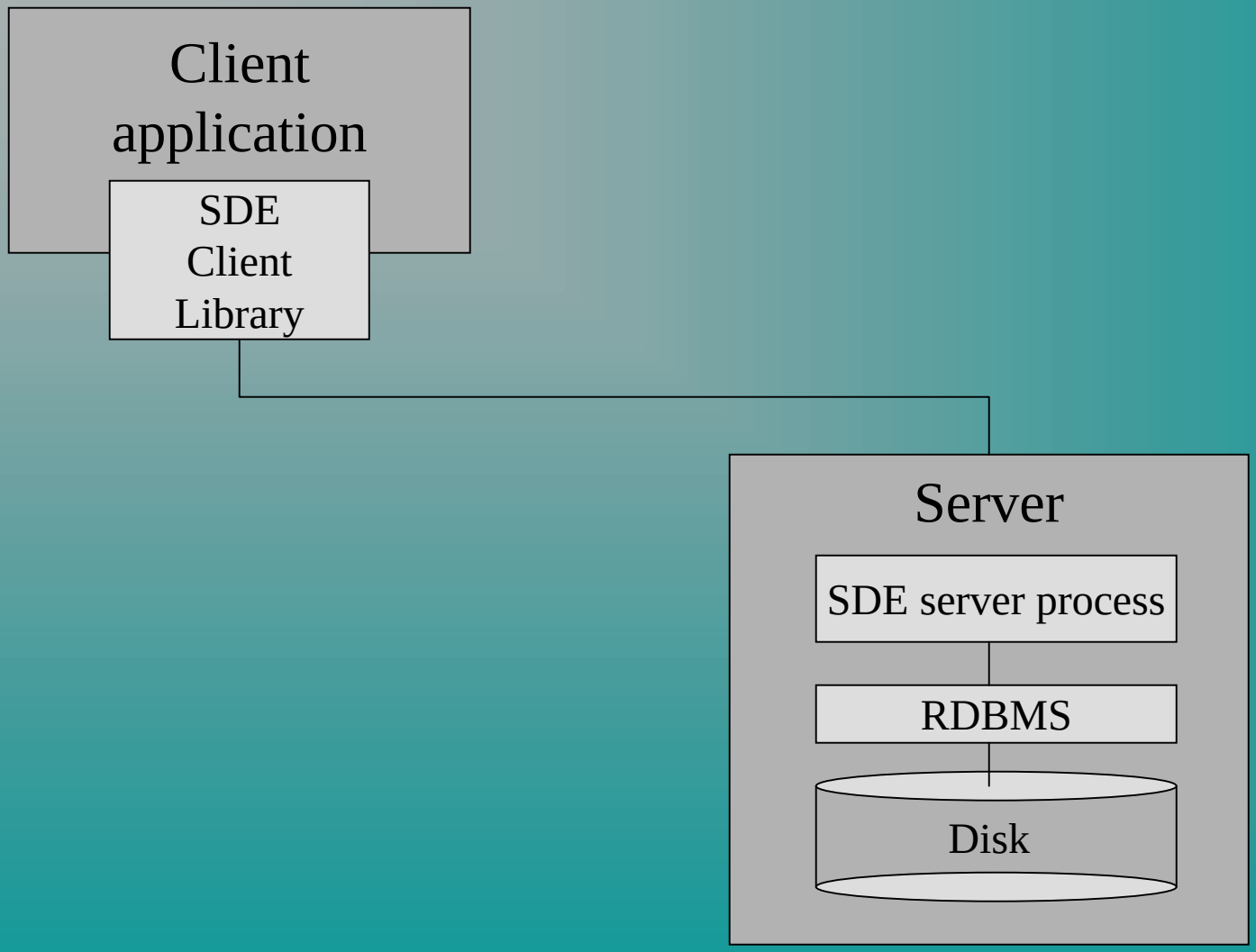
Ken Nelson

Data Access and Support Center
(DASC)

What is SDE?

SDE is a continuous, nontiled spatial model for adding spatial data to a relational database management system (RDBMS)

SDE Architecture



Why is DASC migrating to SDE?

