

**DB2** Data Management Software

## San Francisco maps city services with IBM DB2 and DB2 Spatial Extender.

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### Overview

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■ **Application**

Federated enterprise database system providing timely spatial information to 61 municipal departments

■ **Business Benefits**

Up-to-date citywide geographic information; improved ability to manage and facilitate city business processes; better public safety coordination, such as emergency services, disaster planning and homeland security

■ **Software**

IBM DB2® Universal Database™ Enterprise Edition for Windows NT®, Version 7.0; IBM DB2 Spatial Extender, Version 7.0; IBM DB2 Relational Connect

■ **Hardware**

IBM Netfinity®

■ **Business Partner**

ESRI®



The picturesque city of San Francisco can now offer better, more efficient services to residents, businesses and visitors by leveraging the power of IBM DB2 Universal Database and IBM DB2 Spatial Extender.

Home of U.S. icons such as the Golden Gate Bridge and Alcatraz, San Francisco has captured the imaginations of so many, from movie directors to tourists to Tony Bennett, who left his heart there long ago. Now San Francisco is seeking to better serve its businesses and residents with innovative geospatial solutions.

Charged with the mission: "Using technology to better serve the community," San Francisco's Department of Telecommunications and Information Services (DTIS) provides the technology infrastructure

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*—Erich Seamon, Geographic Information Systems Manager, City and County of San Francisco*



San Francisco expects to gain greater efficiencies in scheduling services such as street maintenance by leveraging the geographic data enabled by DB2 and DB2 Spatial Extender.

for a majority of the city's 61 departments. Many of these municipal departments use geospatial information—data that represents locations and their relationships to each other—to plan and coordinate their daily business processes such as real property analysis and emergency services. Some city departments relied on paper-driven planning processes to accomplish this work, but have begun to incorporate electronic workflow to aid in planning and analysis. "San Francisco's municipal departments have increased their abilities to run more efficiently by incorporating location-based information into their city services," says Erich Seamon, geographic information systems (GIS) manager for the City and County of San Francisco.

Seeking to take its infrastructure to the next level by finding a way to provide the departments with up-to-date electronic geospatial data, DTIS evaluated several available solutions. DTIS ultimately chose IBM DB2 Universal Database with IBM DB2 Spatial Extender to create an enterprise geographic information system—a repository of geospatial data, shared citywide. IBM's strong technological alliance with IBM Business Partner ESRI, a leader in geospatial technology, played a crucial role in the city's choice. Says Seamon, "IBM's collaborative relationship with ESRI, which includes embedding ESRI technology within DB2 Spatial Extender, assured us that our enterprise GIS solution would be robust and flexible for the long term."

Seamon expects DB2 and DB2 Spatial Extender will improve the city's ability to manage and facilitate business processes. He also expects enhanced coordination of public safety services such as disaster planning and homeland security.

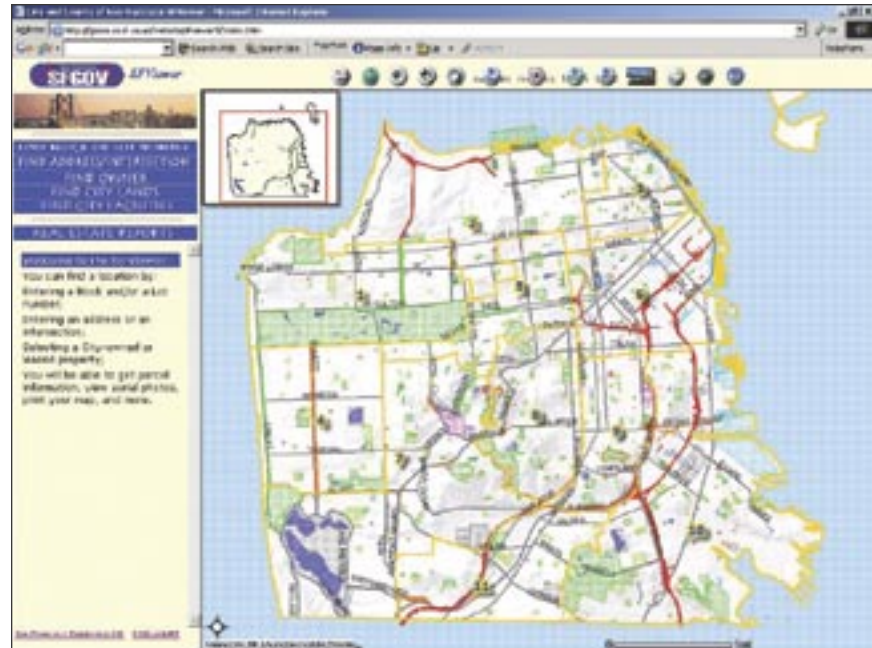
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*—Erich Seamon*

