Project Implementation Review:
GIS / Automated Design Systems

A Rich Consulting Point of View

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Presented by:

RICH consulting

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Project Implementation Review:
GIS / Automated Design Systems

Table of Contents

Introduction

Improving the GIS Value Proposition

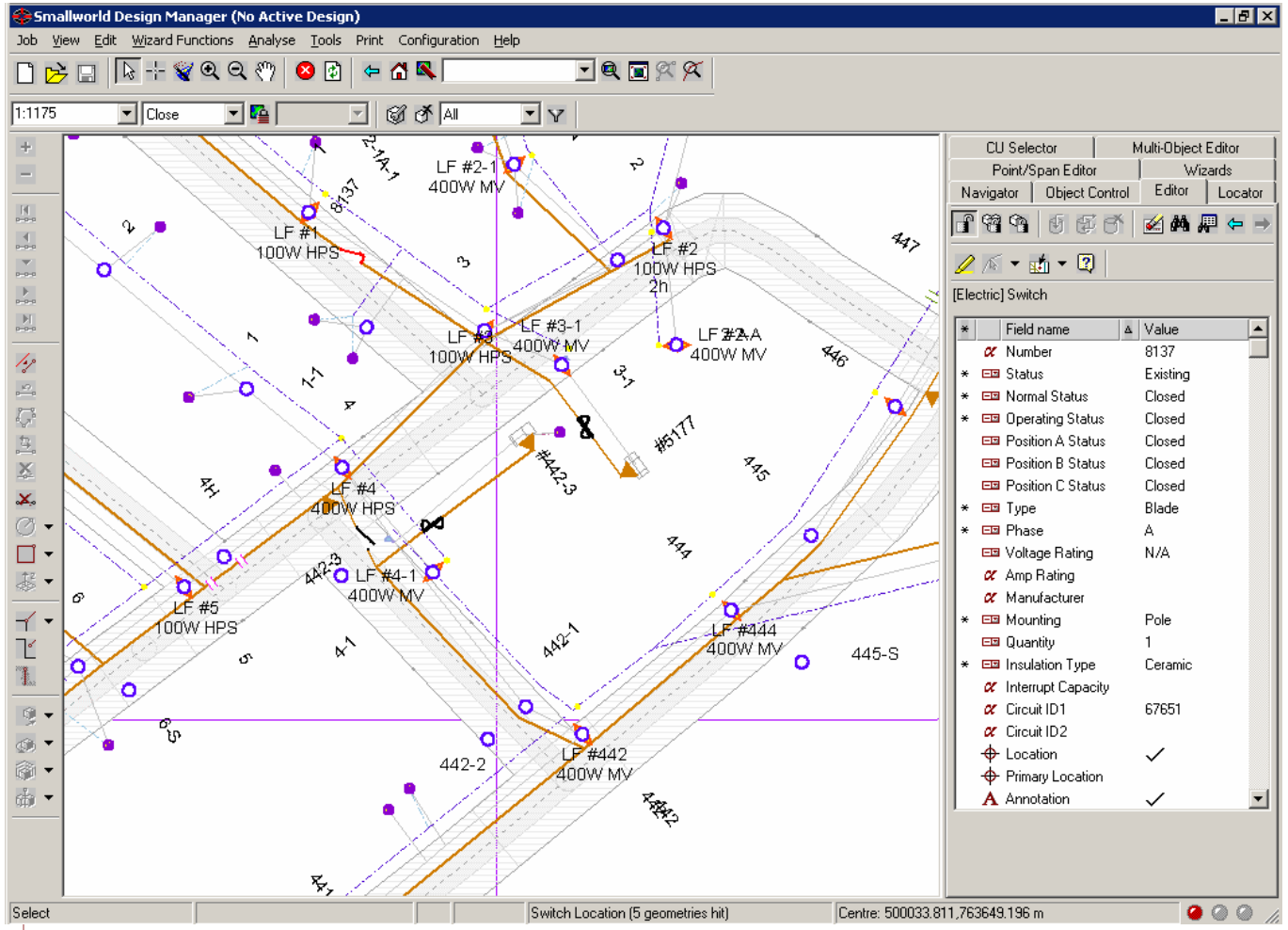
- This is the second in a series of articles on the effective implementation of GIS and automated design systems. Our first article focused on validating the business case by comparing estimated vs. actual benefits produced, analyzing shortfalls in results, and then developing specific recommendations for resolving performance issues.