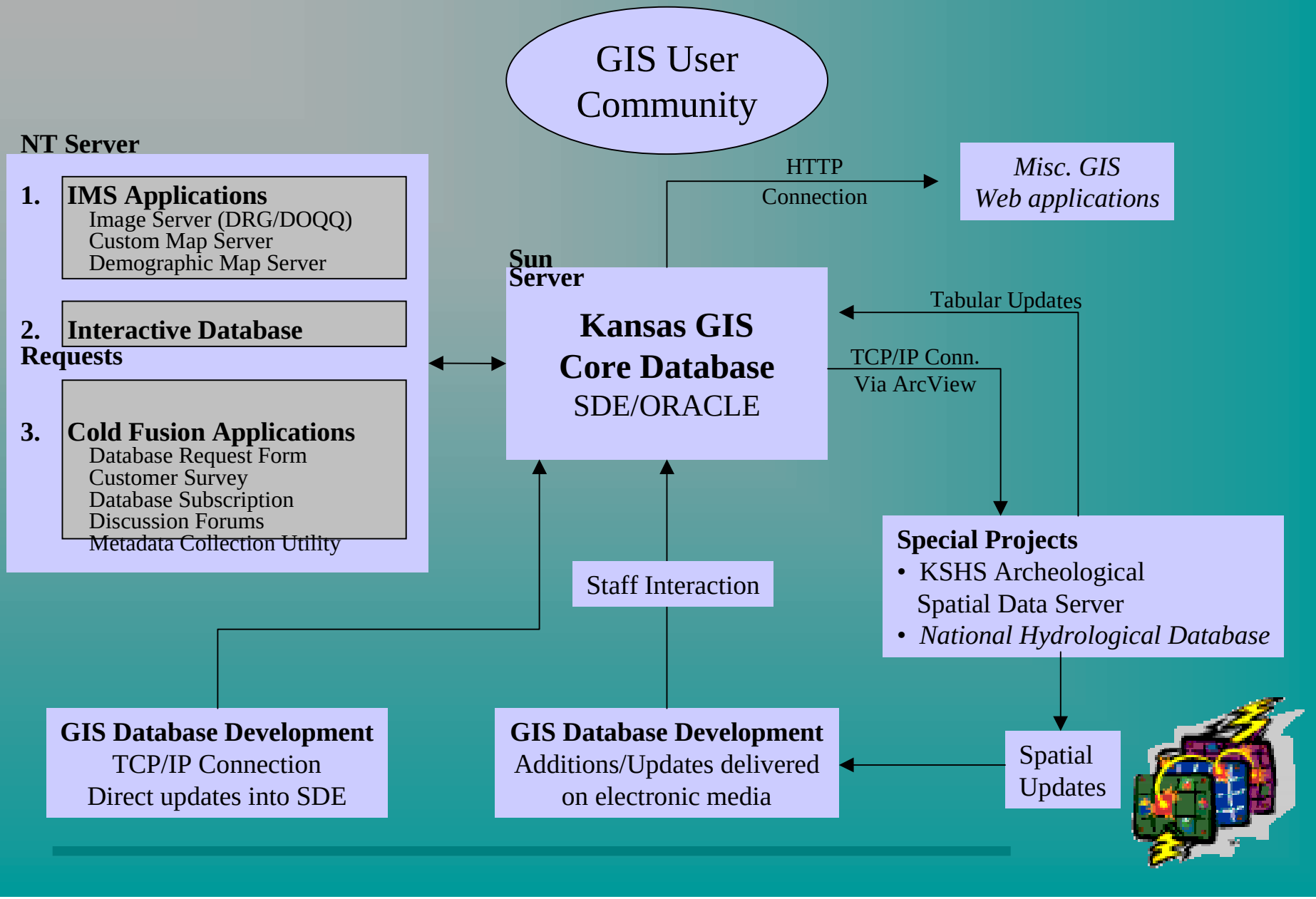
Alleviate data storage redundancy

Supports multiple users/multiple applications

3 instances of the same Core Database

- Staff assisted database request
- Zipped version for anonymous FTP access
- IMS applications

DASC Flow Chart



DASC's migration to SDE

Set Up/System considerations:

- Purchase a RDBMS, an SDE license & a server

- Hire/Designate an Oracle DBA,
  DBA responsible for maintaining SDE

- Prices: SDE $8,750 annual maintenance
  Oracle $3,750 annual maintenance

- Server Size: depend on use/application

DASC's migration to SDE

KGS/DASC's Server

Sun Ultra 2 Dual Processor, 1 GB RAM

DASC's Future Server

Sun Ultra 60 450Mhz Dual processor, 1 GB RAM, RAID Level 5 storage

DASC's migration to SDE

Methodology . . .

