

D. Hilderbrand
City of Kansas City, MO
Paper 1850

Enterprise GIS at the City of Kansas City, Missouri

Author: Dawn Hilderbrand

Abstract: The City of Kansas City, Missouri has long been a player in the GIS field, however, not always in a coordinated, Enterprise manner. The City is currently in the process of designing and building such an Enterprise System. The intent is to bring GIS into the forefront of enterprise applications to enable better business decisions to be made by the City. Outdated applications and data storage and access solutions will be updated. Business processes and applications are being evaluated for potential improvement. The goal is not just a technology update, but also an improvement in processes and methods, resulting in better services to the citizens of Kansas City. The presentation will discuss the history and progress of the project as well as plans for moving forward with GIS at the City of Kansas City, Missouri.

GIS in Kansas City, Missouri

The City of Kansas City, Missouri has been involved in Geographic Information Systems since the early 1990's and before. We have made tremendous progress in our efforts to utilize GIS throughout the City. However, the development and growth of GIS has been generally departmentalized. That is, several different departments within the City have incubated GIS from within each individual department. While we do share data and some processes, most departments have traditionally been concerned about what happens within each respective department. Our departmentalized GIS has allowed the propagation of several issues that have hampered GIS growth for the City as a whole. Beginning in about the year 1999, we began to consider changing our methodology concerning GIS. We began to consider an Enterprise GIS approach.

The City of Kansas City, Missouri

The City of Kansas City, Missouri is situated as the largest incorporated area in the greater Kansas City metropolitan area. We have a population of over 440,000 (out of the metro population of over 1.7 million). Our land area is comprised of approximately 180,000 parcels over 320 square miles covering parts of 4 counties. We are governed by a Mayor/City Council form of government with a City Manager in charge of daily operations. The functions of our city government are currently divided among 23 departments.

Our Current GIS Environment

As mentioned above, GIS has grown up in various City Departments. As such, each department has in the past been free to choose the software they would like to use. This has resulted in various softwares being used throughout the City for GIS.

The variety of software has resulted in a variety of data formats. The data originators keep data in a proprietary format. Someone else converts the data to a different format and begins maintaining attributes and geometry in that format. Then another department

does a different conversion. In our current file based system, we have two copies of most of our data sets to accommodate the different file types required by the users.

Those users reside in the various departments and have varying levels of skills and demands for GIS. Some departments like Public Works, Water Services, and Information Technology have dedicated GIS staff. Other departments such as Health, Neighborhood and Community Services, and Codes Administration use GIS data and applications in the performance of their daily duties. Still others simply use a web map to gather information they may need.

As mentioned in the introduction, our current GIS environment has produced several issues that we intend to resolve by moving our GIS into an Enterprise based environment.

1. Lack of a Business requirements model.
Departments have been using and administering GIS on their own, sometimes collaborating with other departments and sometimes not. We have had difficulty in understanding what the business needs for GIS comprise for the City as a whole.
2. Legacy Infrastructure.
Our hardware and software has become outdated. We need to move to the more current versions of vendor packages. We need to move our data out of a file-based system and into a database. We need to train our people to be more current with GIS technologies and applications.
3. Lack of data standards.
Because the departments are often working on their own, data is held in many formats and styles. One department keeps parcels with 5 attributes. A second department adds 5 more and so on. The originating department may decide to change a field without consulting any other department.
4. Redundant processes
Departments are copying and maintaining the same data sets several times over. Many copies results in lack of trust in any one copy, resulting in the next department keeping its own copy.
5. No business strategy model
We have not had a coordinated methodology for moving GIS out into the organizations.
6. Lack of adequate funding
Without a business strategy and coordinated efforts, departments often end up fighting for funds that could be better used if pooled rather than contested and closely guarded.

What we have accomplished

In the year 2000, we hired a consultant to help us put together an Implementation Plan for upgrading, enhancing, and “Enterprising” the GIS environment at the City. The acceptance of that plan resulted in the decision to pursue a database-based GIS environment. The City’s unique caveat was that we were going to allow departments to

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continue to utilize their own software of choice. We would make the system work at the database level.

Our long-term objectives of the Enterprise GIS project are as follows:

- 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.

After approval of the implementation plan, the City issued an RFP for a consultant for the design portion of our Enterprise GIS project. We selected a vendor and work began in January 2003. The project was named the New GIS and we held an official kickoff in March 2003.

The short-term goals of design phase were as follows:

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 the geospatial vision for the Enterprise Geospatial Warehouse.
4. Provide an implementation plan for the New GIS.

During the design phase of our Enterprise project, we completed several tasks that will lead us to an implementation of our Enterprise GIS system. These tasks included among

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others: review of business practices; data quality review; database prototype; data maintenance environment planning; and planning for the implementation.

As the design phase of the project neared completion in November 2003, concerns were raised about how we were planning to implement and support our planned system. In early April 2004, the City Manager made the decision that the City would migrate all of our GIS to a single platform. We have since proceeded with the New GIS project in that manner.

Benefits of an Enterprise GIS

We believe the benefits of an enterprise GIS will be substantial to the City of Kansas City, Missouri. These benefits include:

- Removal of redundant and duplicate processes and procedures.
- Potential for increased revenue from better processes and better data availability
- Better use of tools and technology in which the City has invested a great deal of time and money.
- Increased access and use of GIS among City departments.
- Improved organizational and governance model.

We are looking forward to the realization of these benefits as well as many others. One of the key benefits and successful outcomes of our enterprise GIS will be increased usage and access to the City's GIS by both City staff and the citizens of Kansas City, Missouri. We want to enable better business decisions and improved outcomes through the use of GIS. Ultimately, GIS must be tied to the business needs and priorities of the City and the citizens to be successful.

Where are we going from here?

We are moving forward with our implementation plans. We are currently trying to reach agreement with a vendor on a statement of work for the implementation phase. We hope to reach that agreement by mid to late summer 2004. Once we agree on a statement of work, negotiate a contract, and receive City Council approval, we will start work on the implementation. The major goal of the implementation phase is to build our Enterprise Geospatial Data Warehouse. Departments will be migrated to a single vendor GIS platform. Data will be migrated from the current file based system into the database environment. Key to the success of the implementation will be the proper training and preparation of our staff. We will be working hard to make sure that everyone receives the appropriate amounts and types of training to contribute to the success of our project and the City as a whole.

Following the completion of the planned implementation, we will continue to build upon our successes to increase the success, access, and use of GIS at the City of Kansas City, Missouri.

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Author Information:
Dawn Hilderbrand
Sr. Systems Analyst/GIS Project Manager
City of Kansas City, Missouri
Information Technology Department
1111 Locust St, 3rd Floor
Kansas City, Missouri 64106
Desk: 816.513.3731
Fax: 816.513.3620
Email: dawn_hilderbrand@kcmo.org