

## **Project Title:**

SYNERGY – An Integrated Approach to Asset & Work Management using GIS

## **Author:**

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## **Paper Body:**

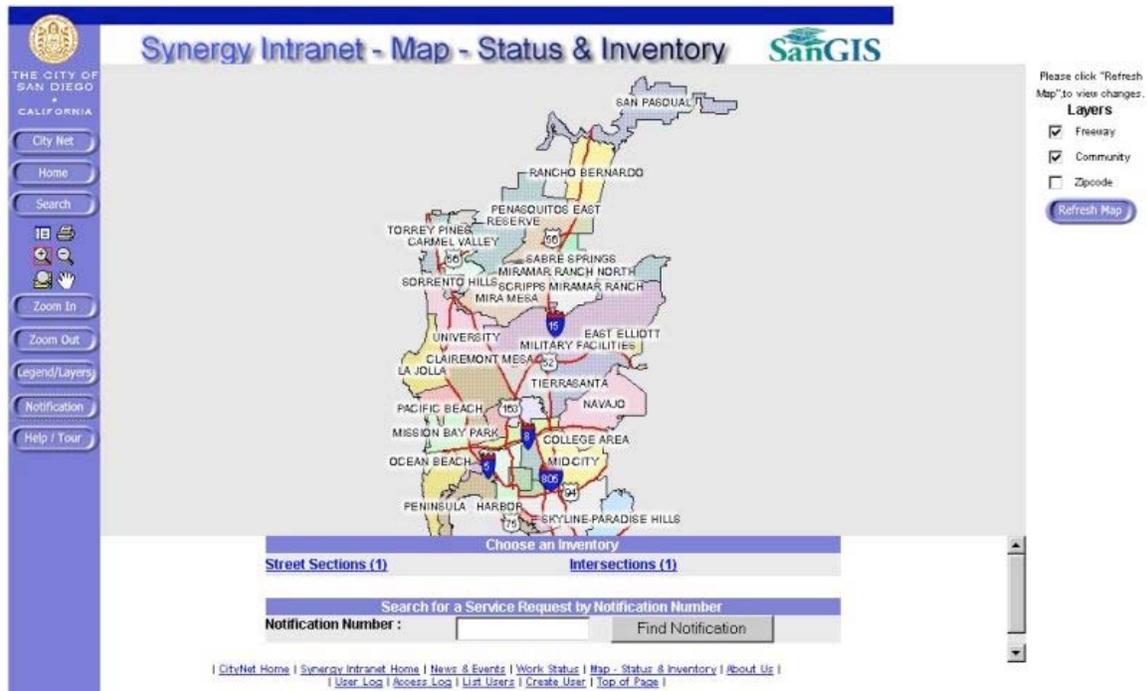
The City of San Diego, one of the fastest growing metropolitan areas in the United States has now become the 6<sup>th</sup> largest city in the country. Street Division, within the City of San Diego, as with all governmental agencies, needed to become more efficient and improve customer service to other Departments, citizens and public agencies. In order to do this, we needed to reengineer our work processes, coordinate work efforts, have more work and asset information available, and the tools to support them.

The division found itself with many diverse information systems, including 5 mainframe service request systems, each following it's own work processes. This situation made it difficult to coordinate work among the division and share information with others. Also many of the division's inventories (Street Lights, Traffic Signals, Storm Drains, etc.) were incomplete and the data was maintained by various methods. In addition to a need for consolidating the various inventories, we needed a standardized method of updating and modifying the data. Once we obtained a full inventory and more work information, the need for better reporting capabilities as well as a method of archiving outdated and obsolete data from the system was required.

Street Division examined other cities and agencies for possible solutions and found that few alternatives existed for government work management systems which included a Geographic Information System (GIS) as part of the solution.

### **The Solution:**

Street Division, in four phases, completed the implementation of a work management system, integrating SAP as a work management tool, and ESRI's Geographic Information System (GIS) as an inventory and mapping tool. The program was entitled "SYNERGY", which refers to the increase in productivity that occurs when two or more individuals work together instead of independently of one another. By this philosophy, the 5 mainframe service request systems were replaced by 1 system, and we consolidated the various inventories into one format. More information was now available to everyone about the work the division did and the assets it maintained.