- Create statewide seamless coverage in Arc/Info
- Error checking
  (topology, edge matching, labelerrors, etc.)
- Error correction maintaining
  National Map Accuracy Standards

DASC's migration to SDE

Methodology . . .

- Project to Geographic/Decimal degrees
- More error checking
- Load coverage into SDE using cov2sde command
- Store cov2sde parameters
- Export & compress statewide coverages & archive on CD for backup

Creating a new layer

Select a grid size

Determine XY Offset & Scale

Specify a coordinate reference

Choose which types of shapes are allowed

Execute command (cov2sde)

Creating a new layer

Select a grid size (-g option)

- Grid Size is the size of the cells in the spatial index
- 9 Grid Cells/Average Viewing Area
- 3 Grid levels
- Create higher grid levels only if more than 20% of data has more than 4 grid cells

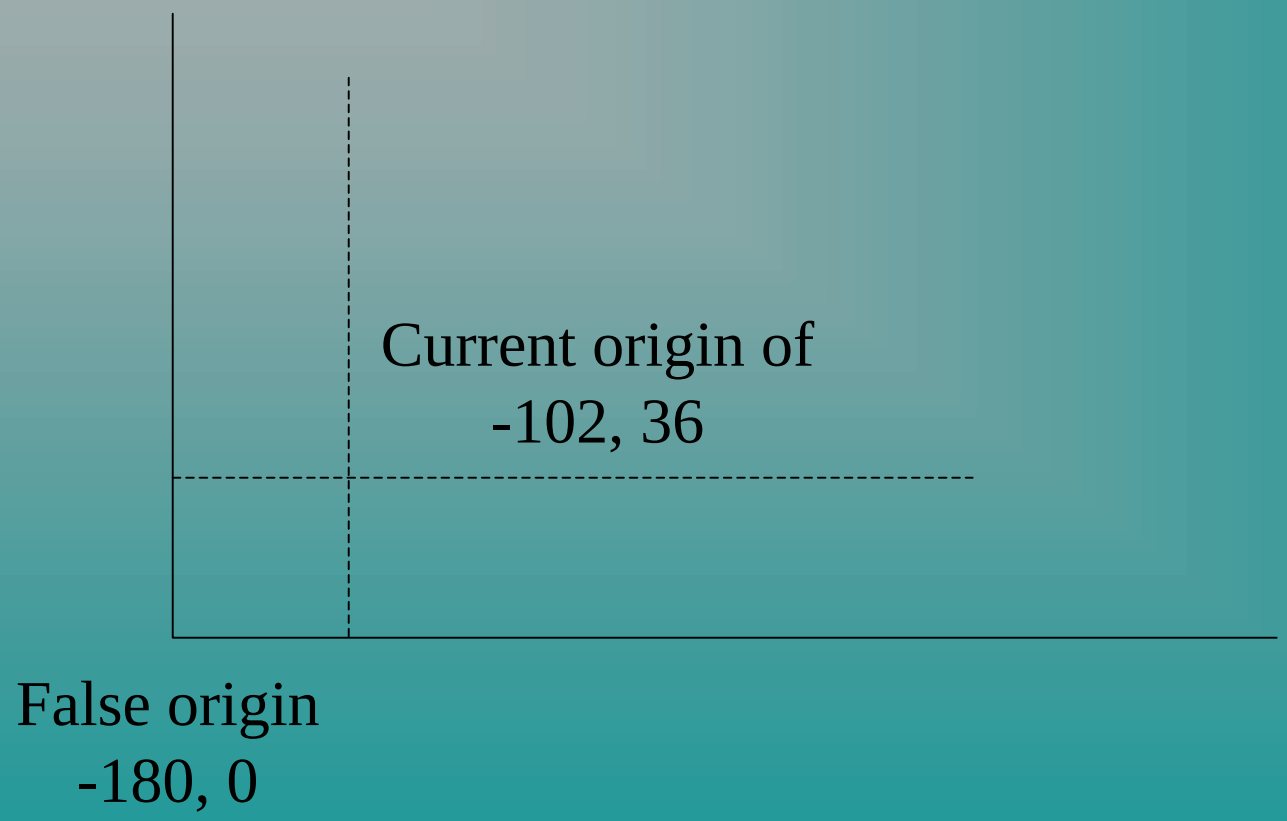
Creating a new layer

Determine XY Offset & Scale (-x option)

- SDE stores positive integers only in a database
- Coordinates are usually negative values with decimals
- Offsets allow you to translate the origin along an axis

Creating a new layer

Determine XY Offset & Scale (-x option)



Creating a new layer

Specify a coordinate reference (-G option)

- the geographic or projected coordinate system for the layer
- specify coordinate system with an integer code found in pef.h file

Creating a new layer

Choose which types of shapes are allowed (-e option)

- Shape types
  - nil
  - point shapes
  - line (spaghetti) shapes
  - simple line (linestring) shapes
  - area shapes
  - 3D shapes (added with the -o add operation)
  - multipart shapes
  - measures on coordinates

Creating a new layer

Execute command (cov2sde)

Layer - Statewide Tiger county boundary coverage
stored in Geographic/decimal degrees

Command:

```
sde2cov -o create -l ks_tigcn,SHAPE
        -f ks_tigcn -g 100 -G 4008
        -x -120,0,100000 -S “tiger_counties”
        -e a -a all -c 10000 -i dasc -s machinename
        -u eileen -p eileen
```

Other commands

Alter layer

sdelayer -o alter . . .

Grant select permissions

sdelayer -o grant . . .

Dump statistics to verify all features were loaded

and to check grid tuning

sdelayer -o stats . . .

sdelayer -o si_stats . . .

Statistics Results

```
ESRI SDE Layer Administration Utility Mon Jul 12 15:50:07 1999
---------------------------------------------------------------
Statistics for Layer 20
---------------------------------------------------------------
Total Nil Features:                          0