- In this second article we have applied our post-implementation review methodology to addressing some of the issues that commonly impact the results delivered by GIS and automated design systems. Common causes of performance problems include:
  - Poorly defined business requirements
  - Insufficient attention to change management
  - Lack of a formal business case and results monitoring system

- This paper provides a brief review of current trends in applying GIS capabilities and presents a suggested approach to evaluating system performance and developing recommendations for improvement.

Trends in Applying GIS Capabilities

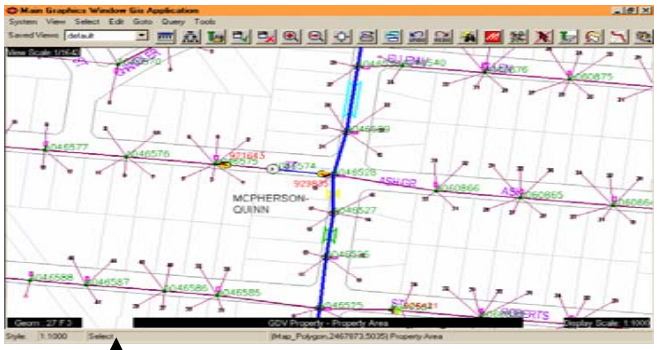
Traditionally Used for Facilities Mapping and Records Management …



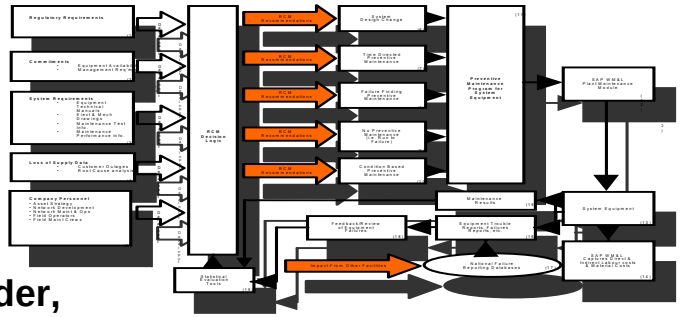
Trends in Applying GIS Capabilities (cont.)

… GIS is Now a Geo-Spatial Data Warehouse, Integrated with a Wide Range of Utility Business Applications …

