Insight Maps on the most impactful articles in the GIS industry.

The GeoIntelligent Leader's Playbook

By HD Spatial

How to Read the GIS Leader's Playbook

The GeoIntelligent Leader's Playbook is a publication developed by HD Spatial to serve as a companion guide and executive summary of other innovative and cutting-edge works about GIS industry issues. The publication's purpose is to review, summarize, and provide insights on these works by HDS experts allowing the busy leader to quickly browse and further research topics of interest in full. Each section of the Playbook is called an "Insight Map" ("Insight" for short) and references a chapter of longer works or the full article for shorter work.

The QR Codes at the beginning of each section link the reader to the outside source articles cited and summarized in each Insight. These documents are not the work of HD Spatial and should be cited appropriately if reused.

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At the beginning of the Insight find the QR code that takes you to the full article for further research.

Either read the Insights by themselves or pull up the source article and read side by side with the Insight.

Information on the Insight authors can be found by following the QR Code at the end of each Insight.

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Introduction

Early in civilization humans began using maps and from the start, maps were a tool to aid business and government work. Babylonian clay tablets from 2400 BC depict property ownership using drawings and the cardinal directions. The Turin Papyrus Map from 1150 BC was used by Pharaoh Ramesses IV to survey and organize a mining expedition. The Babylonians again get credit for the first known "world" map dated 600 BC. This map notably omits some distasteful neighbors like Egypt and Persia showing that maps could be accurate and yet subjective at the same time. Much later we get to the beautiful examples of maps preserved from the Age of Exploration that fueled that era's global growth and expansion of interconnectivity.

If you've received this GeoIntelligent Leader's Playbook that means you are a leader that has taken up this long heritage of applying maps to work. Whether you're a mapper that has come up through the ranks to run a department, a general manager asked to oversee an unfamiliar mapping department, or you're a business leader looking for ways to streamline operations and gain a competitive edge, this playbook is for you.

Our HDS expert authors have a variety of backgrounds and curiosities. You'll hear the different voices of our authors as you read ranging from serious to insightful to even some whimsy. We've worked as both GIS techies and as industry leading management consultants. Through those lenses we compiled this playbook to be an executive summary companion to articles that we've found valuable in leading with Location. We hope in sharing this material, you gain clarity, insights, and confidence in your work with maps and location.

As you read the articles and accompanying perspectives, consider how a business perspective based on "Where" can change your point of view and your organization. You may find that understanding the relationship between location and your business helps you identify trends that are secretly influencing your bottom line. Also challenge yourself as a leader to find ways to promote the benefits of Location capabilities throughout your organization. As you solve problems for others you and your team will be rewarded with resources to do more.

Whatever the outcome you seek, maps have always been the tool that has shown us the way to where we want to go. HDS is happy to serve your leadership ability, curiosity, and knowledge through this work. We'd love to hear your stories on how this material influenced and impacted you.

Happy Course Charting!
Jeremy Myers
Founder – High Desert Spatial

EPRI Monetizing GIS Insight Map

by Jeremy Myers

Scan here to read the full article.

The Value of GIS Data Quality for Electric Utilities

Abstract/Executive Summary
Section 1

Key Quotes //

"Utilities continuously struggle with the quality of geospatial information system (GIS) data. With the advent of the Smart Grid and advanced metering infrastructure, utilities are facing increased pressure to resolve data quality issues." (vii)

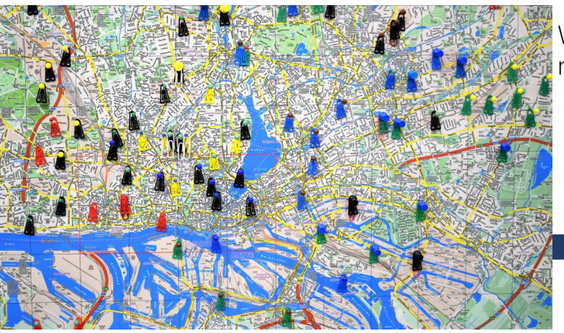
"Despite the importance of GIS data, electric utilities have not invested significantly in its improvement due to an inability to cost-justify the effort." (ix)

The Big Idea

GIS is a foundational technology to electric utility operations and success; however it is often overlooked from an investment and strategic standpoint.

Critical Questions //

Which of the GIS Quality Issues listed in the Abstract does your utility struggle with the most?



Which would you benefit from the most if it were resolved?

Do the leaders in your utility understand the connection between GIS data quality and Smart Grid investments, safety, and reliability?

The Big Idea

GIS provides foundational data for electric utility operations not available from other enterprises systems.

Introduction
Section 2

Key Quotes //

"Although conceptually understood to be a vital enabler of smart grid functionality, the true value of quality data is not widely understood." (1-1)

"In contrast, the cost to improve data quality is a known quantity. Data improvement can be a lengthy and expensive undertaking." (1-2)

"The GIS provides the foundational data for the smart grid through the connectivity model of the distribution system linking customer to transformer to feeder to sub-station." (1-2)

Critical Questions //

Does your utility view GIS as a foundational technology or does it prefer in-vogue technologies?

What are some ways as a GIS leader you can promote the role and value of GIS out-side of your department?

Are there other department heads you can partner with to solve their issues with GIS technology?