Total Point Features:                        0
Total MultiPoint Features:        0
Total Spaghetti Features:         0
Total Pasta Features:                        0
Total Linear Features:                       0
Total MultiLine Features:         0
Total Area Features:                       105
Total MultiArea Features:         0
                                     ----------------------
Total Features:                            105

Minimum Feature Number:                      1
Maximum Feature Number:                    105

Last Modified:                Mon Jul 12 15:49:59 1999

Largest Feature:                     1629 Points
Smallest Feature:                    225 Points
Average Feature:                     426.00 Points
Minimum Polygon Area:                 0.04200 sq.
Maximum Polygon Area:                 0.38313 sq.
Average Polygon Area:                 0.20956 sq.
Minimum Polygon Perimeter:           1.03686
Maximum Polygon Perimeter:           2.83488
Average Polygon Perimeter:           1.89987

Layer Envelope:

          minx:    -102.05130,        miny:     36.99306
          maxx:       0.00000,        maxy:     40.00318
```

Dump statistics to verify all features were loaded and to check grid tuning

sdelayer -o stats . .

Statistics Results

```
ESRI SDE Layer Administration Utility Mon Jul 12 15:50:08 1999
-----------------------------------------------------------------
Layer 20 Spatial Index Statistics:
Level 1,   Grid Size 100
|-------------------------------------------------------------------|
| Grid Records: 105                                                 |
| Feature Records: 105                                              |
| Grids/Feature Ratio:  1.00                                        |
| Avg. Features per Grid: 105.00                                    |
| Max. Features per Grid: 105                                       |
| % of Features Wholly Inside 1 Grid: 100.00                        |
|-------------------------------------------------------------------|

|              Spatial Index Record Count By Group

| Grids:     <=4    >4    >10    >25    >50    >100   >250   >500    |
|---------- ------ ------ ------ ------ ------ ------ ------ ----------------- |
| Features:    105      0      0      0      0      0      0      0 |
| % Total:     100%     0%     0%     0%     0%     0%     0%     0%|
|-----------------------------------------------------------------------------|
```

Dump statistics to verify all features were loaded and to check grid tuning

sdelayer -o si_stats . .