Geo-spatial Date Warehouse



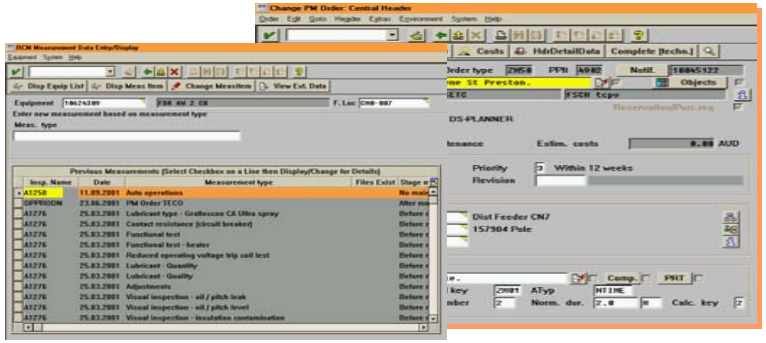
Asset Management System



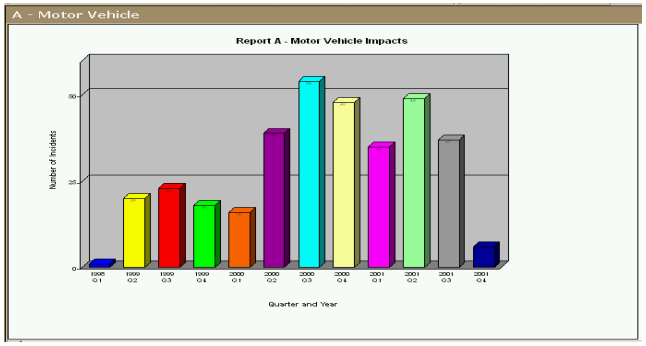
Equipment information

Equipment, Work Order, Maintenance & Materials Information

Data



Data

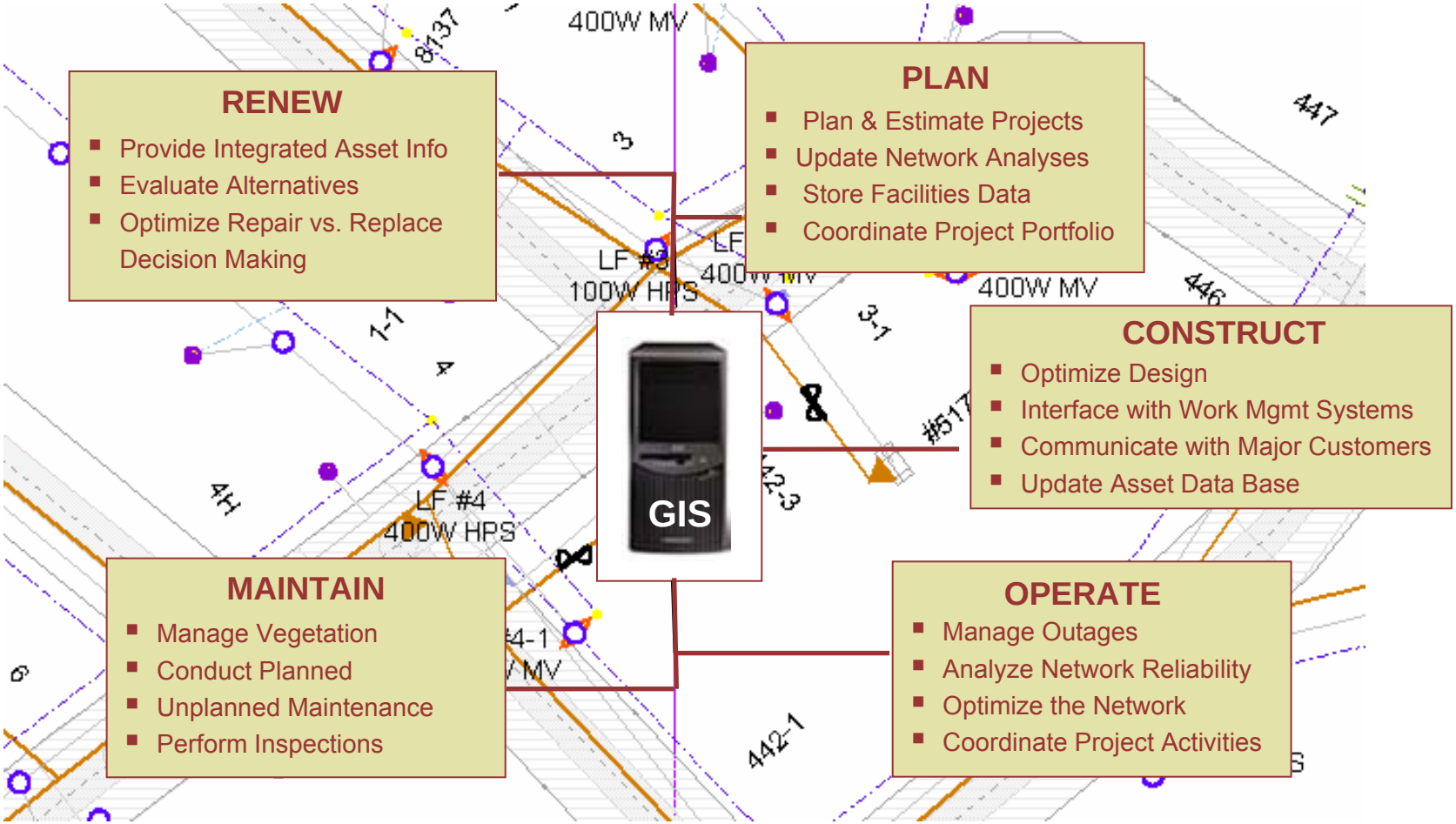


Work Management System

Business Intelligence Dashboard

Trends in Applying GIS Capabilities (cont.)

