

Ideate Helps a Burgeoning City Bridge the CAD and GIS Divide

Studies in Success

Company: The City of Roseville, California, Environmental Utilities Department (REUD)

Software on Board: AutoCAD® Map 3D, HANSEN, ArcInfo™, ArcSDE™

Summary

In 1850, the California Gold Rush brought miners to the area that is now the City of Roseville, but it was the railroad junction created in 1864 by the Central Pacific Railroad's east line crossing a smaller line that initiated the town's expansion. The City of Roseville was incorporated in 1909. It is a charter city operating under a City Manager-Council form of government.

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Recent years have seen the city grow outward in all directions. Its expansive industrial zone is headquarters to some of the nation's fastest growing companies. Located a scant 16 miles from Sacramento, California, this thoroughly-developed independent city boasts an estimated population in excess of 100,000 and about 6,000 businesses.

City services include public safety, electric power supply and distribution, electric power generation, environmental utilities (solid waste, storm water, water, recycled water and wastewater), parks and recreation, housing, libraries, and general administrative and support services.

The Challenge

The City of Roseville's Environmental Utilities Department (REUD), headed up by Roy Van Ness, Mapping Supervisor, had a staff of only four full time employees. Faced with a rapidly growing population, the city needed to manage and maintain its extensive utilities infrastructure while at the same time expanding water, electrical, sewage, recreational, police and fire protection services.

Water management needs alone were daunting. The Roseville REUD needed to manage 1,500 miles of combined pipeline for water, wastewater, storm water and recycled water.

In addition to its mapping responsibility, REUD supports asset management across 12 groups and seven city departments. The department had traditionally relied on a variety of asset management systems, including HANSEN, MP2, Cascade, Land Logic, Squarerigger and several ad-hoc Microsoft Access databases.

REUD initially relied on a variety of mapping software tools. Like many state and local government agencies, the REUD team was using AutoCAD Map 3D to capture and create data, simply because they believed that a CAD-based tool was better for quickly and accurately editing their pipe networks. From CAD, they then exported to ArcInfo Coverages so they could perform the hydraulic modeling in ArcInfo. Within ArcInfo, they wrote Arc Macro Language (AML) routines to link raw data tables to their linework originating from CAD and their asset data tables stored in HANSEN, which required the proper data structure and IDs to populate.

REUD determined early on that they needed both CAD and GIS software to get the job done, and as a result they invested in both platforms. However, this brought unexpected challenges. While the tools operated brilliantly in isolation, the lack of integration soon began to cause headaches.

For instance, the initial workflow between REUD's CAD and GIS software involved importing and exporting data back and forth, which often led to redundant or outdated information and a greater chance of losing data. According to Van Ness, this process “wasn't an easy thing to do, and was very cumbersome.” Although the process worked, he needed to streamline it so his busy staff could keep up with the increasing updates. Additionally, he needed to simplify the steps so he wasn't the only person who knew the intricacies of what needed to be done.

The Solution

The City of Roseville REUD engaged Ideate, Inc. to replicate all point and arc graphical data that was stored in ArcSDE in AutoCAD Map 3D according to a newly developed CAD standard.

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Next step: replicate all the ArcSDE attribute tables as object data tables within the CAD drawings. Through some custom programming, several routines were created to automatically populate pipeline attributes with its coincidental “from” and “to” attributes.

Using feature classes, REUD technicians were able to create GIS-quality graphical and attribute data within the CAD environment. This data could then be exported to shapefiles with the click of a button and populated with asset data from HANSEN.

Finally, after team leader Van Ness had finished some additional quality checking (QC) on the data, he would import the shapefiles into ArcSDE.

As Map 3D has evolved to support ArcSDE running SQL server, Van Ness and his team have connected their CAD mapping software directly to ArcSDE for editing live spatial and attribute data within Map 3D, greatly reducing the demand on the GIS department. REUD then distributes the most current data from ArcSDE to its field personnel by periodically publishing it to DWF format and storing it on the network, making it readily available and up-to-date for field crews to access.

“The time savings and ability to quickly convert CAD data to the GIS have been invaluable,” said Van Ness. “We have also realized cost savings by the ease of conversion and manipulation.”

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“REUD technicians can... clean up their own data... do their own quality checking... all from within one location.”

Van Ness further explained that by using the predefined tables created by Ideate, the REUD technicians can now easily be trained to clean up their own data, without as much of his involvement. They can do their QC within ArcInfo by comparing the incoming CAD mapping and attribute data with the existing assets in HANSEN, all from within one location.

All the data input is done on the CAD side, from the start, creating a more “streamlined” process, minimizing overlapping of work, and reducing the time spent maintaining the data.

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About Ideate, Inc.

Ideate, Inc., a leading U.S. West Coast Autodesk® Value Added Reseller, provides software and hardware, implementation services, training, support, and consulting services for the Architecture, Engineering and Construction (AEC), civil, GIS and multimedia industries. Established in 1992 and headquartered in San Francisco, California, Ideate, Inc. is recognized as an Autodesk® Premier Solutions Provider (PSP) – Building Architecture, Autodesk’s highest level of authorization. Employing top architects and structural, mechanical, and civil engineers, Ideate, Inc. provides its clients with the knowledge and technical resources to make the most productive, efficient use of their software and staff so that they can achieve their optimal competitive advantage.

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