

BIOGRAPPHICAL INFORMATION

Phil Meuret
GIS/SAP/Mapping Manager
Valero Logistics Operations, L.P.

Specific Responsibilities

Present GIS Manager Valero Logistics Operations, L.P. Responsibilities include supervision over staff of five in addition to the management of Valero LP's GIS, SAP, and MOC groups. Oversees all data related to the engineering, reliability and integrity of Valero LP's 9,000+ miles of pipeline.

Past Experience

2002 – 2005 GIS Supervisor for Valero Logistics Operations, L.P. Responsibilities include supervision over staff of five in addition to the management of Valero LP's GIS, SAP, and MOC groups. Oversees all data related to the engineering, reliability and integrity of Valero LP's 9,000+ miles of pipeline.

2000-2002 GIS Supervisor for the San Antonio Water Systems. Responsibilities included the supervision of 8 employees and ensuring that all water and sewer maps were current. Responsible for developing a plan to convert SAWS utility maps from a CADD environment to a ARCGIS environment.

1996 – 2000 At Apex Data Services, I worked as a QA Manager, Assistant Project Manager and a Project Supervisor for various electrical, gas, and water GIS projects. Responsible for the management of utility GIS conversion activities, raising invoices, training production staff, testing GIS software, and was the primary contact point for the client and production facilities.

1993 – 1996 GIS Technician for the Brazos County Road & Bridge Department. Responsible for implementing a GIS system and work with local agencies to create and apply a plan for a county wide base-map using GPS.

Educational Information

BS Degree – Geography - Texas A&M University

BIOGRAPPHICAL INFORMATION

Pedro G Carrizales
I/S Specialist
Valero Energy Corporation

Specific Responsibilities

Joined Valero Energy Corporation in April of 2000. Primarily responsible for assisting the Valero LP GIS group with their GIS environment. Provided guidance in the implementations of our GIS application (ValGIS) and the integrity management interface. Currently, evaluating integrating the Right-Of-Way department into our GIS application as well as assisting in integrating the newly acquired Kaneb assets. Developed project documentation from an Information Systems perspective to accommodate the business requirements of Valero LP.

Past Experience

Worked as a Business Analyst for PG&E Gas Transmission, Texas from June 1998 to April 2000.

Educational Information

B.S. – Computer Engineering, St. Mary's University, San Antonio, TX

ValGIS: A STEPPING STONE INTO OUR FUTURE

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Abstract

One of the biggest challenges facing growing corporations is maintaining multiple data sets and treating data as an asset. This presentation will give an overview of Valero Logistics Operations, L.P. (Valero) current GIS environment, discuss its criteria for selecting a database model and a “Best in Class” software solution, and demonstrate how that software interfaces with other systems, such as Enterprise Resource Management, Document Management, Integrity Management, In-line Inspection data, and Cathodic Protection. Valero will show how it used web services, XML, and data transformation packages to integrate these systems with the GIS database and ensure vendors adhered to its Corporate Data Standards. Using these technologies, Valero conquered the challenges of managing data using the following requirements:

- Providing Web interaction to real time data
- Allowing easy integration with “Best in Class” solutions through open environments
- Supplying a centralized database
- Providing company-wide access to information for prompt, accurate decisions
- Creating up-to-date alignment sheets with ease
- Enabling the user to query data
- Preserving historical records
- Eliminating data redundancy

If you are facing these problems, see how you can leverage a GIS environment to help you prepare for future growth, government compliance, and improved workflow.

Introduction

Like so many companies in the “new” business world, Valero Logistics Operations, L.P. (Valero) has grown through acquisitions. Many of these additions happened so quickly that Valero hardly knew what hit it, much less how to administer the new and varied data. This increasingly complex data also meant that Valero needed to ensure compliance with state and federal regulations of its existing and new assets in a timely manner. As a result, Valero was faced with a major challenge on how to manage and use the existing data, position itself better for future growth, and meet state and federal regulations. With so many departments, data, and differing opinions on how to name, store, and access this data, the question remained on how to

ease the data traffic jam. After months of discussions, research, conferences, and debates Valero chose to implement what turned out to be a wise decision: employ an Enterprise GIS system. This paper will discuss Valero's process of selecting a GIS solution, the steps taken to ensure data integrity, as well as how it has prepared itself for the future.