… to Optimize Performance Across the Entire Asset Management Lifecycle.



Evaluating System Performance

Our Suggested Approach Follows the Three Steps Illustrated Below:

Review the Baseline

- What were the strategic objectives of the GIS implementation?
- How was the original business case constructed:
  - —Costs, benefits, timing, assumptions, etc.

Collect & Analyze User Feedback

- Is the GIS delivering the required capabilities to meet the strategic objectives?
- Are users fully leveraging the system capabilities?
- Are the users adequately trained and supported?

Create Game Plan

- What changes are required to achieve targeted results?
- What is the plan and schedule for implementing the required changes?
- What management and resource commitments are required?

Evaluating System Performance:
Step 1 - Review the Baseline

Evaluating Performance Against Typical System Objectives:

- *Increase Engineering Productivity*
  Standard templates should be used to achieve design and construction efficiencies and improve accuracy of estimates. Standard CU's should be used in generating GIS objects, and designs should be validated against GIS rules to ensure data quality and consistency.

- *Reduce Administrative Costs*
  General mapping and work order posting activities should be reduced with designs performed in GIS. Effective integration with other core systems such as WMS, OMS, and CIS should also eliminate duplication of data entry and ensure consistency.

- *Reduce Errors and Re-work*
  Spatial rules should be applied in the design process to again ensure data quality and maintain the accuracy of the network model.

- *Reduce Hand-offs & Cycle Time*
  Project costs and cycle times should be reduced from baseline values. Automated status updates should provide notification when tasks are complete, and projects should be promptly closed with pertinent systems updated accordingly.

Evaluating System Performance:
Step 1 - Review the Baseline (cont.)

A Sample Performance Review Matrix is Shown Below:

Solution Functionality	Project Objectives			
	Increase Engineering Productivity	Reduce Administrative Costs	Reduce Errors and Re-work	Reduce Hand-offs & Cycle Time
Provide standard designs based on reliability requirements	X	X	X	
Synchronize Compatible Units with Work Management System		X	X	
Provide design/as-built data entry in the field	X			X
Automate workflow	X	X		X
Establish Asset Register for all T&D facilities	X	X	X	
Establish the enterprise network model (current and future)		X	X	
Sample Metric	***Ave. No. of Designs /Week***	***Total Monthly Admin Exp.***	***Design vs. Actual %***	***Ave. Project Cycle Time***

Evaluating System Performance:
Step 2 - Collect & Analyze User Feedback

Evaluate User Feedback Across the Entire Asset Management Lifecycle

	Plan	Construct	Operate	Maintain	Renew
New Solution Functionality	▪ Visualize potential network changes ▪ Optimize capital allocation ▪ Integrate with operational systems	▪ Create new designs from std. templates ▪ Synchronize CU's with WMS ▪ As-build projects and update related systems	▪ Pass network model changes to operational systems ▪ Capture and store asset information	▪ Link inspection data to geography ▪ Provide spatial analysis tools for work planning ▪ Support RCM	▪ Update asset records ▪ Assign retired status to objects ▪ Provide system of record for all operational assets
End-Users Issues and Challenges	▪ Planning department needs only summary information ▪ Too much effort required to remove unapproved projects	▪ CU library not synchronized with WMS ▪ No access to designs in the field ▪ Data conflict when posting as-built ▪ Complicated user interface	▪ Network model too detailed for operational systems ▪ QA rules not complete ▪ No field access to designs	▪ No data entry in the field ▪ Need better analysis tools to optimize maintenance	▪ Difficult to interface with financial system ▪ Asset database size issues

