

BIOGRAPHICAL INFORMATION

Frank Fata
Director, Operations Solutions
JCMB Technology Inc.

Specific Responsibilities

In his current role, Frank is chartered to leverage national best practices to deliver industry-leading solutions for JCMB's utility customers. He draws on technical expertise to help clients reduce operational risk and gain a competitive edge by exploiting technology to improve their business processes.

He is responsible for solutions strategy, business development and client relationships built around the full array of JCMB's software and Data services portfolio.

Past Experience

Prior to joining JCMB, Frank held increasingly responsible positions in real-time systems software engineering, support and pre-sales. Although his primary focus was on new business development, Frank expanded client solutions to include consulting, systems integration and special projects for major clients in aerospace, defense and other mission-critical industries.

Educational Information

B. Eng. – Electrical Engineering, University of Quebec.

Professional Memberships

GITA
IEEE – Power Engineering Society

Prepared for the GITA 2005 Conference – Denver, CO.

Presenters:

Frank Fata
Project Engineer
JCMB Technology Inc.
195 St-Francois Xavier
Delson, Quebec, Canada J5B 1X7
Telephone: (450) 632-5844 (ext) 228 – Fax (450) 632-3207
E-mail: frank.fata@jcmb.com

Joe Pellissier
Project Manager, GIS & Distribution Technology
Sierra Pacific Power Company
One Ohm Place
Reno, NV 89502
Telephone: (775) 834-3252 – Fax (775) 834-3895
E-mail: jpellissier@sppc.com

Data Intelligence – The Basis for Successful Application Deployment.

Paper Presentation

Audience Rank: Advanced

Learning Objectives

The importance of Data quality regarding complex system deployment
The benefits of a unified, centralized and connected Data Model
The methodology behind exploiting data in order to derive Data Intelligence

Topic: Operations Management

Industry: Electric, Gas, Water Sector

ABSTRACT

Mobile Computing, Outage Management Systems (OMS) and AM/FM (Automated Mapping & Facilities Management) Systems are all dependant on precise, accurate Data to ensure total network connectivity. Without proper connectivity, any investment in these systems cannot realize its full potential.

More and more utilities are rapidly investing in a number of these systems in order to improve operational efficiencies. However, in many cases, the utility is not aware of the importance of Data integrity and mapping accuracy until their project is well underway. Accurate Data with proper connectivity is the foundation upon which OMS, AM/FM, and Mobile Computing systems are built. Without a precise Data Model, the benefits realized are suspect.

Data Intelligence is achieved when the usability, accessibility and accuracy of Data successfully drives complex systems.

This presentation will discuss the experiences of one Utility Company, which evolved from a manual paper-based process to a completely unified and connected Data Model. We will examine the process, assess the results and recognize the value of the best practices this utility was able to derive.

INTRODUCTION

Few would disagree that a utility that is migrating their mapping information from a paper-based method to a database-driven intelligent system, is headed in the right “direction”. To add momentum to this philosophy, budgetary funding usually favors projects with technical merits associated to a streamlined, paperless process.

It sounds like a win-win situation for the utility and their vendor; and it usually is, for the short term. However, troubles arise when the applications do not perform like the sales demo, and the project delays eventually point to the Data. Ideally, the Data deficiencies must be identified and dealt with as they arise, otherwise any attempt to implement a Data-centric application will not rollout as expected. In some cases, application patches attempt to overcome systematic Data deficiencies, but this “Data-malpractice” is giving otherwise excellent tools a bad rap. Data is not irreparable, but most times, it is quicker to “hack a fix” than to find root cause and make appropriate changes.

We will take a look at the benefits Sierra Pacific Resources experience everyday, by adopting a meticulous Data regime aimed at continuously improving their distribution Network Data. It isn't always easy, it's not yet perfect, but the results are already paying off.

1. Data conversion requires a crystal ball

Some call it experience, but we call it Data Foresight: knowing specifically, what future capabilities will be expected of the Data. In other words, utilize open/non-proprietary technology that keeps the Data accessible, and the Model scalable. For example, an electric utility cannot implement a useful Outage Management System without excellent device connectivity and updated customer-transformer link information. These requirements are mandatory for an OMS project. When preparing a Centralized Data Model, it must easily accommodate for customer information, complex device modeling and ultimately – Data sharing abilities. Lessons learned indicate that proprietary Data is difficult and expensive to own, operate, maintain and share.

Data is unfortunately often overlooked when planning to rollout a complex system. At Sierra Pacific Power Company, they started with the Data and immediately took corrective action – so far, it is proving to be the right approach.

