Un-Siloing Land Data Bases

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BIOGRAPHICAL INFORMATION

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Specific Responsibilities

Mr. Shepard joined Wilbanks Resources Corporation (WRC) in January, 2004. He is responsible for the administration and operation of land rights acquisition for multiple public utility, natural gas and oil pipeline and communication company projects and base load work.

Experience – 35 Years

In addition to Mr. Shepard current position with WRC he worked for Sempra Energy, parent company for San Diego Gas & Electric and Southern California Gas Company, both regulated utilities. He additionally worked for non-regulated affiliates Sempra Atlantic Gas (Halifax, Nova Scotia) and Sempra Energy Resources. He has had extensive experience in the areas of Customer Service, Operations, Engineering, Facility Operations and Land and Real Estate Services.

Educational Information

- ◊ BA - Public Administration, Land Planning and Urban Studies, San Diego State University
- ◊ MA – Public Administration, California Desert Conservation Plan, Utility Corridor Study, San Diego State University
- ◊ Certified Facility Manager – University of California, San Diego
- ◊ Certified Plant Operator – University of California, San Diego
- ◊ Certified Property Manager – Institute of Real Estate Management
- ◊ California Real Estate Broker

ABSTRACT

Large un-integrated land databases are cumbersome, prone to duplication and errors. They are difficult to sort and use in order to strategically plan for the future. Multiple databases must be digitized, integrated and made readily available in a common viewing package. Smaller, more manageable integrated databases are critical in order to graduate from a GIS mapping tool into a GIS analytical problem solving organization, able to directly impact an organization's bottom line.

INTRODUCTION

As the pace of business becomes more and more rapid and the demands upon employees becomes grater and greater the need to process information at a much faster pace is critical to the success of the employee and the organization. Those companies or agencies that are not fast on their feet will be left behind in the dust of those organizations running faster towards effectiveness and efficiency.

One way to help with the processing of critical information in order to serve our customer and clients, whether they be in-house or outside the organization is an integrated GIS system for managing, accessing and processing that information. A critical component of doing that well, is deciding just what information is relevant and how do we integrate all this generally siloed information. Like everything else not all information is equal.

Most large companies that have been in business for a number of years have by now collected tons of data, much of it informative, much of it very necessary for the successful operation of their business. Much of it however is just so much paper! With that said the questions that come to mind are, "What data is useful?" "Can and should text and spatial data bases be integrated?" "How do we use GIS data as we go forward to improve the profitability or efficiency of our business or agency?'

KEY REASONS FOR FAILURE

Technology or software applications are rarely the reason for GIS system implementation failure. There are many excellent software and hardware platforms available in the market place. Most of them work very well. Surprisingly the primary reasons for failure are operational or organizational and include:

- ◊ Lack of operational readiness for change or implementation
- ◊ Insufficient management support for necessary and sometimes painful change
- ◊ Lack of clear understanding or alignment with corporate goals
- ◊ Insufficient sponsorship and end user involvement
- ◊ Unrealistic expectations
- ◊ Multiple fragmented, un-integrated and siloed data bases

KEY CHALLENGES

Of all these potential failure points, probably the greatest challenges are associated with bringing the organization to a common understanding and expectation of the final outcome and performance of the GIS system implemented. A leadership program, communication and definition outcome, etc, addresses those challenges. Both software and hardware also play a key role in the final system performance, ability to expand as the business grows and ultimate value it can add to the bottom line of the company or agency. Some key considerations for success include the following:

- ◊ Development of a well thought out GIS leadership program
- ◊ Broadly communicating a clear and compelling reason for implementing a GIS system and a **well defined vision of the future outcome**
- ◊ Ensuring that all stakeholders understand GIS applications
- ◊ Early communication, training and single point of contact for land data management
- ◊ Identification of the most important and critical data

KEY ISSUES

In my experience there have been four major issues that need to be addressed early on in order to enhance the opportunity for a successful GIS application. A decision needs to be made about the primary use of the system. "Will it be a mapping tool or a tool to provide analytical problem solving value to the organization?" In my opinion to use a GIS application for only mapping purposes is like driving a Formula One race car 25 miles and hour down the speedway. In fact, once the system is up and running reliably, it is best to put the ability to create and print maps directly in the hands of your internal customers. If you do not do so, the GIS support organization becomes an "order-taker", and can become inundated with customer requests where no real problem solving will take place.