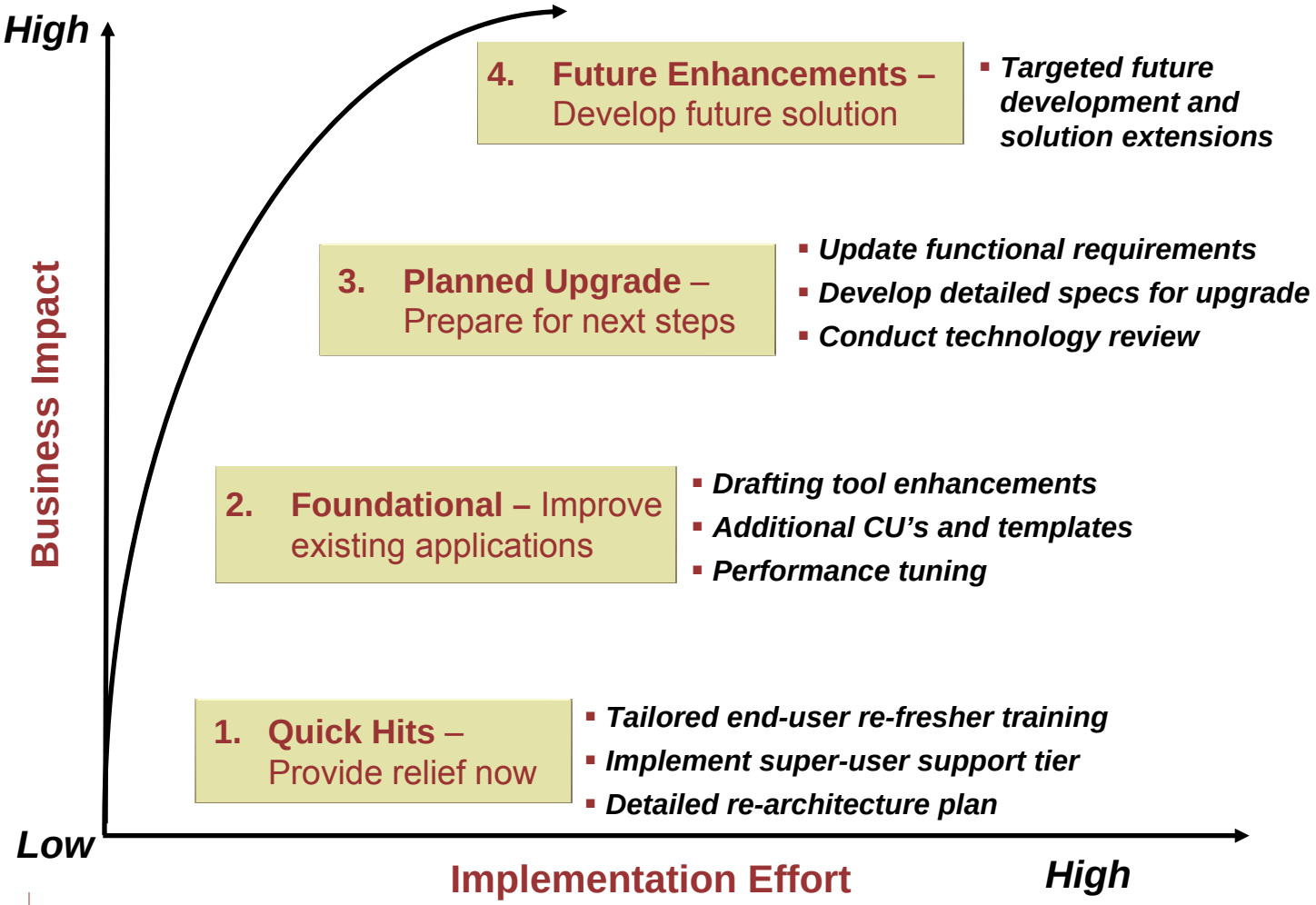
Evaluating System Performance:
Step 2 - Collect & Analyze User Feedback (cont.)