Data Foresight pays dividends if a utility clearly understands the downstream application requirements for the Data. When Sierra Pacific decided to do away with paper maps and other inaccurate mapping platforms within the company, they instinctively considered national best practices, rather than to dive right in. They adopted preliminary standards early, and avoided proprietary technology that allowed for the flexibility to expand their Data Model as the project evolved. They continued to have dozens of source Data types captured and converted over the years, yet the Data Model adjusts to their technical direction by keeping the technology open and non-proprietary.

2. Conversion rules of engagement

Working closely with Sierra Pacific on a Data Capture Standards Manual (DCSM) meant not only auditing their business process at the time, but included the consolidation of their paper and digital Data in the form of as-builts, work orders, future work orders, mainframe information, database information, corrected landbase and practically every electric, gas and water map product in the company.

Understanding the business processes behind their Data was vital in order to optimize the workflow. Several hundred man-hours of new symbology creation, attribute mapping, source Data prioritization and information consolidation went into

authoring the DCSM for Gas & Water. Then we tackled the Electric DCSM that set new Data Standards for their Intelligent System. These “Data Workshops” offer a unique opportunity to analyze the utility’s Data with a fine-toothed comb and apply long-overdue symbology and attribute corrections, updates, improvements and validation.

The following illustration shows how a Data Fusion effort can combine several very disparate types of Data gathered from all over the company. The result is a powerful Data Center that can provide instant equipment life cycle information that is typically difficult to find and laborious to maintain.

With this effort completed, all new information may continue to be generated and keyed-in from different parts of the company. However, the new business process and tools helped standardized the way these Data types are input and maintained.

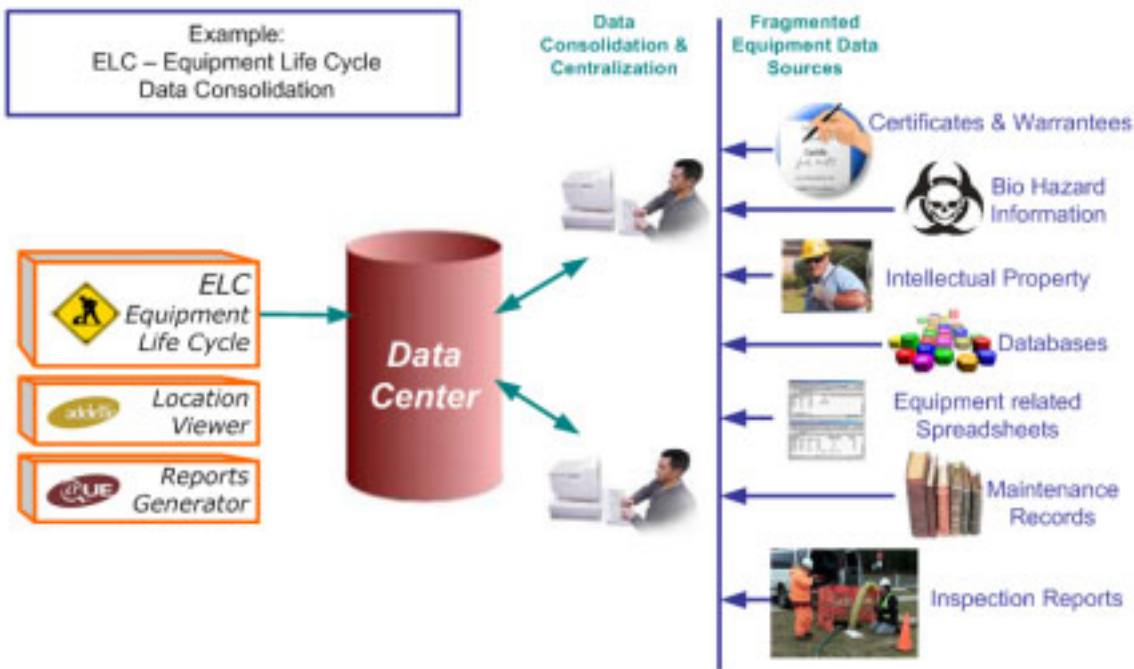


Figure 1. Data Fusion provides an opportunity to correct the information, digitize it when necessary and centralize it – once and for all.

3. Data Quality, Data Integrity and User Acceptance

It was becoming quite clear that the conversion effort was extremely accurate at moving tremendous amounts of Distribution Network information from numerous sources such as: paper maps, Access tables, spreadsheets, electronic maps, wall maps, circuit maps and boxfuls of work orders in various conditions. Data Quality was clearly achieved. Moving forward, Data Integrity efforts require the user community to engage in a continuous Data improvement modus operandi.