Back to my earlier comments regarding data bases. Most organizations have a variety of data sources and types. Land data bases can be multiple and enormous. Four million or more documents in a single data base are not unusual. Neither is it unusual for an

organization to have several silo data bases, many with duplicate information which creates a high potential for error or conflicting data. So, how will your new GIS installation handle the data? Accessing multiple data bases or do you "mash" it all into a single data base? It is a tough question and unfortunately there is no single correct answer. Each organization must evaluate and decide what is best in the long run for the organization. The mistake is not which is preferable, but making a convenient and short term decision. A convenient decision will cost more money and time in the long run and may result in the failure of the GIS effort.

Another key issue that needs to be address early on is ease of system use by the end user. To ensure the widespread use and maximum benefit to the organization the user viewer package must be easy to use. Remember, most individuals are very comfortable with their personal and business software packages on their computers. When you go beyond that many get lost and frustrated. The more familiar the user package appears, the more comfortable people will be using it and consequently the organization will see more direct value from it.

APPLICATIONS

For almost 30 years traditional GIS applications have been two dimensional maps, databases, software and hardware have not been user friendly and have required specially trained operators. GIS applications have been largely oriented towards large scale projects and mapping data sets such as demographics, land uses and constraints, topography, environmentally endangered species and habitats, air quality zones, etc. All of this has been extremely useful information and has formed the foundation for the next millennium of applications.

Consider three dimensional visual viewing packages, possibly holograms. "What if" diagnostics and predictability applications in land use, business processes and equipment performance. How about testing equipment performance and diagnostic metrics to compare life cycle operating and capital costs or managing thousands of miles of utility transmission line or pipeline performance real time, balancing loads and demands for optimum performance and profit.

GIS MYTHS

There are a lot of myths around GIS applications and many of them keep organizations from embracing GIS as a serious analytical tool they can afford to purchase and maintain. To name a few:

- ◊ It is too expensive - $5 to $10 Million
- ◊ It is to difficult for lay people to use – requires a specialist
- ◊ Takes too long to put in place – two to five years
- ◊ Impossible to fully integrate multiple unrelated data bases (land, facility, HR)
- ◊ It is just a mapping tool
- ◊ As soon as it is installed and running, both the software and hardware are out of date

Well, some of these are legitimate concerns, particularly the last one. How many times has an organization invested hard earned funding into a system that later is not supported? "Burned once, shame on you; burned twice, shame on me." Generally organizations are very reluctant to come back.

On the other hand, investments into good systems that have been well conceived pay off for the organization many times over in the long run and much of the time the investment can be shared as I will show in a case study of the San Diego Association of Governments. With the proper front end user package and proper training the lay person can easily use the system to create maps and perform analytical problem solving. It is never too late to start and many benefits can be immediate. The concern over the integration of multiple data bases once broken down is not that difficult. You do not necessary want to integrate all your silo databases, only those that make good sense and use of the GIS system capabilities. Some you only need to be able to access as needed, so "hot link" them. The key is to eliminate points of duplicate information and entry of that data wherever possible. GIS is much more than merely a fancy mapping tool.

CASE STUDY #1 - MISSISSIPPI DEPARTMENT OF TRANSPORTATION

Problem – The Mississippi Department of Transportation needed to share up-to-the-minute traffic information to commuters in order to avoid accident sites, re-routed traffic, closed roads and weather conditions.

Objective – Provide on-line map based GIS traffic overview. access to local news channels for up-to-the-minute news broadcasts and local weather conditions.

Solution – Commuters are now able to log on to the Mississippi Traffic Watch in order to obtain a real time view of their pending drive to and from work. Additionally they can watch a real time video feed showing current road and traffic conditions. The monitoring cameras also allow Traffic Management Center Engineers the opportunity to monitor and respond immediately to problems such as accidents or environmental spills on the road, when the Highway Patrol and Ambulance Services arrives, wreckers and tow trucks.

