

Enterprise GIS at the City of Anaheim, California

Goals

- A better way to maintain, manage, and share geographic information throughout the city
- The ability to query and analyze maps in a productive way
- Elimination of redundant copies of data accessed by users and applications
- Standardization on a software platform

Results

- A seamless, intelligent, and comprehensive database managed in a DBMS
- Efficient delivery of map and geographic record information to the public, city staff, and other agencies and special interest groups.
- Improved cooperation between departments
- Better data accuracy and integrity
- Reduced potential for errors introduced by maintaining multiple data sources
- Simultaneous editing by multiple editors (versioning)
- Increased system performance

Introduction

In the early 1950s, Walt Disney had a vision for a family-oriented amusement park unlike any the world had ever seen. His vision soon outgrew the small site near his Burbank, California, movie studios where he had originally planned to build "Mickey Mouse Park." Disney hopped in his car and began driving south on the newly completed Interstate 5 until he reached the farm country of Orange County. He marveled at the quaint small town that 19th century German settlers had 100 years before named "Anaheim" for the Santa Ana River that runs through it and the German word for "home."

In 1950, the town of approximately 15,000 reminded Disney more of his Midwestern roots than of bustling, nearby Los Angeles. Though some still think only of Disneyland when they hear the name Anaheim, the city's current population of 330,000 makes it roughly the size of St. Louis, Pittsburgh, or Cincinnati. It is also the fastest growing large city in California and one of the 10 fastest growing cities in the United States, according to the 2000 census. It hosts millions of visitors every year and is home to the eighth largest convention facility in the nation.

Growth on this scale can be difficult to manage. Today the problem for enterprises small and large alike is not a lack of information but how to manage what can seem like too much information. Those experiencing booming growth may find it difficult to keep up.

An Enterprise is Born

Experts in city planning have estimated that more than 80 percent of information that city governments deal with is linked to geography. Questions such as "Where should we build a new library?" or "What areas are experiencing rising crime?" can be difficult to answer unless a city's mountain of information can be analyzed spatially.

Until 1995, the city of Anaheim was still manually maintaining all of its maps. Like many other cities, Anaheim was looking for better ways to maintain, manage, and share geographic information throughout the city. The inefficiencies of manually maintaining maps logically led to contracting with a vendor to have the city's maps converted into electronic maps using computer-aided design (CAD). Although this step allowed city workers to more easily maintain their maps, they were unable to query or analyze the maps in a productive way.

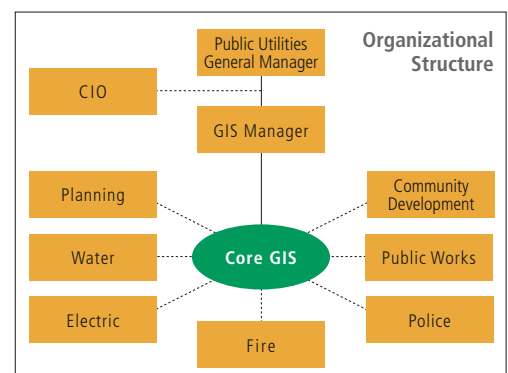
City officials recognized that their needs were best served with a geographic information system (GIS). Thus, in 1997 the city contracted with ESRI, the world leader in GIS, to implement the needed services. ESRI delivered hardware and software, developed custom applications based on ArcView 3, and converted the city's CAD basemaps.

As the years passed, many new layers were added. As the number of layers increased, managing them became more difficult. Although these layers were all stored on a central file server, accessing them over the network was at times very slow. Many users would copy them to their hard drives to increase performance. Some applications were referenced a copy of a layer instead of the master layer stored on the GIS file server. In addition, there was no metadata for any of the layers. These and other related issues forced the city to rethink how it was going to manage its data.

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About Anaheim, California

Founded in 1857, the city of Anaheim is one of the nation's premier municipalities and California's 10th most populous city. As the oldest and largest city in Orange County, Anaheim covers 50 square miles, with nearly 330,000 residents and 2,100 city employees. The municipal corporation's annual budget is \$960 million and boasts world-class companies such as Boeing, Carl Karcher Enterprises, the Walt Disney Company, L-3 Communications, MTI Technology, and Pacific Sunwear. Annually, the City of Anaheim also welcomes millions of visitors to the city, truly making it a great place to live, work, and play.

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In June of 2001, the city resolved to eliminate redundant copies of data accessed by users and applications and use only ArcGIS software for data maintenance and application development.

That goal has now been achieved through the implementation of an enterprise GIS environment using an ArcSDE geodatabase. In less than a year, this implementation was completed, and the city of Anaheim is now taking advantage of the benefits that come from an enterprise ArcSDE system.

Organization

Located within the Public Utilities Department is a group of city employees that supports the core functions of the overall city GIS program. These functions include (1) administering GIS software and databases, (2) maintaining the base layers (e.g., parcels and streets), and (3) developing applications for citywide use. This provides a foundation for other departments to build upon.

The core GIS group consists of a GIS analyst and two GIS operators. The GIS manager is responsible for managing the core GIS group and providing GIS-related direction and support to other city departments. These departments use their own GIS staff of varying sizes to build and maintain data and applications specific to their needs. This decentralized organizational approach was selected for the following reasons:

- Each department sets its own pace in developing GIS data and applications based on its needs and budget constraints.
- Each department retains control over its data to ensure accuracy.
- Avoids a large centralized group where competing interests can hinder customer service.

Enterprise GIS at the city of Anaheim consists of many different departments and divisions working on top of a central GIS knowledge foundation. Central GIS develops broad parameters, devised by GIS professionals throughout the city, from which all units work. Through this structure, the various departments can benefit from each other's work and provide customers with the most recent, highest accuracy, and greatest depth of data and information available.

Participating departments include water, electric, planning, community development, fire, and police. The city shares data with other regional public agencies such as the Orange County Water District, Orange County Sanitation District, and the Anaheim School District.

System Design

ESRI software and extensions

ArcGIS 8.1 (seven ArcInfo licenses, three ArcEditor licenses, 17 ArcView licenses, and one ArcGIS Spatial Analyst license)

Enterprise ArcSDE 8.1

ArcIMS 3.1

ArcFM 8.1 for Electric (from Miner and Miner)

- DBMS:** Oracle8i (v. 8.1.7).
- Operating System:** Windows NT SP6 (upgrading to Windows 2000 in August 2002).
- Server Configuration:** Compaq Proliant 8500 with six 550 MHz processors (this server will be replaced in August 2002 with the new ArcSDE Geodatabase Server and will then become an ArcIMS server).
- Number of Layers:** Twenty-four defined feature data sets containing approximately 225 line, point, annotation, and area features classes.
- Type of Data:** The ArcSDE Geodatabase stores many data sets such as transportation, water, electric, parcel, and zoning.
- Size of Database:** Vector data—40 GB.
Raster data—2.5 GB.

All layers are in a single, centralized geodatabase; therefore, all participants in the city maintain, view, analyze, and model their data in this central database.

