



Virtuosity  
Consulting

IMPACT STORIES

# MICROSOFT SQL SERVER NOW SUPPORTS LRS FOR MORE GEOMETRIC TYPES WITH VIRTUOSITY

## THE SITUATION

In late 2008, Microsoft added initial support for Geometry and Geography types. These both types are implemented as .NET CLR types in SQL Server which provides a feasibility where custom libraries built on top of .Net framework can be registered with SQL Server to manipulate these types. Later in SQL Server 2012; additional support for Spatial datatypes are added. But post that there is no active development in the field of Spatial Data for SQL Server. As the field of Spatial Data in relation database evolved; LRS (Linear Referencing System) got popular due its simplicity in Linear position system.

One of Microsoft's prospectus client were primarily relying on this LRS system for their legacy product where SQL Server lacked the primary modelling and manipulation support for this type natively. In order to achieve this in quick turnaround time; SQL Spatial Tools (an OSS library) was developed to provide out of the box functionalities that are not available in SQL Server. As a proof of concept an attempt to get LRS functions in this OSS library is performed where the potential need to extend this library and support for map drivers emerged. Resource constraints and manual legacy processes also exasperated an already difficult problem.

## VIRTUOSITY ENGAGES

With Virtuosity's strong reputation across Microsoft SQL Server Products, the Microsoft team sought out their partnership and support to help enhance Spatial Tools library to include\enhance functionalities to support LRS System, and to evaluate Virtuosity's execution capabilities.

Within two (3) weeks, the Virtuosity team had onboarded a SCRUM team, attacked the assigned business problem, understood and took good grip over the code base and restructured and based lined the code for further development. From Second sprint they started delivering customer specific on-demand functions to manipulate LRS system. Initially the support is for only simple Geometry types LINestring where edge and boundary conditions on various input cases are not handled. The Virtuosity team could analyse these cases and started delivering with a clear work break down structure for POINT, LINE and MULTILINE GEOM types.

Additionally, the business need for SQL Server specific support for various map connecting OSS drivers GDAL, OGR2OGR, MAP Server and QGIS is perceived by the team where the usage of SQL Server is elevated for different horizons of front-end Mapping solutions as a trusted relation data backend for maintaining Spatial types. Our team could get this additional support in the existing OSS drivers to plot\draw the new Geometric types exposed in the core engine.

To aid the iterative test and comparison of arrived results with a competitive Spatial Solution, the team proactively developed an automated test suite to simplify the team's curation process, which saved lot of time in regression test process.

## ACHIEVING FULL POTENTIAL

Within three (3) months of the phase 1 engagement, Virtuosity delivered critical functions and additional support of POINT, MULTILINESTRING Geometry types. Further the team documented list of functions and related samples to aid and integrate functions for developing scripts. Among their exceptional accomplishments are:



SUPPORT POINT  
TYPE



SUPPORT LINESTRING  
TYPE



SUPPORT MULT-LINE  
TYPE



DRIVER SUPPORT  
MAP SERVER, GDAL, QGIS

## ONGOING PARTNERSHIP

Virtuosity has expanded and is engaged for second phase of development where additional features and integration with core SQL Server Engine is involved; also turning as a trusted partner, driving continuous innovation and automation across the entire release cycle, consistently meeting and exceeding established real-time KPIs.

## CLIENT

Microsoft

## SCOPE

Managed Software Dev  
& Engineering Services