Before Enterprise GIS

Simply put, before Enterprise GIS, things were a mess. Creation of maps, sets of data, and reports were created separately throughout the company, causing confusion, delays, and extra cost in trying to reconcile these differences each year. Because of this non conformity, people referred to the same data in different ways. Mapping, accounting, corrosion, property tax compliance, Integrity Management, ROW, as well as many others would all have different names and definitions for a pipeline system. Valero began to see the need for a centralized repository to standardize all data.

Getting Specific / Questions Arose

Valero clearly saw that there was a lack of communication within the different groups. As Valero analyzed the situation, it discovered that the best way to increase communication and decrease redundancy was to create a centralized data repository to store all its pipeline information. However, Valero wondered how it would accomplish the following:

- Manage and use the existing and new datasets
- Accomplish the goal of centralizing our data
- Standardize the data
- Ensure we are meeting federal and state regulations and able to meet future regulations
- Eliminate redundancy
- Make the data available to the Valero as a whole

These questions required serious consideration. As a result, Valero decided to do more extensive research. It performed a number of tasks to determine what was in its best interest. The biggest push in the right direction came when its employees attended the GITA Oil & Gas Conference in 2003. It is there that Valero became aware of a pipeline data model and decided to implement a pilot. It then reviewed several vendors to select a "best-in-class" solution.

Business Requirements

By way of this research, it became clear that Valero needed an Enterprise GIS. Valero's business requirements for an Enterprise GIS consisted of the following:

- Providing web access to data
- Having alignment sheets with up-to-date information
- Enabling easy integration with third-party software
- Generating detailed reports quickly
- Allowing for corporate wide access to information
- Maintains historical data

- Implementing naming standards
- Reducing the amount of time required to gather field data and automate the process of data preparation

Valero's goal was to reduce the time it took to gather field data and automate the process of data preparation. As a result, redundant data would be eliminated and its new data set would be reusable. Additionally, the Enterprise GIS would increase its interdepartmental communication by providing more accurate reports quickly.

Selection Process

Based on Valero's requirements, it elected to review GIS conversion companies that used an industry standard database model. The database model is based on a consortium of pipeline industry representatives with the purpose of identifying standard pipeline operations data elements such that applications with varying functionality could be developed against a common data model for integration purposes. Valero decided on a vendor that provided all the services it was hoping for such as an industry standard data model with a stable front-end solution that utilizes existing ESRI API's.

Making the Case

Benefits were measured in quantifiable terms of dollar value and/or time saved or non-quantifiable terms of quality, efficiency, and service. In this analysis, potential GIS uses were identified, and the potential benefits were estimated or defined.

COST/BENEFIT NUMBERS

Benefit/Cost* Description

7/1	Maps extremely difficult to produce without an Enterprise GIS due to poor or no systems in place.
4/1	Create a common system when data is shared
3/1	Automated map updates
2/1	Planning and Engineering
1/1	Computer aided mapping only

** Benefit/Cost numbers were taken from web site <http://tsc.wes.army.mil> (The CADD/GIS Technology Center of the DoD. The "Center" is located at the U.S. Army Engineer Research and Development Center, Information Technology Laboratory, Vicksburg, Mississippi.*

Data Conversion

After receiving approval, Valero faced a new hurdle. The initial step to creating a successful GIS environment pertains to data gathering. It had to identify all the data sources, determine which data was the correct data, update its existing alignment sheets, and ship them off for conversion. This process was a gruesome effort, which was facilitated by the staff of Valero. It had to interview the personnel that maintain all of its systems ranging from Cathodic protection to Right-of-Way to SAP to One-Call. Once the data was evaluated and Valero determined which data was the correct one, it took its existing alignment sheets and red-lined them. Employees

physically took a pen and marked all the missing or needless information on the alignment sheets. They changed the names to fit Valero's new naming structure. Once the red-lining was completed, Valero submitted its changes to its vendor for them to capture the data in their PODS data model. After completion, quality assurance took place, an important step to ensure data integrity.

Information Systems Role

A critical point that many organizations leave out is the involvement of their IS personnel. With their assistance, a company can better calculate system requirements, gain technical knowledge, and have a support staff to help the company understand problems in its GIS platform. The IS role for Valero was extremely important. Since the IS department was able to determine what needed to be extracted from systems, how to extract them, and how to create reports.