## DB2 Spatial Extender centralizes location-related data

San Francisco's core basemap information is made up of four layers—parcel information, street centerlines, edge of pavement information and aerial photography. Previously, city personnel would receive this GIS information on a CD released every six months. Each department would then use this data to perform its own spatial analysis. This approach limited the city's ability to keep geospatial information dynamically up-to-date, and also encouraged redundant GIS systems with non-standard data.

To create an integrated GIS system for San Francisco, DTIS sought an infrastructure that would enable all city departments to access and view the same secure, up-to-date spatial information. This new data infrastructure will ultimately enable publication of selected geographic information to the city's Web site—functionality that would allow realtors to find information about specific parcels, or businesses to perform site-selection and cost analysis for a new location in San Francisco.



*DB2 Spatial Extender and ArcIMS give municipal departments the tools they need to perform research and analysis on geographic information.*

DTIS also sought to maintain a distributed approach to GIS data sharing, allowing ownership and control of core data to be managed and maintained by departments but used in enterprise GIS services. The federated database approach available with DB2 solved this problem without the need for replication—making data in a remote database appear to exist natively in DB2. Says Seamon, "Our requirements for database integration and functionality were high. We needed a database that could allow us to leverage our legacy data—without replacing or revamping existing systems. For us, DB2 provided the best overall solution."

## IBM and ESRI: a complete spatial solution

The City and County of San Francisco solution includes DB2 Universal Database Enterprise Edition for Windows NT, Version 7.0 and DB2 Spatial Extender, Version 7.0. ESRI ArcSDE™ facilitates management of spatial data and ArcIMS™ provides the foundation for distributing these spatial systems and mapping services to the Internet.

The implementation resides on two IBM Netfinity servers running Microsoft® Windows® 2000—one for intranet production behind the city's firewall, as well as one outside the firewall for Internet applications. DB2 Spatial Extender manages the updating, structuring and insertion of geospatial data and enables development of the spatial database schema. DB2 Relational Connect provides native-read access to the city's existing databases, allowing users to view existing non-spatial information in any of the city's databases as they also view the associated geospatial fields contained in DB2. City employees access this geospatial data, such as location information or even maps, through the ESRI ArcIMS front end, which they can view with a browser.

#### **DB2 Spatial Extender boosts revenue, cuts costs**

With the city's geospatial data stored in DB2 and DB2 Spatial Extender, Seamon expects that city departments will be able to better identify and capture uncollected tax revenue by associating tax license information with locational demographic data. By spatially evaluating areas of business concentration, city employees can better identify companies that, knowingly or unknowingly, are not paying their taxes.



DB2 Spatial Extender also enables more efficient scheduling of regular maintenance activities such as street paving. For example, by having quick, efficient access to locational data, the city can easily plan to pave several intersecting streets at the same time. When this information was based in paper, it was more common to pave one street across an intersection and then repave that intersection again when the city eventually repaved the cross street. San Francisco's Department of Public Works currently utilizes citywide GIS data to manage these types of processes.

#### **Better city services come from GIS technology**

With more than a thousand city employees now using the DB2 and ESRI solution, the City and County of San Francisco is moving to the second phase of its project—Web-enabling spatial data. When that's complete, residents and businesses can simply input their street addresses to obtain myriad spatially related information such as trash pick-up days or their legislative representatives.

"The technology leadership of DB2 and DB2 Spatial Extender, along with the flexible integration provided by ESRI, allows the City and County of San Francisco to continue offering outstanding levels of service to its citizens," says Seamon.

#### **For more information**

Please contact your IBM marketing representative, IBM Business Partner or IBM Direct at: 1 800 IBM-CALL.

For information faxed direct to your location: 1 800 IBM-4FAX.

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For more information about the City and County of San Francisco GIS project, visit: [www.sfgov.org/dtis](http://www.sfgov.org/dtis)



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06-02  
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