

## **BIOGRAPHICAL INFORMATION**

Dawn Hilderbrand  
Senior Systems Analyst/Project Manager  
City of Kansas City, Missouri

### Specific Responsibilities

I joined the City of Kansas City, Missouri in 1998. I have been in the Information Technology Department, in the GIS division, for the entire tenure. I have served in a variety of different roles and performed different tasks for the City in my time here. I am currently the Project Manager for an Enterprise GIS project.

### Past Experience

Prior to joining the City, I was employed with the Missouri Department of Transportation for two and a half years in the Office of Transportation Management Systems.

Prior to that I worked for a private company that contracted with counties to implement enhanced 911 emergency telephone systems.

### Educational Information

Bachelor's Degree—University of Missouri-Columbia, Columbia, Missouri  
Master's Candidate—University of Missouri-Columbia, Columbia, Missouri  
Project Management Professional—Project Management Institute

### Professional Memberships

URISA—Urban and Regional Information Systems Association

THE NEW GIS—THE CITY OF KANSAS CITY, MISSOURI  
Dawn Hilderbrand  
City of Kansas City, Missouri  
Information Technology Department  
Communications Center  
1111 Locust St, 3<sup>rd</sup> Floor  
Kansas City, Missouri 64106

Abstract: The City of Kansas City, Missouri has undertaken a major Enterprise GIS Project. The City has recognized the value of GIS data and systems in the completion of City business. The project is further recognition of this value and recognition of the need to improve the position of GIS in the City to further realize the value GIS can bring to the decision-making process. The City will move its GIS environment into the spatial database environment while at the same time improving communications and data maintenance processes. This paper discusses the goals, objectives, and progress made thus far at the City of Kansas City, Missouri.

#### THE CITY OF KANSAS CITY, MISSOURI

The City of Kansas City, Missouri is a largest city within the greater Kansas City metropolitan area. Kansas City is situated in western Missouri on the Missouri-Kansas state line.

The population of Kansas City, Missouri is approximately 441,545 (Census 2000) and the estimated 1999 population of the Metropolitan Statistical Area is 1,755,899. Kansas City proper's landbase is approximately 180,000 parcels, covering an area of approximately 320 square miles.

Kansas City governmental structure is that of Mayor-City Council with a City Manager in charge of day-to-day operations. There are 22 city departments that perform various city functions. The departments include among others Aviation, City Planning, Information Technology, Public Works, and Water Services.

#### GEOGRAPHIC INFORMATION SYSTEMS AT THE CITY

Geographic Information Systems data, software, processes and analyses are used across these varied departments. Several key departments including Public Works, Water Services, City Planning, and Information Technology have full-time GIS staff. Other departments including Health, Environmental Management, and Codes Administration have staff that use significant GIS resources in the performance of daily duties.

## Software

The Geographical Information Systems environment in the City of Kansas City, Missouri is as varied as the departments who use the systems. Software used at the City includes Environmental Systems Research Institute (ESRI), Intergraph, Bentley, and Autodesk. Departments have historically chosen the software they would like to use based on skills, needs, and available tools.

## Data

GIS data is currently stored in a variety of formats in a variety of locations. Parcel boundaries are stored in MicroStation DGN format. This results in the Parcel dataset (as well as several others) being composed of up to 400 separate files. Other files are stored in ESRI shapefiles. Various departments have begun to look toward using geodatabases for data storage. A central file server attempts to house a majority of the commonly used data sets, but many are copied to departmental PC's and servers for use and manipulation. It is often difficult to link GIS data to other City business data.

### LONG TERM OBJECTIVES

- Enhance Customer Service by providing a central “one-stop” repository of geospatial information accessible to all City users and external organizations through browser technology.
- Provide GIS Information for Public Safety by designing data maintenance processes that support the critical requirements of initiatives such as Computer Aided Dispatch (CAD/RMS) and KC Safe City.
- Provide GIS Information for Asset Management by designing data maintenance processes that support asset maintenance and replacement decisions, and further GASB 34 compliance.
- Provide a Framework for Integrating GIS Applications and Data through an architecture that combines geospatial information with operational and planning data for decision making, performance analysis and information dissemination.
- Enhance the Coordination and Communication among all parties involved in creating and maintaining geospatial information.
- Improve Spatial Data Quality Control Processes and Standards as they relate to all dimensions of data quality, with emphasis on data currency, accuracy, completeness and comparability.
- Adopt a Revenue-Oriented Approach to Spatial Information by involving potential external users and their information requirements in the design and implementation stages of the program to increase the potential to generate revenue from the dissemination of spatial information.
- Realize a Return on Investment in GIS technologies by supporting business initiatives that generate defined outcomes and net value.

### THE PLAN

In the year 2000, the city selected a consultant to perform a system analysis and develop a plan for moving GIS forward in the City of Kansas City, Missouri. The resulting work

was compiled into a Strategic Implementation Roadmap that was the draft plan for the City's moving forward with GIS.