Explore Findings and Develop Appropriate Corrective Actions

Sample Findings	Gaps & Implications
Operational Issues ▪ Limited access to data in the field ▪ Initial Training and Roll-out was strong; however, frequent changes and lack of change control process presents barriers for end-users ▪ Too many options for approaching a design. High volume designs should have templates to help streamline initial entry. ▪ … **Technical Issues** ▪ Complex data model is leading to errors, re-work and excessive admin requirements. ▪ Complex rules built into the system are impacting performance.	▪ *End-User Productivity:* Line replacement jobs difficult to enter. Need better tools with basic drafting functionality included. ▪ *Training and Support:* End-users confused and frustrated. Need to assign super-users to each regional office for better support. ▪ *End-User Productivity:* Need intermediate states added to provide better workflow in WMS. ▪ *Interface Issues:* Access to CIS is needed during design phase to accommodate new premise identifiers.

Evaluating System Performance:
Step 3 - Create a Game Plan

Create A Multi-Stage Implementation Plan



Evaluating System Performance:
Step 3 - Create a Game Plan (cont.)

Schedule and Execute the Plan

Near-Term Actions

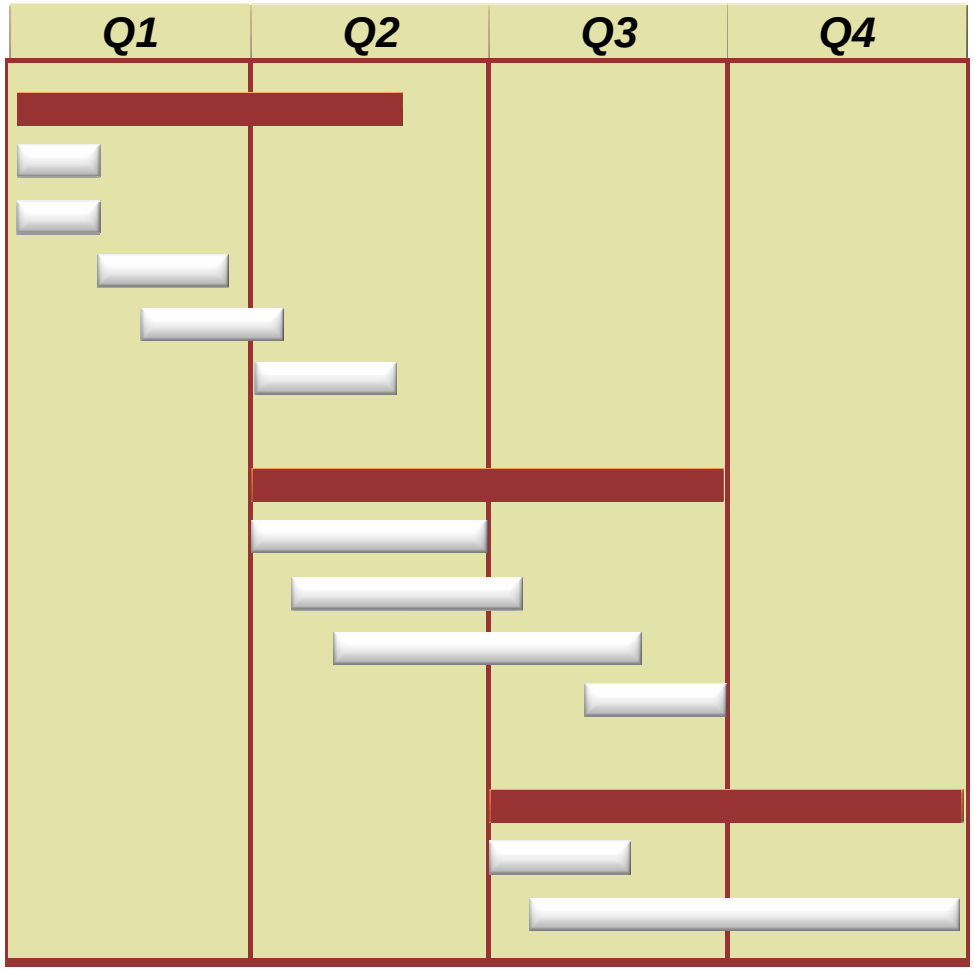
- Clarify Roles and Accountabilities
- Strengthen Vendor Collaboration
- Prioritize and Schedule Initiatives
- Build New Tools
- Conduct Refresher Training