Street Division is now in Phase V of the SYNERGY project, and a partnership was formed between the City of San Diego, ESRI and Cybertech Systems, Inc. to further develop the system and expand it's reach to other departments and the community. We standardized methods of inventory updates and modifications, and programs were developed to support them. The programs were written using GIS tools, configuration of the SAP system, and the use of Global Positioning System (GPS) technology to collect these inventories. We also expanded the use of SAP by configuring and designing standard procedures for archiving outdated and obsolete data, and for producing more effective reports within SAP.

To be able to share our information and offer this new technology to other departments, an intranet site was developed using standard GIS tools, an ArcIMS server which houses the inventory data, and an Oracle server which contains the information from the SAP database. This solution includes a site for division news and events, a site for the division's organizational responsibilities, a site for reporting work status on requests with searching capabilities, and a site for viewing the location of these requests by inventory on a map.

For the citizens of San Diego or anyone with Internet access, an Internet application has been developed using the same tools as the intranet, but which has a site for the public to enter a service request to the division. It uses GIS tools to display a map from where this person can identify the exact location of the problem. The system will not only accept the request, but will display the status of work previously requested by this person. The system will also generate an email and send it to them when the work has been completed.

## The Results:

The SYNERGY program has resulted in an estimated cost savings of \$1.2 million per year. These cost savings came from the elimination of the 5 mainframe systems, the continued editing and completion of all inventories and the ability to perform more planned maintenance versus reactive maintenance. The newly developed inventory editing programs allow for the rapid update of these inventories and the use of GPS technology helps us collect them faster. The archiving programs have eliminated data that was outdated and obsolete, which has resulted in a cleaner and more dependable system. Improved reporting capabilities have resulted in a quicker way to generate reports and more accurate and useful information.

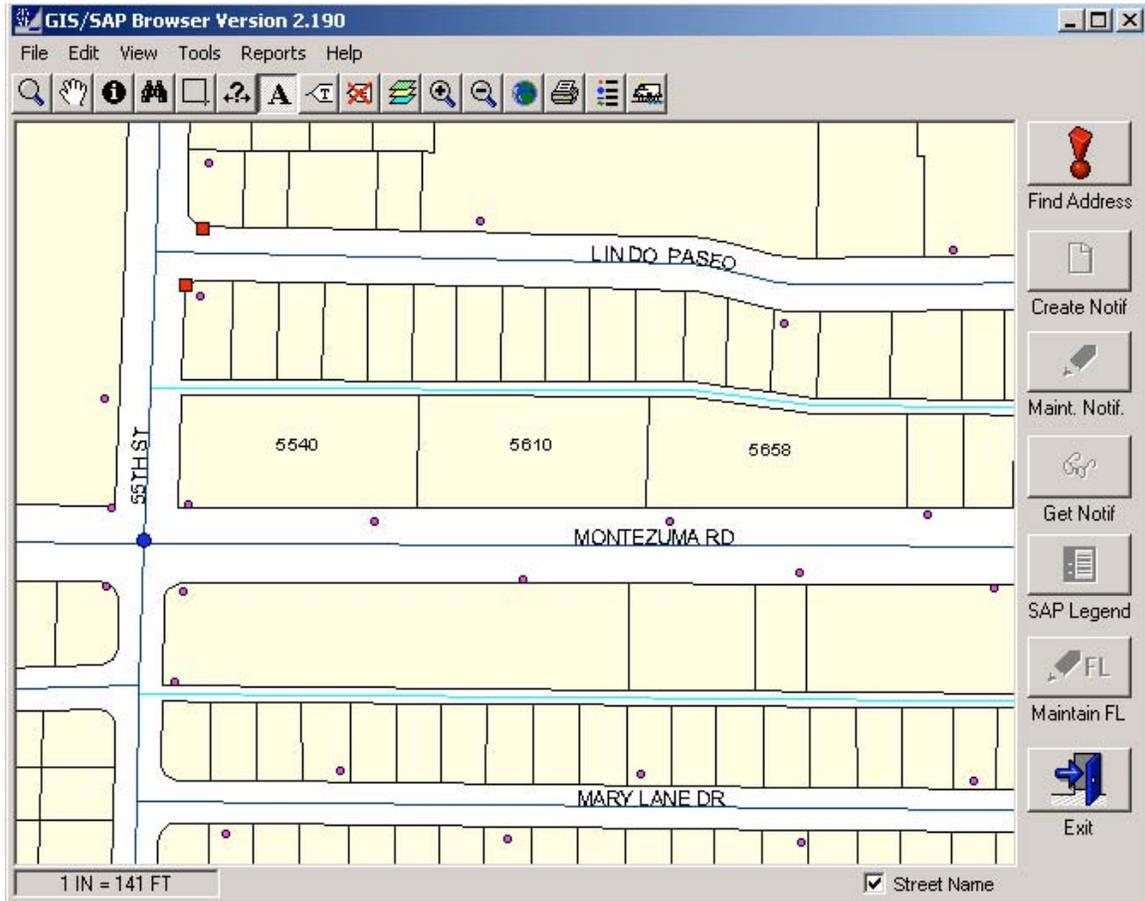
The screenshot displays the 'Synergy Intranet - Map - Status & Inventory' application. The interface includes a navigation menu on the left with options like 'City Net', 'Home', 'Search', 'Zoom In', 'Zoom Out', 'Legend/Layers', 'Notification', and 'Help / Tour'. The main area shows a street map with a grid of streets. A legend on the right lists layers such as 'Lakes', 'Bridges', 'Alleys', 'Channels', 'Traffic Signals', 'Intersections', 'Drain Structures', 'Street Section', 'Parks', 'Street Lights', 'Parcels', and 'Freeway'. A table at the bottom shows a list of notifications with columns for 'SAP Notification', 'Street', 'Cross Street', 'ZIP', 'Status', and 'Description'. The table contains one record: '160000127280', 'FRONT ST', 'W R ST', '92101', 'NOCO', and 'FRONT & R ST, CLEAN STORM DRAIN NEG'. Below the table, there is a note: 'Map data may not be available for all SAP records.' At the bottom of the page, there are links for 'CityNet Home', 'Synergy Intranet Home', 'News & Events', 'Work Status', 'Map - Status & Inventory', 'About Us', 'User Log', 'Access Log', 'List Users', 'Create User', and 'Top of Page'.

