Tips and Tricks on Spatial Data, SQL Access and Working with SQL Spatial

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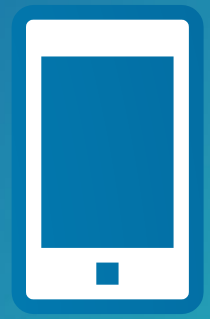
Assumptions

Target Audience

- **Intermediate knowledge of SQL and relational databases.**
- **No knowledge of the ST_Geometry data type or functionality is necessary.**
- **Not covering setup and configuration of ST_Geometry environments.**
  - **Please stop by the support island.**
- **Questions at the end of the presentation.**

Please turn off cell phones



Agenda

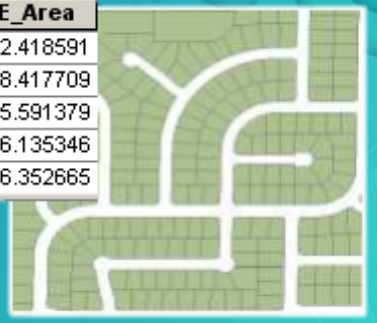
- What is ST_Geometry?
- Why use ST_Geometry?
  - Benefits of ST_Geometry
- Additional consideration
- DEMO - How to use ST_Geometry?
  - Constructor
  - Accessors
  - Operators and Relationship

What Is ST_Geometry?

- ST_Geometry is a spatial type that stores geometry data in a single spatial attribute

Parcels

OBJECTID *	SHAPE *	PROPERTY_I *	Res	Zoning_simple	SHAPE_Length	SHAPE_Area
1	Polygon	5001	Non-Residential	<Null>	3597.780813	112552.418591
2	Polygon	5002	Non-Residential	<Null>	814.855837	18488.417709
3	Polygon	1003	Residential	Residential	489.655523	12815.591379
4	Polygon	1004	Residential	Residential	521.761248	14036.135346
5	Polygon	1005	Residential	Residential	453.479649	9816.352665

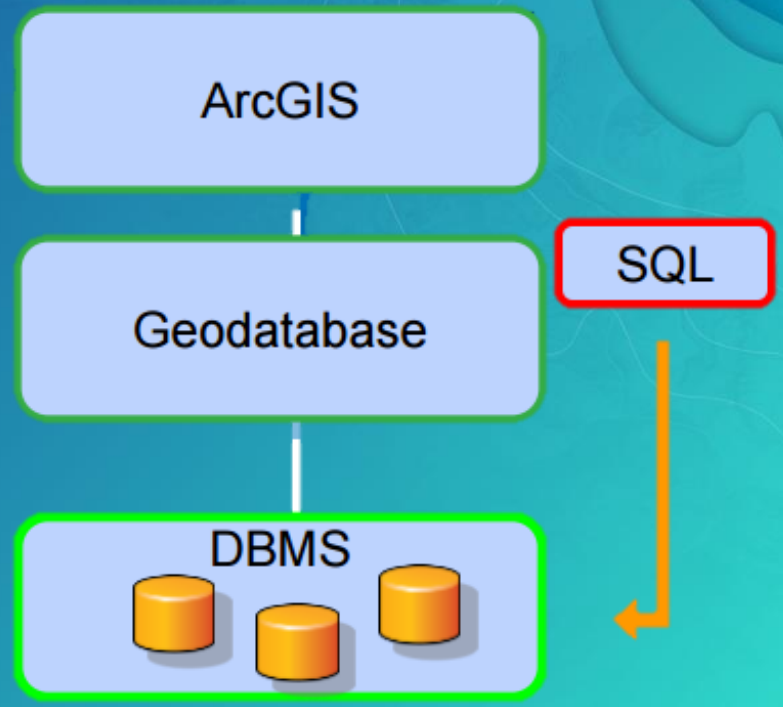


- Spatial Index
- Relational and geometry operators and Functions
  - Constructors
  - Accessors
  - Relationship and Operators

Why use ST_Geometry?

