

Seamless Design and GIS Integration

From data creation to collection to distribution, Tacoma saves time and extends its resources.

The Public Works Department of Tacoma, WA, uses its geospatial data to do everything from issuing building permits and managing wastewater to maintaining streetlights. The city has prioritized the centralized storage, efficient maintenance, and real-time distribution of spatial data.

With Autodesk Map 3D (www.autodesk.com) and Oracle Spatial (www.oracle.com) forming the core of its GIS, Tacoma's efforts have met with spectacular—and award-winning—success.

Since Tacoma is now able to create, edit, share, and store geospatial data, the city can now:

- Eliminate duplicate data entry from its design and GIS processes.
- Collect and process more spatial data more quickly.
- Use existing staff and resources to maintain a large spatial database.
- Save internal and external customers time with instant access to maps.

- Customize web applications quickly and easily with existing IT staff.

Separate Data Streams Inefficient

Although GIS and design data are largely interdependent in public works environments, many organizations maintain two separate data sets for each type of information. Engineers request the geospatial data they need from GIS specialists to design their projects and, when completed, the GIS specialists



In the late 1990s, Tacoma's Public Works GIS staff scanned over 75,000 paper construction drawings into its Autodesk GIS system, freeing up valuable office space. Today, the city uses Autodesk's Raster Design to quickly update these record drawings.

refer to those engineering designs to update their spatial data. However, Tacoma's Public Works Department wanted to leverage the efforts of its design staff to maintain its spatial data. The city felt that such a system would ensure more timely data by eliminating duplicate data entry.

According to Gary Cantu, Tacoma's Public Works Information Technology Supervisor, "It's more efficient and cost effective to have one integrated set of tools for both design and GIS. When engineers do much of the data maintenance in the normal course of their work, it frees up dedicated GIS staff to collect more data, analyze it, and make it more easily available to internal users and citizens."

From Survey to Design to Citizens

Realizing it needed a GIS solution built to work seamlessly with design tools, Tacoma chose Map 3D as its geospatial data creation and editing engine. Map 3D, an open, standards-based tool, is designed to work well with common geospatial data formats and incorporate the precision of CAD-based design and survey applications. The software also offers a direct connection to Oracle Spatial, the geospatial extension to a standard Oracle database. This has enabled Tacoma to integrate its design and GIS processes while including spatial data, such as SHP files, that it receives from other sources in its system. Once collected, Tacoma stores its data in an Oracle Spatial database.

"We use Autodesk Survey to collect field data and groom it for our designers," says JR Smith, the city's Senior GIS Analyst for the Public Works Department. "Our designers carry out their work within Autodesk's civil engineering software such as Land Desktop, which is built on top of Autodesk Map. After we complete construction projects, we use Autodesk Raster Design, an extension of Map, to capture and digitize as-built information. We then collect and manage the data using Map in Oracle Spatial and publish that information to web-based applications using Autodesk MapGuide. For us, Autodesk Map 3D is the heart of our complete



Tacoma, located at the foot of Mount Rainier, was incorporated in 1884 and now has a population of more than 199,600 residents.

end-to-end solution."

For its geospatial data storage, Tacoma chose Oracle, which is the same data storage solution the city selected to support its business process applications. By using the same system for GIS as for other applications, the city benefited from better integration and faster data access. In part, that is due to the tight integration between Autodesk Map 3D and Oracle Spatial. "Autodesk Map includes a built-in menu to connect to Oracle," explains Smith. "Because Map works so well with Oracle, we are able to create, save, and translate data more quickly."

Making Government Easy

With its GIS staff able to do more than just collect data, Tacoma has been able to extend the value of its spatial data. Nowhere is that more evident than on its award-winning website, called govME. govME, which stands for Government Made Easy, uses MapGuide to give internal users and citizens access to spatial information on intelligent and interactive maps.

"Instead of going to city hall to find zoning and permit information or construction plans, citizens can find what they need online," reports Mitchell T. Webb, the Senior Application

Development Systems Analyst in charge of the mapping functionality on govME. "Connecting Autodesk MapGuide to our Oracle data is as easy as opening a Microsoft Word file. I can add new geospatial layers and functionality very quickly."

By integrating its data creation, collection, and storage processes, Tacoma is saving time and resources throughout its GIS workflow. Smith explains, "It just seems natural to have GIS and engineering functions connected. Our engineers and designers have instant access to all the information they need, and our Oracle database contains up-to-date information. I'm reluctant to use the word flawless to describe our system, but it is pretty close."

Although the process efficiencies are saving Tacoma's staff time internally, Tacoma is even more pleased with the convenience govME delivers to citizens. "Before, whenever citizens needed a map, they had to drive downtown, stand in line to request the information, and staff had to make copies," says Cantu. "Now they can get the information they need in minutes whenever they need it from wherever they have an internet connection. They're saving at least an hour of their time, plus the information is always up-to-date." GE