SAP Notification	Street	Cross Street	ZIP	Status	Description
160000127280	FRONT ST	W R ST	92101	NOCO	FRONT & R ST, CLEAN STORM DRAIN NEG

The Intranet application has improved customer service by allowing other City Department customers to easily access work status information as well as a mapping application to display those requests. The site is also helpful by informing other departments of the correct contacts at Street Division for the various functional responsibilities. It is an invaluable tool that assists in the coordination of work within the City.

The Internet application has improved customer service to our citizens by providing an alternative way to request services using a map to identify the exact location of the problem. The system will not only allow them to obtain the status of the work requested, but will also send them a reply email when the work has been completed. They can also get general information about the division and the specific projects in progress.

The City of San Diego, Transportation Department, Street Division is the only location nationwide that utilizes the integration of SAP with GIS technology. The technology has been of major interest to other cities, states and governmental agencies as well as to private companies. The solution has been published in numerous publications and presented at conferences across the United States. It has allowed us to make what we feel is a valuable contribution.



## Benefits

### Improved Citizen Service

The system provides better information to the division's managers and dispatchers, enabling them to answer the caller more efficiently.

### Improved Service To Other Agencies

The system significantly reduces the turn-around response time for information requests from Mayor, City Council, City Manager, and City Departments. Similarly, mandatory information requests from other agencies (e.g. SANDAG, CalTrans, Federal Department of Transportation) are answered in a timelier manner.

### Increased Efficiency

The system increases efficiency, as a result of:

- ◆ Streamlining of the existing processes
- ◆ Electronic routing of service requests
- ◆ Increased accountability (audit trail)
- ◆ Integration between service request systems and inventories

### Comprehensive and Accurate Performance Measures

The Street Division measures its activities, using quantitative performance indices to measure its activities

### Better Control of Planned Maintenance Activities

The system supports the street division's preventive maintenance activities (e.g. periodic inspections, preventive replacement of aging devices).

### Ability To Support Long-Term Expansion

The system is based on an off the shelf ERP solution. As such, it can grow with the City both in functionality and in size.

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