Professional Association for SQL Server

Spatial Data: Cooler Than You'd Think

Hope Foley

Sponsored by:

Who am I?

- Microsoft Team Lead
- SQL Server DBA
- (MCITP: Database Administration in 2005 and 2008)
- In IT industry for 10 years. DBA for 5 years. I've been with PTI for 3 years.
- Worked for various industries such as large insurance companies, government entities, large and small corporations, hospitals and medical related business and on and on

Agenda

- Overview of spatial data
- Explain some of the functions within it
- Show some examples of it
- Then bring it all together with a real world scenario

What is Spatial Data?

Dictionary definition: Also known as *geospatial data* or *geographic information* it is the data or information that identifies the geographic location of features and boundaries on Earth, such as natural or constructed features, oceans, and more. Spatial data is usually stored as coordinates and topology, and is data that can be mapped. Spatial data is often accessed, manipulated or analyzed through Geographic Information Systems (GIS).

My definition: the laying of stuff out on a map

Spatial Data…really?

- Who is really ever going to use that stuff? Why should I care?
- We all could use it and we all should care
- Huge potential in just about every industry possible

Spatial Data within SQL Server

There are 2 types of spatial data that can be contained within SQL Server

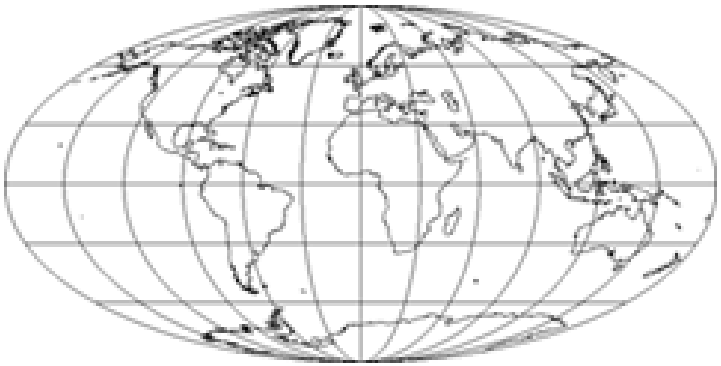
- Geometry – grid/flat (flat map and objects, floor plans)
- Geography – round earth (latitude/longitude)

Just user-defined types so they don't really care what is contained within them.

SQL Server complies with Open Geospatial Consortium (OGC). They help develop standards for geospatial and location based services.

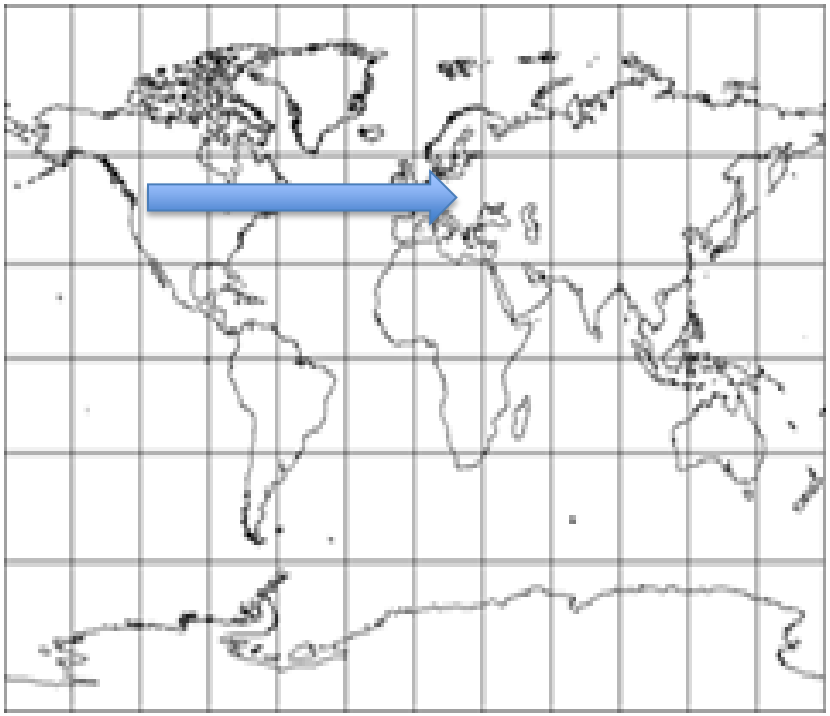
You’re losing me here…

- Geometry - often referred to as the flat earth system – uses grids/coordinates
- Geography – the round earth system and grid also but in latitude/longitude



Example of difference

Trip from US to Europe



Spatial data objects

- Point: an exact location identified by X & Y coordinates
  - Can also have Z -> elevation
  - Can also have M -> Measure
- LineString: A path between a sequence of points.
- Polygon: A closed 2 dimensional shape defined by a ring.
- Collections: collection of more than one spatial object. These can be generic collections such a GeomCollection….or more specific ones that hold a particular type ..such as MultiLineString.

Ok…so how do I look at these funky shapes?

SQL Server supports 3 formats that the OGC defines to display geospatial information:

- Well-Known Text (WKT) – human readable form
- Well-Known Binary (WKB) – binary representation
- Geography Markup Language (GML) – XML defined by OGC

demo

Now what can I do with this data?

There are many instance and static methods available for use with the spatial data types.

STGeomFromText	STLength
PARSE	STArea
STEnvelope	STDifference

And many many many more…

demo

Shapefiles

A shapefile is a commonly used format of file that contains GIS information (same stuff we're putting in database, polygons, lines etc).

There are many places you can get shapefiles. The US Census Bureau and Indiana University have some published

That's all well and good but can we see it now?

Now that we're done with the concept stuff lets get to real world scenario.

1. Take hospital information and load into database
2. Tie it to some spatial data
3. See the potential use

Demo

References

- Shape2SQL tool - http://www.sharpgis.net/page/SQL-Server-2008-Spatial-Tools.aspx
- Geocoder site - http://www.gpsvisualizer.com/geocoder/
- US Census Bureau Shapefiles – http://www2.census.gov/cgi-bin/shapefiles2009/national-files

Thank You!

Thank you for attending my presentation!

Feel free to email me with any questions/comments

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