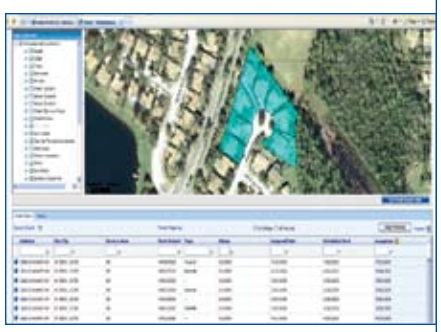
MATURE DATA MANAGEMENT

Modernizing Seminole County's water utility

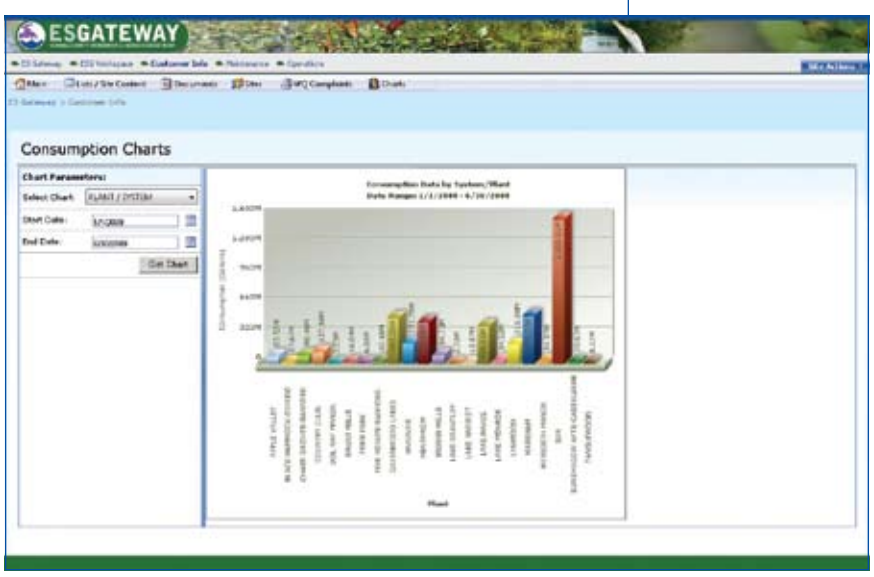
By Margie Dylewski

Florida's Seminole County Environmental Services Division (SCESD) is in the midst of a major capital improvement program (CIP) to upgrade and expand its infrastructure to support current and projected demand for water, wastewater and reclaimed water service. The utility was in need of a tool that improves coordination between vital business activities and increases information visibility and work process efficiency for the SCESD.

A single access point enhances information visibility.



The technology allows toggling between text or map queries.



Users can drill down analysis or enterprise-wide metrics.

In order to meet current and future service demand, some of the following areas needed to be addressed:

- Critical information (e.g., customer information, permits and maintenance records) was stored in database systems with limited access. Requests for data were routed to individuals with access, who were then distracted from their essential responsibilities to compile and distribute information for others.
- Nonsensitive information was stored in a complicated format, requiring system experts to retrieve and assimilate the information.
- Some mission-critical information was controlled by individuals rather than processes. As a result, underlying data was not easily available and often influenced by the "data owners." This masked inconsistencies in the underlying details and added long-term risk to the enterprise by keeping institutional knowledge isolated.
- Several departments responded to evolving business needs by building homegrown, nonenterprise databases. The maintenance of the data stored in these impromptu systems was vital to the continuing success of the enterprise, and maintaining them in a nonenterprise form prevented the introduction of proper security, maintenance and backup procedures. In many cases, there was no single version of the truth because of the disparate systems.
- Due to the heavy reliance on handmade reports and nonenterprise databases, some departments began maintaining separate copies of the same data to suit their own purposes. Over time, this resulted in redundant and inconsistent databases and data sets, plus difficulty in determining which version of some data sets was correct.

To help meet the challenges of the CIP while continuing to provide customer service and comply with regulatory requirements, CH2M Hill and Critigen performed a business process analysis and recommended SCESD look to information technologies for help to build a utility enterprise system. This includes a data warehouse that serves as the foundation for building more efficient work processes through the minimization of data redundancy, assurance that data needed for specific applications or reports is acquired from the authoritative system of record, and the creation of a centralized storage of critical data that is accessible to all authorized users across the enterprise.