Generally they see the accident as it occurs or it's immediate after affects. Additionally the system allows them to monitor and control traffic lights via fiber optics.

Value Added – GIS system integration with remote camera monitoring is directly responsible for making existing Mississippi highways more efficient and safer, saving lives, resources and money for the state.

Reference – www.mstraffic.com, www.maris.state.ms.us/HTM/about.htm

CASE STUDY #2 – SAN DIEGO ASSOCIATION OF GOVERNMENTS (SANDAG)

Problem – As a result of the enormous growth pressures in San Diego County, the government and private sector organizations require continuing higher levels of demographic, economic and land use data in order to manage that growth. Building such a regional integrated database is expensive and time consuming.

Objectives – The development of integrated databases through cost effective partnerships with state, Federal, local governmental agencies, academic institutions and the private sector spreading the cost among the partnership organizations.

Solution – The SANDAG partnership efforts have been completed and multiple land use, economic and demographic databases have been integrated and are currently in use. This multi year effort has resulted in uniform information such as satellite imagery, digital elevation models and contours, digital imagery from aerial photography, County of San Diego income information from tax returns, utility systems, County Recorder information, land and environmental constraints, traffic flow information and Emergency Operations information coordination (earthquakes, firestorms, etc.)

Value Added - Ten important guidelines for creating successful GIS partnerships.

1. Find a champion.
2. Meet multiple agency/organizational needs.
3. Document the database and development process.
4. Implement outreach and education programs.
5. Establish flexible partnership contributions.
6. Formalize commitment from partners.
7. Get partners involved and keep them involved.
8. Ensure neither limitations nor restrictions on use.
9. Stress quality control above all else.

10. Develop a mechanism for handling information requests from non-partners.

Reference – San Diego Association of Governments www.sandag.cog.ca.us/

CASE STUDY #3 - PROGRESS ENERGY FLORIDA

Problem – How to electronically consolidate and integrate multiple dispatch centers to improve overall customer service and minimize outage duration during emergencies.
Objectives – Achieve an integrated GIS application to manage facilities (poles and wires), automated outage management, mobile work force management and automated vehicle technologies through a single dispatch center.

Solutions – Beginning in 1997 PEF began the transition from non-digital information systems to a GIS digital environment. Now when customers call to report outages their location is automatically identified in their Customer Information System and linked with the Outage Management System which then pinpoints the line, transformer, fuses, etc. serving the customer.

The map screen has several layers of critical information including local road networks and can be viewed via lap top computers located in each of some 150 trouble vehicles. Necessary work orders are then dispatched, again via lap top computers. The crews then have access to all the information they need to perform their restoration work. In addition, the dispatchers always know each Trouble crews location and status allowing dispatching of available resources to the most critical locations.

Value Added – PEF's outage management system has become so efficient that the utility was able to consolidate three dispatch centers into a single Distribution Control Center. During Tropical Storm Gabrielle in 2001 PEF's automated GIS systems enabled the utility to quickly respond to power outages and restore system integrity.

Reference – Progress Energy Florida www.progress.energy.com/

FINAL THOUGHTS

To conclude there are some important things to take away. You do not need to be a GIS wizard to understand the potential benefits of this technology and like it or not it is here

to stay. I think I can safely predict that it will become an even more critical component of our information society as we enter this century.

If your organization does elect to undertake the integration of a GIS system into the business decision making processes then I strongly recommend the following:

- ◊ Energizing the organization beyond the glitter of the technology.
- ◊ GIS technology is the tool to help solve, not the answer to organization problems and issues.
- ◊ Ask yourself before you start, "What is the degree of change readiness within the organization?"
- ◊ What specific programs/databases are needed to insure success?
- ◊ When you provide a well defined Vision of what the future could be and the value added to the organization, you lay the foundation for successful implementation.
- ◊ Successful implementation will drive down costs, increase profits, improve operational effectiveness and directly improve the bottom line.

Time and again it is the lone champion of a GIS system that creates a history of successful applications in an organization which has a greater impact than a legion of committee members attempting to solve all the problems of an enterprise in just the design phase of a project during the same span of time. Small success with good planning can lead to bigger organizational implementations in the future.