Benefits of ST_Geomtery

- **Enhances Efficiency**
- **Interact with data on the SQL level**
  - **Create tables, with a spatial attribute**
  - **Read and analyze the spatial data**
  - **Insert, update and delete simple features**
- **Accessed using common API's and SQL**
  - **International Organization for Standards (ISO) compliant**
  - **Open Geospatial Consortium, Inc. (OGC) compliant.**
- **Bridge the gap between GIS and non-GIS users**
- **Sometimes you want a single result, and not a map**



Editing Geodatabase Feature Classes using SQL

Additional considerations

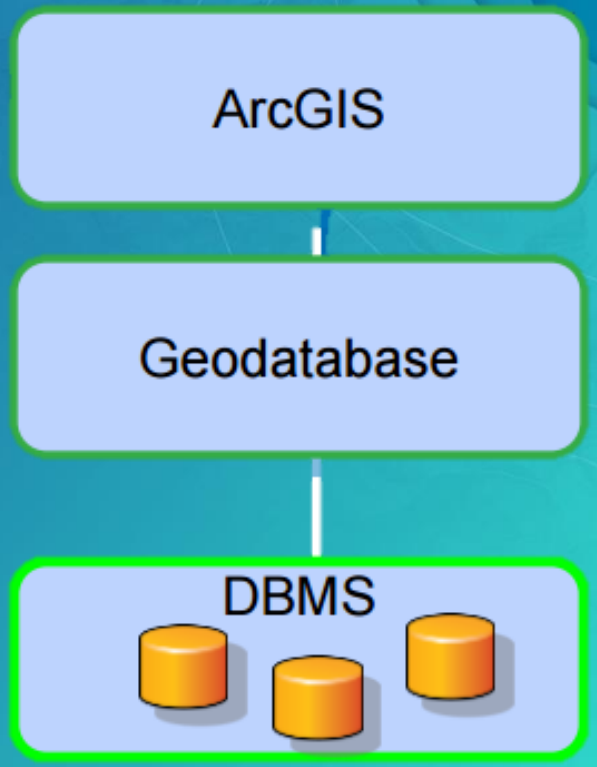
When working outside of ArcGIS, keep in mind:

- **What can you edit?**
  - **Simple features (points, lines, polygons)**
  - **Without geodatabase behavior (*Is_Simple*)**
- **Editing Versioned Tables (*versioned view*)**
- **Must maintain next ObjectID and GlobalID values (*Next_RowID/Next_GlobalID*)**
- **Minimal validation of the objects will be performed**

Rules for creating spatial tables to be used with ArcGIS

Prerequisites

- Unique identifier.
- One spatial column in the table.
- One spatial reference in the table.
- Do not use mixed-case object names.
- Entity type matches the type defined for the spatial column.



ST_Geometry Functions

Demos

Relational and geometry operators and Functions

- Constructors – creates new geometry
  - Example: ST_Point, ST_Line, ST_Polygon
- Accessor – return property of a geometry
  - Example: ST_Area, ST_SRID
- Relationship and Operators – perform spatial operations
  - Example: ST_Intersects, ST_Buffer

DEMO

1. Constructors
2. Accessors
3. Relationship and Operators

Additional Resources

- **ST_Geometry Function List**
  - http://desktop.arcgis.com/en/desktop/latest/manage-data/using-sql-with-gdbs/st-geometry.htm
- **Configuring ST_Geometry for SQL Access**
  - **Oracle**
  - http://desktop.arcgis.com/en/desktop/latest/manage-data/gdbs-in-oracle/configure-oracle-extproc.htm
  - **PostgreSQL**
  - http://desktop.arcgis.com/en/desktop/latest/manage-data/databases/add-the-st-geometry-type-to-a-postgresql-database.htm
- **Spatially enable an SQLite database**
  - http://desktop.arcgis.com/en/desktop/latest/manage-data/databases/spatially-enable-sqlilte.htm