Data Integrity is achieved when the Distribution Network maps indicate the actual placement and configuration “as energized” in the field. Every utility tolerates a certain gap between the mapped circuit and the actual configuration in the field, but the ultimate goal shared by all is to get the GIS as close as possible to the real-world installation. Distribution Operations usually drive the Data Integrity effort because of their critical need to work with accurate information. Even streaming real-time Data becomes more valuable when combined with a properly maintained Network Model. Data Integrity allows dispatchers to access timely, accurate information and carry out their work with certainty.

For the end users, the conversion results looked far better than paper and the equipment seemed to be accurately positioned because the distribution network and corrected landbase is aligned and overlaid on aerial photography. As with any business paradigm change, user acceptance is steadily increasing as they realize the improved Quality that they are now able to deliver. Considering end user input while maintaining business targets and milestones requires the system to be highly configurable. Working closely with end users allows their feedback to drive system improvements and enhanced functionality across the application suite.

Some benefits of an accurate and connected Data Model:

- Improved safety to the field crews reading correct circuit attribution
- Increased confidence in generated reports
- Reduced labor costs by working with reliable information
- Higher customer satisfaction numbers by keeping them better informed
- Optimized business processes

4. Data Intelligence – Feedback from the field improves Data Integrity

In an effort to narrow the gap between GIS data and actual in-field configurations, Sierra Pacific has put maps in crew trucks for more than dispatch, crews correct Data. They realize that the next time a crew visits that equipment; the Data will be improved, more reliable and field-validated.

In addition to the mapping, wireless crew dispatch and vehicle location permits 2-way “email-type” messaging for job assignments and crew management. Meter sets and unplanned work is fed back to the centralized Data Model that updates some Data fields – automatically. Having this wireless system, Sierra plans to implement a link between the dispatch system and the mapping system where as crews can send mapping and attribute changes directly into the mapping system.

When a new customer is energized, the billing cycle is reduced to days from weeks on the old paper-ticket method.

5. Applications that exploit good Data – Operation FUSION

Applications that offer extensive functionality are the result of a connected Data Model. For example, tracing a specific circuit by phase is not an option if connectivity is not maintained in the Distribution Network Model. Operating multipart vault configurations in an underground Network is a significant advantage when a utility needs to simulate scenarios with relatively high fidelity.

At Sierra Pacific, several practical applications contribute to their Data Fusion effort – they call it Operation FUSION. Some FUSION components are very graphical while others manage tabular Data for Equipment Life Cycle for instance. The FUSION framework is based on Microsoft .net and Oracle, which makes the Data Model non-proprietary and the applications highly configurable. As illustrated below, Operation FUSION at Sierra Pacific Resources delivers Data Intelligence to several departments. Each department references a single, centralized and connected Data Center allowing them to utilize the FUSION applications effectively.

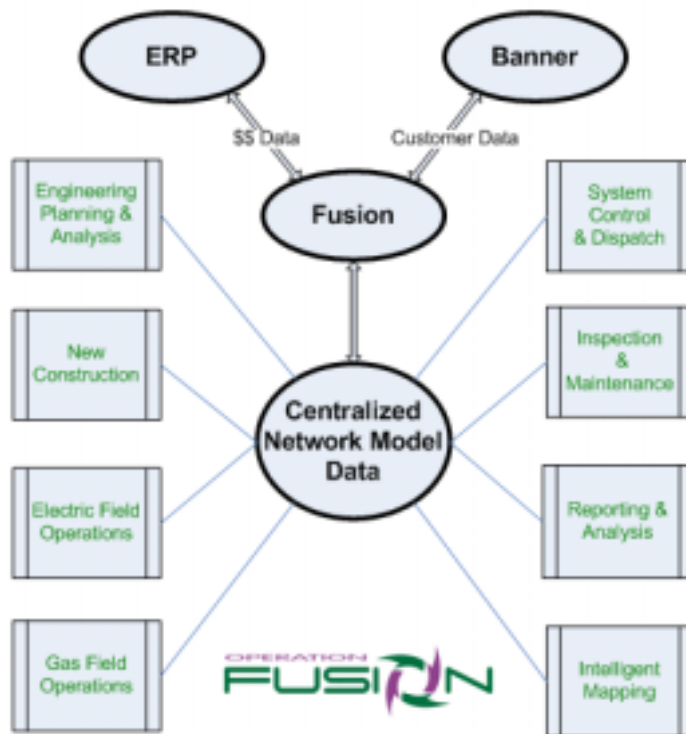


Figure 2. Operation FUSION diagram illustrates how several departments at Sierra Pacific Resources access and share a Centralized Data Model.