Medium-Term Actions

- Simplify Data Configuration
- Redesign Processes
- Revamp Interfaces
- Optimize Utilization

Preparation for Upgrade

- Identify and Quantify Benefits
- Plan Future Upgrades



Conclusion

GIS is Moving from a Niche Application to a Core Enterprise System

- Managing assets across their entire lifecycle requires a full and effective utilization of GIS and related systems. The review process outlined in this paper can identify both short and long term actions that will resolve current shortfalls in system performance and improve business results:

  - Operational efficiencies can be gained by creating a connected work flow and asset management process across the lifecycle – from '*Plan'* through the *'Construct', 'Operate', 'Maintain' and 'Renew'* stages
  - Effective systems integration can eliminate multiple databases, improving data quality, and reducing system support costs
  - Analytical tools can then be applied to optimize Capital and O&M spending over the entire asset life-cycle, maximizing return on asset investments.

Appendix

Appendix:
GIS Utilization and Best Practices – Electric Utilities

The Top 10 List for Electric Utilities*:

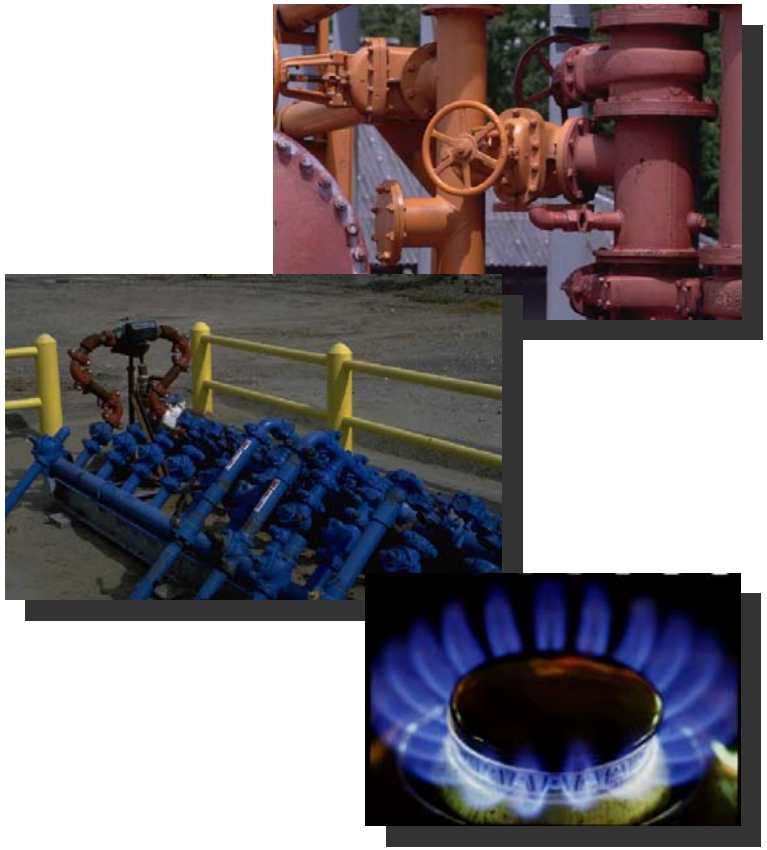
1. Trouble call / outage analysis
2. Engineering work order design
3. Field automation / workforce automation
4. Data maintenance
5. Work management
6. Engineering analysis
7. CIS integration
8. Distributed automation / SCADA interface
9. Conversion data capture
10. Executive reporting information

*Source: GITA State of the Industry, (2005)

Appendix:
GIS Utilization and Best Practices – Gas Utilities

The Top 10 List for Gas Utilities*:

1. CIS integration with AM / FM / GIS
2. Work management / process automation
3. Facilities monitoring and maintenance
4. Mobile data collection, viewing, analysis
5. Leak management
6. Outage management
7. Cathodic protection
8. Asset maintenance and management
9. System repair vs. replacement optimization
10. Geographic management / marketing



* Source: GITA State of the Industry, (2005)

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