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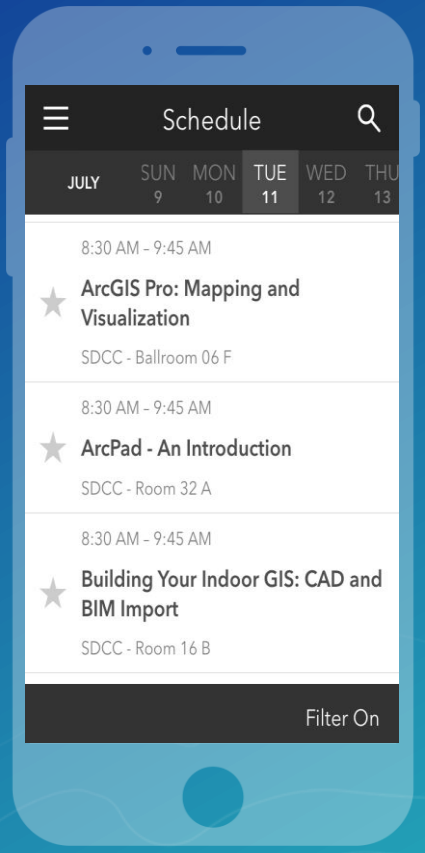

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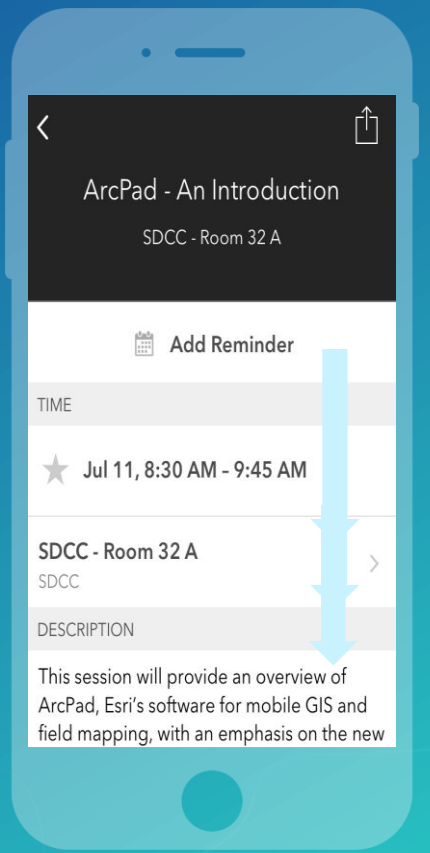
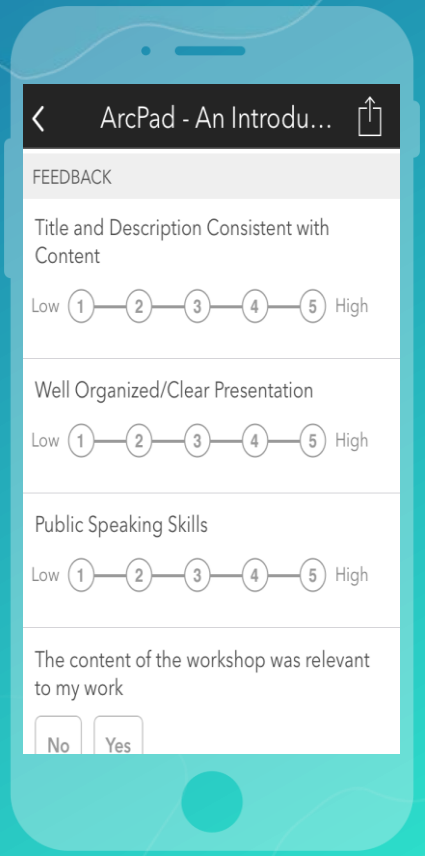


Complete Answers and Select "Submit"

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