ESRI USER CONFERENCE

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The Full Cycle

Ricardo Bandeira

IplanRIO

Introduction

The Rio-Águas Foundation Institute in the city of Rio de Janeiro is the technical reference body for the management of urban stormwater in the city of Rio de Janeiro, with the skills to plan, manage and supervise preventive and corrective actions against floods.

Every new urban allotment and every utility company which performs works deeper than 0.5 meters must submit their projects for Rio-Águas to analyze their interference with the drainage system.

http://www.rio.rj.gov.br/web/rio-aguas/quem-somos

The Challenge

- How to integrate thousands of files of an entire city?
- How to ensure the correct spatial location of the files made by different engineering firms?
- How to extract and save the information in a fast way and in a lightweight format?
- How to retrieve, view and display the information from anywhere, on any device?
- How to exchange the information and make it available to everyone, everywhere?

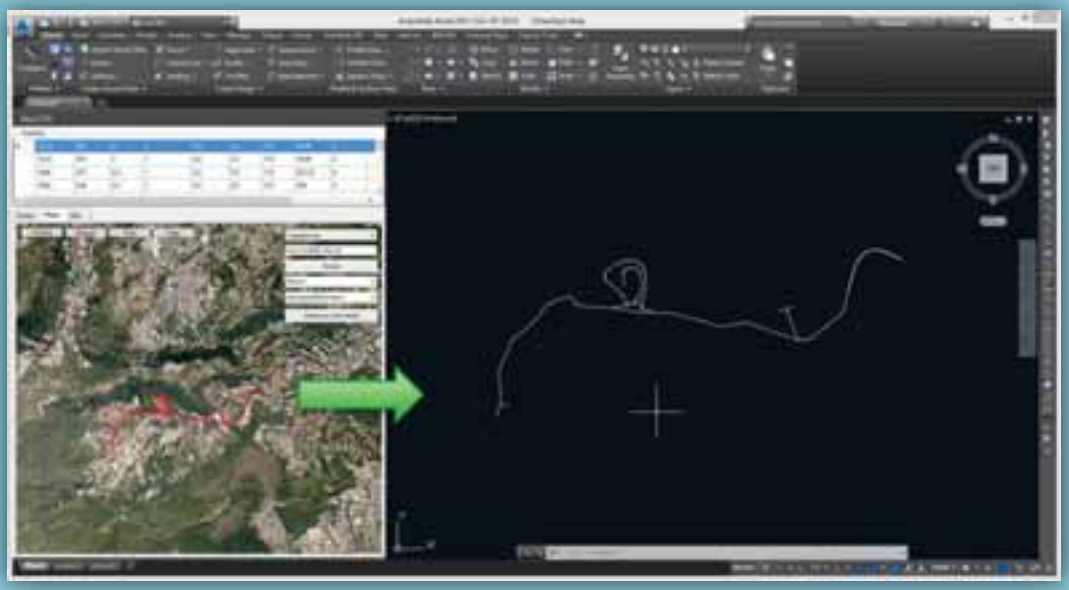
The Full Cycle

The ArcGIS for Server brought new possibilities to the way the engineers work and for the management of thousands of drainage, sewage and infrastructure files stored in various formats at the Rio-Águas Foundation. The Full Cycle is a model that integrates the ArcGIS map services, the AutoCAD® and the MS SQL Server in very flexible architecture.

This model allows the engineers to query any layer on the map server and get the results drawn directly into the AutoCAD®'s document. They can edit the drawing and get the information from various sources to compose a new project. Allows them to select the geometry in the drawing and send it as a parameter to query the map server or to perform spatial analysis.