DASC's Future Plans

Complete conversion of the Core Database to SDE

Develop a web application that allows the user to perform custom database requests online

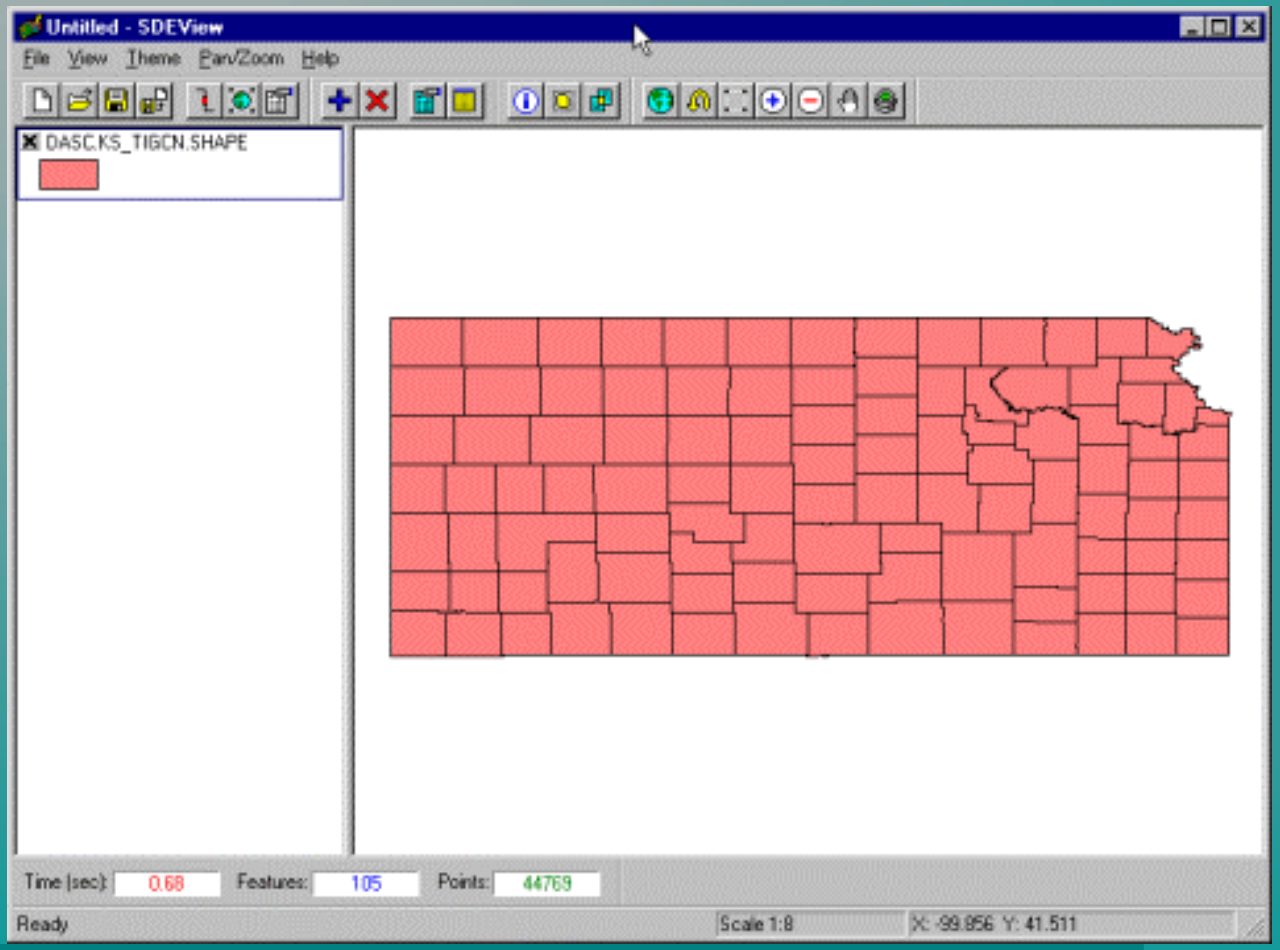
Develop mechanisms that allow for database updates from database developers via TCP/IP connection

