

Add GIS to Civil Infrastructure Solutions to Unlock Data and Open Doors to New Projects

BY RON COUILLARD



Civil infrastructure technology has long helped engineers and designers build better infrastructure in more-efficient and profitable ways. During roughly the same time period (starting in the 1970s), GIS technology grew into a powerful platform to analyze and display geographic information.

Companies such as San Rafael, Calif.-based Autodesk created leading BIM/CAD tools, and the leader of the GIS world was (and still is) Redlands, Calif.-based Esri. Although the technologies can look similar to casual observers, their core development and early applications were quite different. In a simplistic summary of their origins, BIM/CAD manages, stores and displays graphic information in its files; a GIS collects geographic features that can be displayed as points, lines and polygons generated from its database. Previous attempts were made to better connect and integrate these two different worlds, but it was in 2017 that a significant breakthrough occurred.

Better Together

Fortunately, the two industry giants realized both of their core products would become better tools if they partnered and opened their expertise to each other and their users. Autodesk would maintain its expertise in BIM/CAD while “connecting”

with Esri tools that would add the global power of GIS data, and Esri would focus on its geospatial expertise while “connecting” to Autodesk technology that would add powerful tools to design the world’s built infrastructure in a global and geographic context. To use a popular candy analogy, it was “peanut butter and chocolate” finally coming together for the betterment of society.

The partnership was originally announced at the Autodesk University conference in 2017, and both sides have been working ever since to improve how their tools interoperate and make the user experience better and simpler.

Stay Connected

It’s important to note that neither side is trying to create a new “super program” that does it all but might require everyone to learn something new. Instead, Autodesk and Esri experts stay inside their familiar tools, but can automatically connect to and utilize the power of the other brands and their specialties. For example, Autodesk’s Civil 3D, Map 3D and InfraWorks all now connect to GIS data on the Esri side, while Esri’s ArcGIS Pro and GeoBIM tools connect to Autodesk tools and data. There’s nothing extra to download and install.

As each product is used in different ways for different projects and outcomes, the results of each connection also are different.

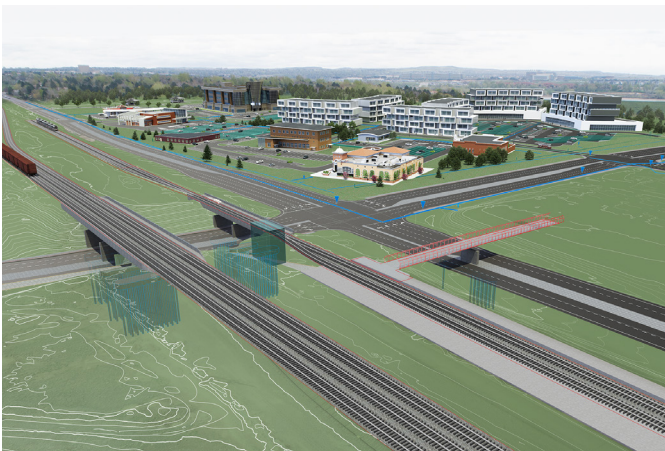
For Autodesk users, Civil 3D allows for conversion of GIS data to civil objects such as alignments or parcels. It also allows users to create a template for stylization. The connector in Map 3D adds feature data objects, and the connector in InfraWorks allows users to bring in data such as coverages, parcel areas, roadways and other elements of that nature.

For Esri users, GeoBIM propagates all the Esri and Autodesk data in one platform, whereas ArcGIS Pro is more of the authoring tool for GIS analysts and technicians. Each product's connector is tailored toward that specific product and allows users to get objects that work best for them in that particular software.

Opening Doors

With the advent of the Autodesk and Esri connected platform, users now can harvest GIS data in the CAD world, which then leads to asset management bringing in existing conditions in the absence of survey data. GIS, CAD and BIM in the same world opens doors for a lot of options and projects that didn't exist before this partnership.

Both teams are working to take walls down to give each company access to the data types they can acquire. For example, on the Civil 3D side, users can query roadway centerlines and—without any type of conversion or translation—instantly create Civil 3D alignments that are intelligent objects for use

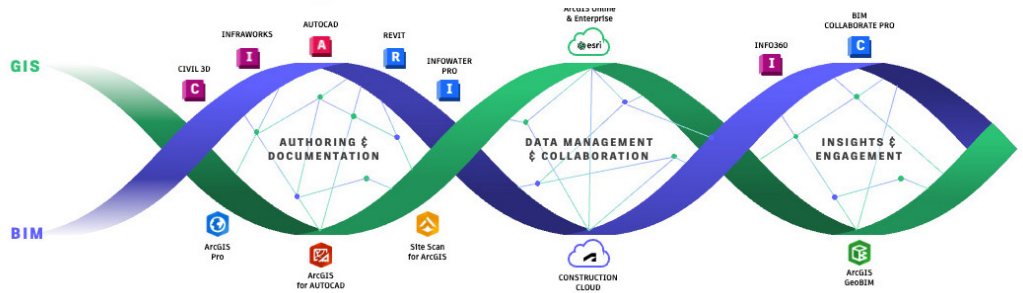


An image shows infrastructure with BIM (buildings, roads and rail) as well as GIS (topography and geolocated) data.

in projects. Before this partnership, to do what I just mentioned, users would have to bring in unintelligent data objects and then go through a conversion process to get those objects into a project.

Not only are we getting more functionality, we're getting more accuracy, because we have access to both companies' intelligence. Users only need to log into their Esri account and decide which data they want to bring in from the data store.

BIM & GIS Convergence



Abandon Static File Exports

Under the Esri/Autodesk partnership, users can propagate live data rather than exporting static data (historically as Esri Shapefiles). In GIS circles, we often say, “once you do an export, you’re probably already out of date.” After a live data connection is established, however, users will always have their projects’ updated data at their fingertips.

If you have parcel data, for example, any buildings on that parcel can be used for asset management because the database has attributes and statistics that can be mined to perform queries on that data. When such data are added to the BIM/CAD world, they’re tied to a real location in the real world. You can perform visualizations as well as different types of studies. By bringing the two worlds together, it allows for a more-robust dataset than what you would have with just one or the other.

Having immediate access to live data allows projects to move forward faster and more efficiently, because people aren’t having to send additional survey crews out, for example, or research data stores to get their data. When it’s all propagated live in one place, it makes for a more-efficient start and continuation of the project.



Ron Couillard is Technology Consultant/Team Leader with U.S. CAD. He has more than 25 years of civil infrastructure industry experience with expertise in an array of Autodesk civil solutions, leveraging his field experience serving as a CAD manager and senior civil designer at several engineering firms; email: ron.couillard@uscad.com.

Learn More

A summary of U.S. CAD’s Autodesk Solutions, including an informative video, “Essential Solutions Provided,” can be viewed at bit.ly/3NSUqOB. Additional information about the new Autodesk connector for ArcGIS can be found at bit.ly/3S8MfAn.



Autodesk Solutions



ArcGIS Connector