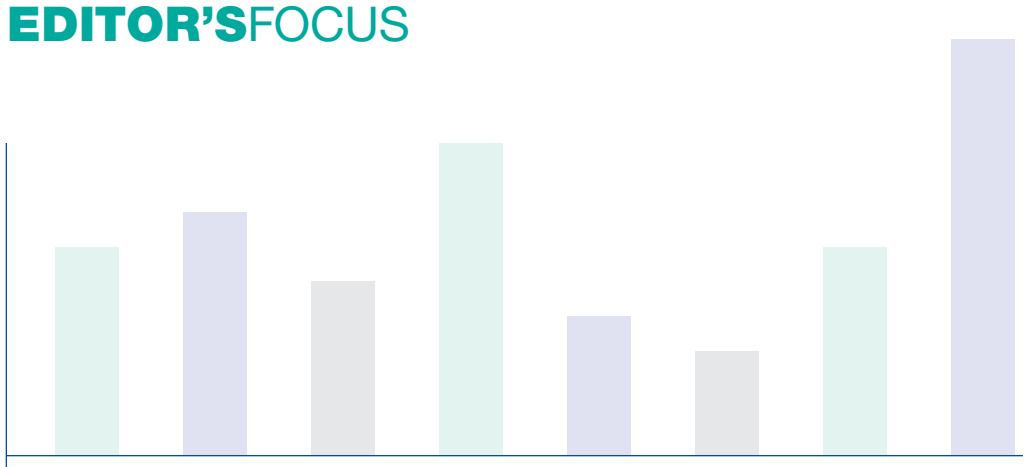
Challenges

Data warehousing is about building a stable library of information compiled from transactional systems. The challenges include understanding the users and building what people need, integrating often disparate data as well as considering data quality and finding workable solutions when integration and data quality issues are encountered. The transactional systems were often homegrown, and duplication of data was evident through the utility.

"The issues we faced are not unique among utility organizations," said Andy Neff, director of the SCESD. "The maintenance of the data stored in impromptu systems was vital to SCESD's success, but keeping it in Excel documents on people's desktops prevented introduction of proper security, maintenance and backup procedures and, moreover, kept us from fully integrating our information with our water and service delivery."

Centralization & Collaboration

The Environmental Services (ES) Gateway is the solution developed to provide centralized access to and collaboration on critical information to the utility. Critigen worked with the user community to design and develop a comprehensive data warehouse and business-intelligent tool that combines many different technologies and goes beyond ordinary data warehouse delivery by providing interaction between



the data warehouse, GIS and collaboration tools. Homegrown applications were brought into the Gateway to provide wider access, change control and data integration and expand on a single version of the truth concept.

Data warehousing often points out the weakness in existing systems and business processes. Critigen was able to help identify areas of improvement and offer solutions for maturing data management within the organization.

"Our activities related to customer information, maintenance, operations and permitting now work in concert," Neff said. "We can be much more proactive in identifying business deficiencies and be far more responsive to impending needs because we can access and visualize all of the information that we need to manage from a single point of entry."

To maximize cost savings and minimize maintenance, Critigen built the Web-based applications using a suite of off-the-shelf technologies to provide map- or text-based analysis, collaboration, work flow, ad hoc reporting, document management and data management. This supports activities related to customer information, maintenance and operations, permitting and other critical utility information.

In developing the ES Gateway, Critigen gave the SCESD:

- Enterprise data warehouse and business intelligence components;
- Choice between map-based or text-based interface that allows users to create dynamic queries and view information for an area or parcel such as customer, maintenance or water operations information and documents;
- Document management, shared calendars, document libraries for team collaboration, rapid storage and retrieval of shared business knowledge;
- Interactive and ad hoc reporting through the data warehouse and real-time systems in a single environment (one point of access to disparate systems that allows users to easily combine information from multiple sources);
- Integration with external systems to gather key performance data to aid users in making informed decisions and improve decision-making by providing access to data not previously available; and
- Easier data maintenance and more efficient processes by migrating homegrown applications into centralized and manageable enterprise applications.

Results

The new technology allowed SCESD to convert three critical nonenterprise databases (customer complaints, water flushing events and lift station inventory) to enterprise systems, and the underlying data was made available through the ES Gateway. As a result:

- Proper security and backup procedures were put in place.
- Data duplication and inconsistency were eliminated by removing the need for multiple copies.
- Access to information was increased by making the data readily available to a wider audience.
- Features were added that were not available in the homegrown systems (e.g., adding workflow to customer complaints and combining lift station details with map locations).

Furthermore, critical data sets used for planning and reporting (e.g., top water consumers, water consumed vs. water permitted, water quality complaints and meter inventories) were established and made available directly through the ES Gateway. As a result:

- This information was made retrievable without the need for requests to individuals.
- The underlying data and logic necessary for those critical reports and decisions was made directly readable by the entire organization, moving important institutional knowledge from individual staff members to the general knowledge base of the enterprise.
- Staff work satisfaction was enhanced by allowing employees to spend more time achieving their work goals and objectives, and less time gathering the necessary information.
- A central access point became available for collaborating and sharing enterprise needs. WWD

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