Work with Virtual Layers to optimize data extraction based on the type of application accessing the data

Free Non-Supported Tools

Available on ESRI web site (www.esri.com)

SDEView



Free Non-Supported Tools

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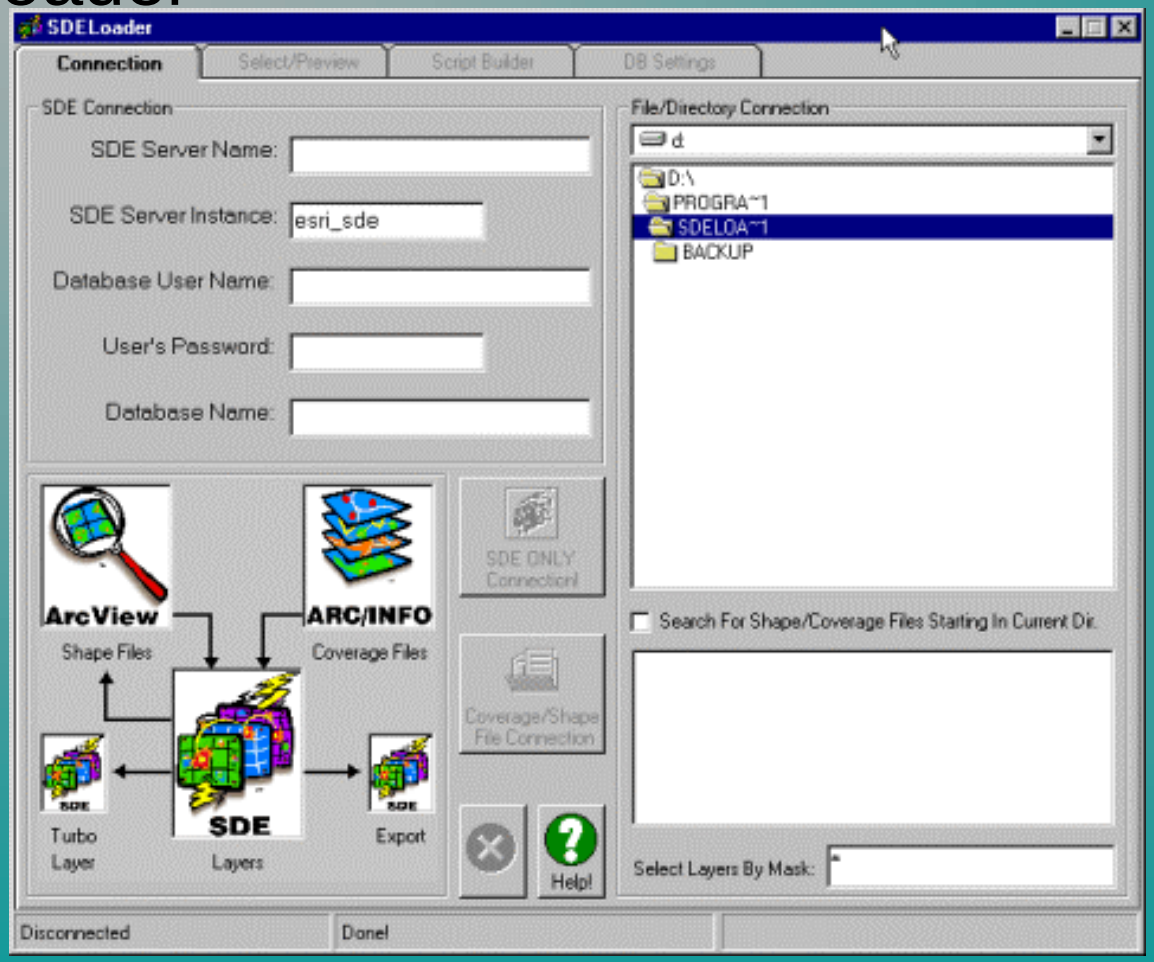
SDELoader



How to contact DASC

Ph: 785-864-3965

Fax: 785-864-5317

E-mail: dasc@kgs.ukans.edu

http://gisdasc.kgs.ukans.edu