Querying the Map Services:

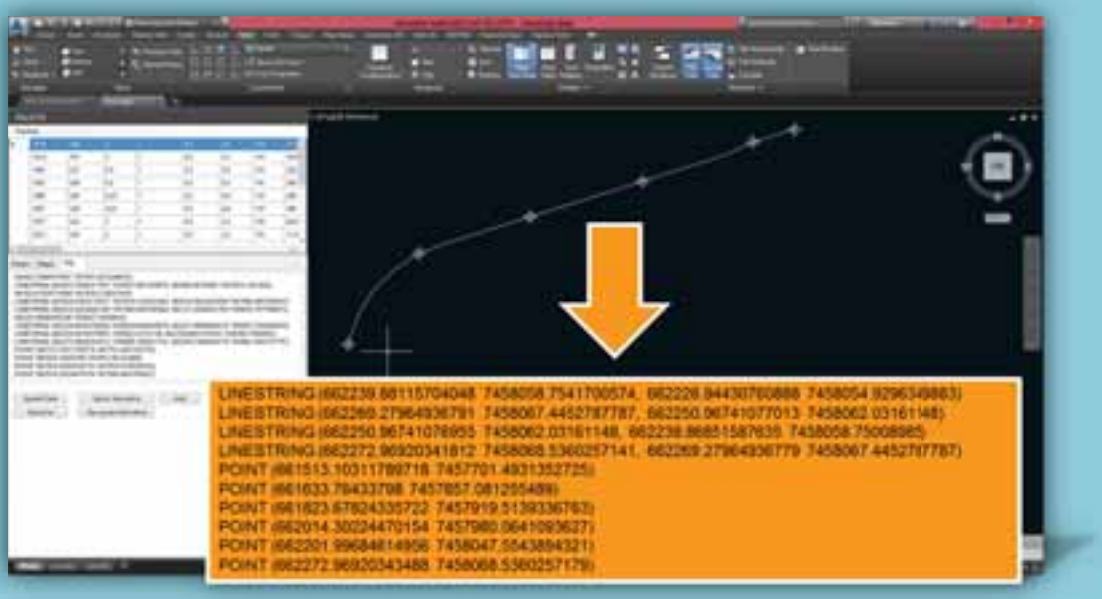
Making an interface between ArcGIS map services and AutoCAD®, the engineers can query any kind of layer through the internet and get the results drawn directly into the AutoCAD® document. It's possible to query for rivers, streets, buildings, neighborhood divisions and so on. It's also possible to select the CAD geometry and send it as a parameter to query the map server and to perform spatial analysis.



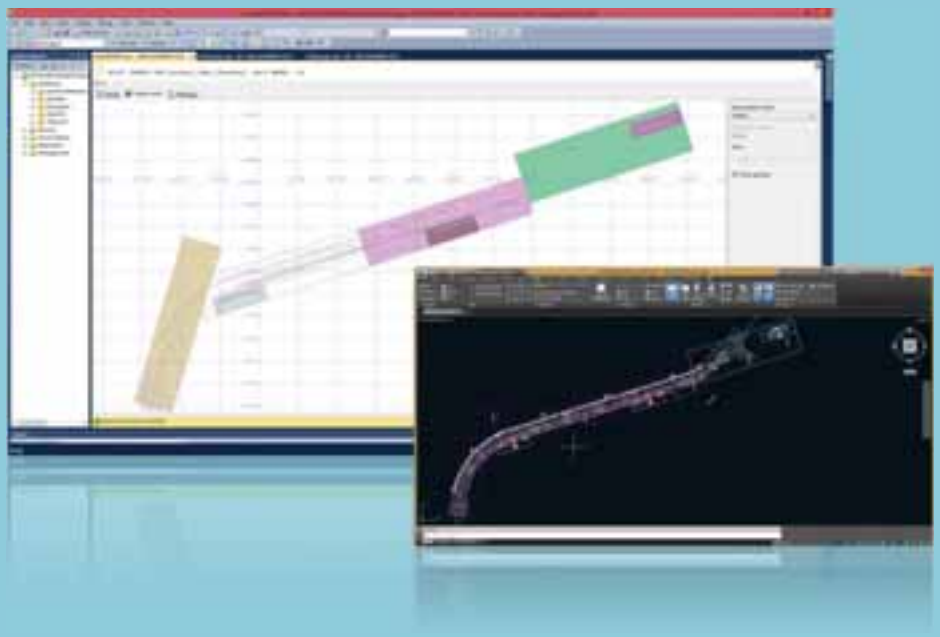
Converting and Saving the CAD geometry as Spatial Data:

The geometry retrieved from the map server is converted to Spatial Data using the **Microsoft.SqlServer.Types** library and can be edited as text.

After editing and composing their work, the engineers can convert all AutoCAD® geometry to Spatial Data and save them in the MS SQL Server.

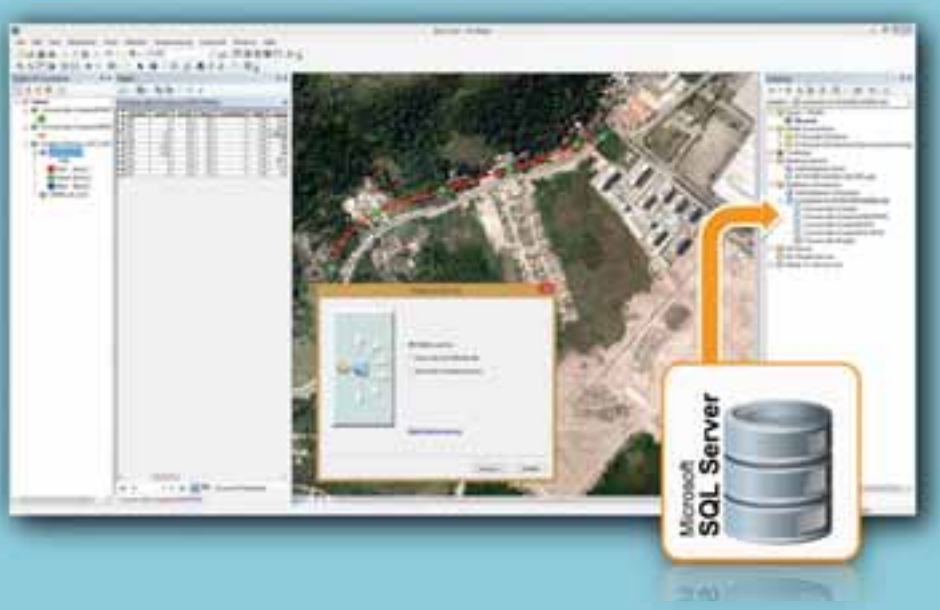


The AutoCAD® geometry can be saved and retrieved as text and the information of various drawings can be combined into the database. The information is organized in SQL Views and can be added to ArcGIS to be shared.



Publishing the Information as a Service and Completing the Cycle:

After connecting to MS SQL Server, the CAD geometry stored in the database as Spatial Data, can be added to ArcGIS as a layer and published as a map service.



Conclusion

This architecture with three components integrated to the company's GIS, offers infinite possibilities to everyone who needs to use these tools.

Advantages:

- Flexible - you can access the data from various sources.
- Powerful - you have the power of Spatial Analysis on the Map Server, in the ArcGIS for desktop, in the AutoCAD® (Map or Civil versions), in the MS SQL Server and in your company's GIS.
- Integrated - With this solution everything is connected.
- Independent - you are the owner of you geometry and you're free from the impositions of software versions.
- Lightweight and Interchangeable - with the *json* format from the map server and the spatial data as text from MS SQL Server, it's possible to send and receive an entire drainage project, for example, via e-mail.
- Accessible from anywhere - with this configuration you can get geometry and technical data from anywhere via HTTP through the internet.

Contact me:

Ricardo Bandeira
Systems Analyst - IplanRIO
rlbandeira@gmail.com
+55 21972077454