The City began using GIS technology in the early 1990's. We needed a plan to move both our technology and data into the 21<sup>st</sup> century. We needed to update our software and hardware environments. We want to move to a database driven data storage system as well as upgrade the software we were using to the latest versions of our software vendors. At the same time, we wanted to improve how we do business. We wanted to make it easier to access and use the data for those who do GIS as their job. We also wanted to make GIS more accessible to those who can benefit from using GIS in the performance of their job duties, such as planners, customer service representatives, and inspectors. That is, we wanted to enable city staff (and citizens) to use GIS as another tool in the process of making better business decisions for the City and for the citizens.

The Strategic Implementation RoadMap was accepted in February 2001. At that time, the City chose to implement a database driven solution that would allow the GIS users in the City to choose the software tools they felt would best suit their needs. The goal was to allow users to be able to access the GIS data without having to standardize on software and without having to have each user translate the data for his/her specific need.

## THE DESIGN

The City chose to issue an RFP for a consultant to design and implement the plans established in the Strategic Implementation Roadmap. The RFP was issued in Fall 2001. A consultant was selected in January 2002. Due to many issues in the city, an ordinance for contract was not put before the City Council until November 2002. The project was dubbed the New GIS and the official kick-off of the design phase was held in March 2003.

The goals of the design phase of the New GIS are as follows:

Short-term:

1. Review and evaluate business plans and processes for any departments that do or may utilize spatial data.
2. Design spatial data maintenance procedures that meet the requirements of City initiatives.
3. Design and prove geospatial system vision for the Enterprise Geospatial Warehouse.
4. Provide an implementation plan for the New GIS.

Long-term:

1. Provide the design and direction for the entire New GIS project leading to a geospatial one-stop environment in the City of Kansas City, Missouri.
2. Develop a funding strategy for Enterprise GIS with particular attention to support for external customers.
3. Support current and future City business processes and initiatives.

The intent of the project is not to simply build a data warehouse and give everyone updated software. We want to truly position GIS to be the foundation of better business decisions in the City. City staff should be able to find and use the geospatial data that they need to perform their business functions. Public Safety staff should feel confident that what they are seeing on their screen is as accurate as it can be. Codes Administration should be able to issue permits to any parcel in the City and feel confident in the address that are assigned. Planning and Development should be able to buffer parcels for zoning notifications and be confident with the results.

In support of these goals and objectives, the design phase of the New GIS project has included tasks conducted over the course of the last year (2003). In conjunction with our consultant, we have met with most of the 22 City Departments to determine their use, needs, and wants for GIS data and mapping applications. Key data sets were examined for quality and completeness. Since the chosen technical path was one of mixed technology (Oracle, ESRI, and Intergraph), a prototype spatial data warehouse was built to prove the concept as well as understand any issues that may arise during implementation. Additional tasks include completion of a logical data model and data migration plan. As mentioned above, the intent of the project is to improve how we do business in the City. As such, data maintenance processes for key data sets were examined and revised, both for improved efficiency and to function within the Spatial Data Warehouse environment. Along the same line, we also examined and devised a strategy to be able to more closely integrate GIS within other business processes and systems within the City (such as work order management, pavement management, and the Land Information/Permitting System).

This phase of the project is nearing completion in January 2004. The final task of the project is to complete and approve the Implementation Planning document. We are looking at various organizational and governance models for the ongoing GIS program within the City. We are looking at different funding strategies. Finally, we are examining different implementation scenarios to determine what can be done within the next phase of the budget (given staff and budget constraints). This task should be completed by the end of January 2004.

## IMPLEMENTATION

The next phase of the New GIS will be to implement the design plan completed in Phase I. The plan is for this phase to be kicked off in late March or April 2004.

The main goal of Phase II is to build and make operational the Spatial Data Warehouse. Key datasets will move through a complete migration and cleansing work stream. Data maintenance environments will be redesigned and implemented. A key component of this Phase will be ensuring adequate staff training to ensure as little difficulty in operating within the New GIS environment as possible.

## BENEFITS

We believe that implementation of the New GIS will bring many key benefits to both City staff and citizens of Kansas City, Missouri.

City staff will be better able to make use of the data and tools in which the City has invested. Departments who have not in the past been able to utilize the data and tools will be given the opportunity to do so. An improved organizational and governance model will allow for better communications among City Departments. We will be able to better understand the business requirements of city departments and external customers. Improvements in our legacy GIS software, processes, and environments will allow for improved methods of doing business in the City. Storing data within a spatial database will allow for the implementation and enforcement of standards, as well as remove redundant processes resulting in the maintenance of multiple copies of data sets. We will have a stronger business strategy for GIS in the City of Kansas City, Missouri as well as be able to better justify budget requests and expenses.

## MOVING FORWARD

Phase I is scheduled to be completed by the end of January 2004. We will then begin work toward the kick-off and execution of Phase II of the project. By April of 2005, the intent is to have a functional Spatial Data Warehouse, conversion and migration of key data sets, trained staff, functioning shared geoprocessing tools (through browser technology), and an improved organizational model (along with improved cooperation and communication among departments). We will then be in a position to continue with the New GIS in the City of Kansas City, Missouri. We will be able to add more data sets to the warehouse environment and provide more tools and data to City Staff and citizens. GIS will be truly positioned to support better business decisions in the City of Kansas City, Missouri.