Valero is a company that uses an Enterprise Resource Planning system to track its everyday business. It is used to track preventive maintenance tasks, work orders, accounting, billing, and other tasks. As such, it was decided that its ERP system would be the system that would dictate its pipeline hierarchy. The ERP came up with the naming conventions for the pipeline systems and segments as well as the equipment. To interface those names with the GIS environment, an extract had to be generated from the ERP system and imported into GIS. Valero chose to implement a Web Service that is called from its GIS application. This web service provides GIS an XML file that has the pipeline hierarchy and equipment information.

The GIS application was configured to accept this XML file and compare its existing data to the file. Any new, changed, or deleted records are displayed on a screen for the GIS administrator to accept or disregard before entering into GIS.

One of the groups receiving emphasis from the regulators is the Integrity Management Program. They require a great deal of data to be entered into an IMP application to generate risk results to present to regulators. Data ranges from cathodic protection readings to One-Call data to HCA locations to ILI data. Valero decided to use GIS to house all this data and feed it to IMP whenever it needs it. Storing the data in one database ensures that the data is up-to-date and there is only one source for this data. There is no more searching around for rectifier readings and locations, and everyone refers to the pipeline system the same way. One of the unique things about the GIS application is that it allows for a new segment type, called a testable segment, to be created. Creating these segments provides the flexibility needed by IMP to refer to segments from trap-to-trap and not pump station-to-pump station. Once the testable segments were created, Valero created database views in our GIS that interfaced with the IMP models. These views were a one-to-one mapping of the variables in GIS and Integrity Management. The creation of the views do the following: it allows IMP to get the latest data with ease, and it provides the ability to query certain segments as opposed to getting everything in GIS.

As mentioned earlier, GIS houses Valero's ILI, cathodic, and One-Call data. These are done uniquely, but with ease again allowing for all the data to reside in one central point. ILI data is "stretched" through the GIS application so that the welds match up with a corresponding valve in GIS. When processed, Valero generally yield 95% or better accuracy on the stretching providing adequate information for its integrity engineers. The cathodic protection data is stored in a non-

relational database that provided two new challenges. First of all, how does Valero extract the data out from this “old” technology, and second of all, how does it ensure that the names match its GIS names. For cathodic data, it was decided to use the names from the cathodic protection database since this information is not stored in the ERP. Rectifiers were given a unique name in the system, but test leads had to be renamed to create uniqueness. Once the naming standard was decided, Valero decided to export the data in an XML format and modify the GIS application to accept this data. Like its ERP interface, when the XML file is processed it gives a list of rectifiers and test leads that are new, changed, or missing. In addition to the names of the rectifiers and test leads, GIS also stores annual survey inspection data. The data from the One-Call system is extracted along with the LAT/LONG coordinates for the ticket. The data is converted to a shape file, set up as a layer in the GIS application and processed to notify Valero of the areas where it is getting a large number of calls.

With all the data housed in one location, Valero is able to generate alignment sheets with accurate data. When generated, these alignment sheets are stored in Valero’s file storage system. Using the file storage system provides the ability to version, edit and change its alignment sheets while keeping a historical record of them. The GIS application had a built in module to interface into Valero’s file storage system, and all that was required was reserving the necessary space to save these sheets.

Results

Valero is infinitely better off thanks to its Enterprise GIS. It is able to now overlay massive amounts of data – ILI data, HCA data, One Call data to enable its IMP engineers to make intelligent decisions on the need to repair or replace pipe, add pipeline markers, add automated block valves to reduce number of HCA’s, and the list goes on and on. Valero is able to generate reports for property tax division to help determine the number of feet of pipeline it has in all school districts it crosses. Valero is using it to help determine best routes for pipelines. The results are exciting as it find more and more GIS uses for this Enterprise GIS.

Conclusion

GIS is an exciting, fast moving field. Valero has chosen to grow rapidly with it. Enterprise GIS has enabled better conformity and communication in the corporate realm which has led it to the conclusion that it was a great call for Valero. Implementing the Enterprise GIS also allows its future to have great possibility. As needs arise such as Operation and Maintenance forms, hand held data entry, and the creation of a standardized data dictionary for use in new construction so that this data can easily be assimilated into our system, – all of these challenges will have solutions because of Valero’s Enterprise GIS.