Developing an Enterprise GIS

City of Clearwater, FL

Public Works Administration

Engineering/Geographic Technology

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The City of Clearwater, which is located on the Gulf of Mexico on the west coast of Florida, is the second largest municipality in Pinellas County with over 109,000 residents. The city is approximately 34 square miles with 62 lineal miles of shoreline and waterfront. The city employs over 1600 full-time employees in 25 departments. The Public Works Administration operating budget makes up almost one third of the entire city budget. The Public Works Administration is responsible for the maintenance of all the utilities that the City of Clearwater provides to its residents.

The Geographic Technology Department of the City of Clearwater is a part of the Public Works Department's Engineering Division. Its role is to provide highly accurate spatial and asset information to citizens, city departments, consultants and private business. The department consists of 3 integrated areas: Survey, Design and GIS. The three survey crews are equipped with Leica® Robotic Total stations and are currently in the process of acquiring sub-centimeter GPS equipment. The Design division uses AutoDesk Land Desktop® to create plans for City projects based on the directions of the city's Engineers. The newest division in the Engineering department is GIS, which maintains the spatial data,

produces atlases, and creates custom applications primarily for departments within the Public Works Administration.

The planning for GIS began approximately 3 years ago as a means to better manage the city's spatial data. Previously this data had been created and maintained using CAD applications in the form of atlas books. CAD had been used for this for over 15 years, and while this process was adequate, there were no analysis or management tools. The Geographic Technology Department implemented ESRI® GIS into its business practices to more efficiently serve its customers, improve communications with its citizens and show the complexity of the processes that constitute the Public Works Administration in a simple to understand medium.

When choosing a GIS, there was a citywide consensus to find an "out of the box" solution that was mainstream with a successful track record. We wanted to avoid proprietary software and use something directly off the shelf. This enabled us to find training and support much easier, and provides us with a much larger talent pool to hire from internally and externally. More benefits are derived from using outside consultants with prior ESRI® experience to develop applications and provide general support for GIS projects. We continue to keep this mentality as we design and build new applications. Our GIS simplifies the exchange of data, because all of our applications read the same data

using ArcSDE, which sits on an Oracle 8i Database. This reduces redundancy and data maintenance. Other applications that access our SDE server are: a Billing program utilized by the Customer Service Department, a mail merge application that is used citywide, a future Asset and Land Records Management, both of which are currently in development. The Land Records Application will tie Plats, "As-Built" drawings, Construction Drawings and Ordinances to our GIS data to provide a digital library system. To replace the old CAD atlases, we use the free DSMapbook tool to export our atlas pages to Adobe Acrobat® pdf files, which are then distributed through our custom web application. Some of the types of atlases published are wastewater, potable water, storm water, street address, zoning, land use, city limits and survey atlas.

The Geographic Technology Department manages a large variety of asset data in its GIS. Samples of the infrastructure quantity maintained are over 1,500 miles of pipes, over 10,000 manholes, over 10,000 storm structures and hydrants distributed in and around 460 miles of city streets. The City of Clearwater partners with the Pinellas County Property Appraisers office for parcel line and centroid data. By utilizing the Property Appraisers parcel lines and centroid data we are given the opportunity to QA/QC the line work within the city limits and provide updates to the Property Appraiser. In this symbiotic relationship, the city receives monthly updates from the Property Appraiser and returns parcel

and right-of-way information for updating, which the Property Appraiser then updates to his countywide basemap when applicable. These processes allow for continued advancement in quality for both the City and the Property Appraiser.

The Geographic Technology Department plans to implement and create many new tools in order to increase the quality of its GIS data. As mentioned, future projects include a Land Records Management application using scanned images of Plats, Record Drawings and "As-Built" drawings to be attached to parcels, as well as the implementation of ArcIMS markup tools to reduce redundancy of data creation by allowing employees in the field to enter data and to allow the Geographic Technology Department to QA/QC this data before posting it to our SDE server. Purchasing survey accurate GPS (sub-centimeter accuracy) will allow the survey crews to add attribute information about features in the field while collecting data for design projects. The implementation of Asset Management software will capture asset information that our GIS does not contain. Much of this data already exists, just not always in a digital format. These new tools will put those with the most expertise and experience in terms of these assets in a position to maintain records in a highly organized, easily accessible fashion.

Implementing changes of this nature do not come easily but major change is rarely accepted with open arms. This type of project requires consensus with all departments and a champion to provide leadership and direction. Reasons are simple for embarking on this citywide project and with support from senior management success will be the end result. With the rapid growth of technology came an increase in demand for information that was accurate and accessible. It is the responsibility of our department to ensure quality and reliability of information. This evolution to a more productive and efficient system was not a choice, but a necessity. Populations and organizations not only grow in size over time, they also become more sophisticated in their needs and requirements. As technology continually advances, the demand for improved service mirrors government's responsibility to provide it.

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