Some examples of Sierra Pacific's Operation Fusion application suite:

- Outage Radar: automatically lights-up outage calls as reported by customer calls through an IVR system and collects the Data required for regulatory reporting purposes
- LineView: Automatic schematic one-line diagram generation along with other configurable mapping products generated for various user groups.
- JOBS: Work force management and wireless crew dispatch with vehicle location
- QUE report generator: performance-based reports to help calculate cost per hookup, SAIDI/SAIFI
- Fusion Viewer: Mobile automated mapping with GPS-capable redlining
- Point of Service: customer-transformer link management and visualization
- Equipment Life Cycle: inspection and maintenance Data manager

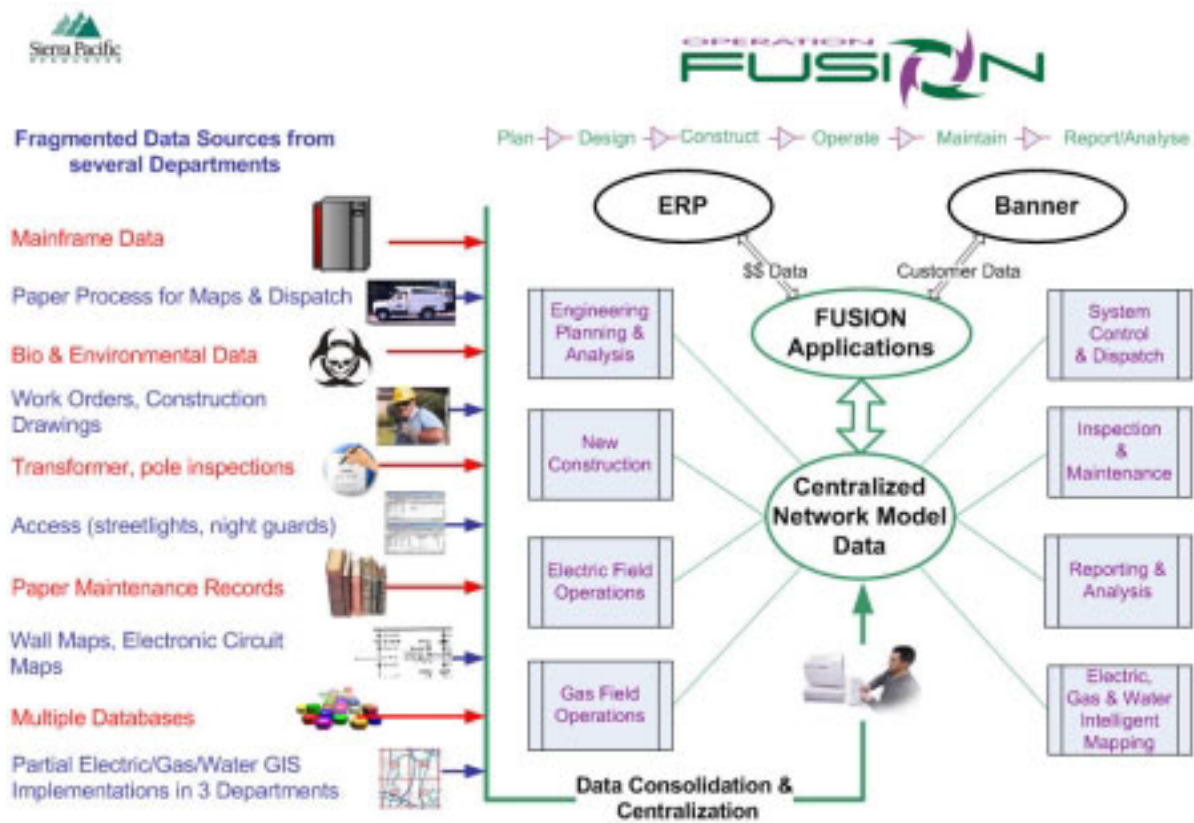


Figure 3. Numerous Data Sources are consolidated in order to populate the Centralized Data Model for Operation FUSION at Sierra Pacific Resources.

6. Concluding Remarks

By using this integrated and coordinated approach to technology, new services can be brought online with confidence, since they will be based on accurate and timely Data that already exists in the system.