The Big Idea

Utility Assets are not the exclusive to GIS. A well functioning utility IT ecosystem will leverage the best features in GIS and other Asset systems through well thought out integrations and data lifecycle processes.

GIS for Asset Managment

Section 3

Key Quotes //

"A building block of the smart grid is the asset management functionality provided by the GIS, in conjunction with realtime data from MDMS (Meter Data Management System) and SCADA (Supervisory Control and Data Acquisition) data." (2-1)

"A key component of data quality ... is the correlation of the data between systems as assets' data are necessarily stored and exchanged between GIS and other asset management systems." (2-2)

"The GIS is not ideal for storage of all asset data. In contrast to geometry and location, financial information, historical data, and customer records are ill suited to be stored in the GIS." (2-3)

"In order to leverage the individual data management strengths of each system, each must be integrated with the GIS to provide seamless, accurate and timely data transfer. Thoughtful integration will enable users across the utility to access and maintain data for which they have responsibility without GIS users' duplicative update efforts." (2-6)

"Poor data quality can initiate a positive feedback loop whereby bad data creates worse data." (2-6)

Critical Questions //

How can GIS combined with EAM better support intelligent and prudent spending in the utility thus optimizing asset lifecycle costs?

Where does your utility have gaps in its asset data? Where does your utility have default data filled in that needs to be evaluated?

As a GIS leader, what can you do to better understand the EAM program at your utility and thereby understand how the EAM and other Asset systems at your utility use and benefit from your GIS?

How does having an understanding of your utility's EAM objectives and uses of GIS help you build a value proposition for GIS investment?

HDS Point of View //

As noted in this section, GIS is a great source / repository of Asset Data, however it is not the only or sometimes best source of all data relating to utility Assets. Having a holistic, unified view of Assets across utility systems and data lifecycle processes in place to manage that view is crucial. Too often GIS is made to try to solve EAM problems when that only ends up bloating and encumbering GIS with non-mission critical data and processes. The reverse situation also occurs where GIS is treated as an impregnable system that can't be touched or used by external systems thus reducing its value to the larger organization and forcing other systems to store geographic data. GIS needs to be leveraged by external systems like EAM, CC&B, etc. to get the value of GIS while letting each system focus on what they do best. For example, EAM systems are great at work transactions and financial recording while GIS is great at physical location, connection, and analysis. Creating joint processes and data handoffs allows the best of both systems to be leveraged while minimizing data creation.
Note: CMMS, WMS, and EAM are all synonymous for the purposes of this paper.

Data Quality Issues

Section 4

The Big Idea

This section categorizes and starts to quantify data quality issues. Look for comparative metrics on GIS data quality as well as GIS department efficiency.

Key Quotes //

"Small coops and large IOUs (Investor Owned Utilities) alike are challenged by their need for accurate GIS data. The utility which has solved its data quality issues remains an aberration in the industry." (3-1)

"This is an important consideration for utilities initially implementing or upgrading a GIS: data quality will not be improved simply by conversion to digital format or a new application." (3-2)

"Because GIS data are used by numerous staff and departments throughout the utility, many will assume the other is tasked with the responsibility for data maintenance." (3-3)

"Often in conflict with the data users, the staff assigned to data maintenance are viewed as overprotective of the data, particularly to access and data update capabilities." (3-3)

"Although the GIS contains many attributes about the utility's facilities, it truly excels at storage and maintenance of geographic information. Other attributes and data are best stored elsewhere, such as CMMS, MDM or CIS and linked back to the GIS via a unique identifier to provide a seamless user experience." (3-4)

{For GIS critical data elements} ... Experience gained from utilities with mature GIS systems indicate that less than 5% data error rate level must be achieved during initial system start up and continuously be maintained so as not to erode user confidence in using the GIS, e.g. 5% mismatch of field and GIS. (3-9)

{For GIS standard data elements} ...A 25% or less data error rate is deemed sufficient by experienced GIS administrators to maintain user confidence. (3-9)

Critical Questions //

How well defined is asset data ownership at your utility? Do all departments understand and agree on who owns the "truth" about asset data? Where is this documented and referenced?	Is your GIS staff viewed as overprotective of data updates while at the same time feeling overwhelmed with the burden of updating / maintain what they know is poor data? What can be done to allow for controlled outside access and internal "crowd sourcing" by enlisting the users to share the burdens of appropriate data updates?	If they exist, are the processes for updating data inside the GIS department and from outside GIS well understood and followed? Does your utility have cross department forums for discussing data needs and issues? Does this forum involve the field workers / end users closest to the data?	Does you GIS have rigorous, automated QA/ QC rules in place to daily check the quality of data changes edits to capture problems at the point of entry? What is your strategy for Manual Testing of data quality?	What is your ratio of design staff to customers? How does it compare to the average (1:18k) and best (1:28k) ratios described on page 3-11? According to the text, this number might indicate opportunities to improve the design work order process at your utility. (Inside and outside the GIS department). It may also indicate a need for additional staff.

Perceived Cost and Values

Section 5

Key Quotes //

"64% {of Utilities} supplement the GIS with data in an asset management system." (4-1)

"Presently, 69% have instituted such {unique asset} numbering across the distribution system. This underscores experience that unique identifiers are crucial to an asset management strategy." (4-2)

"Data accuracy and quality can depend heavily on the organizational structure of system ownership and maintenance. (4-2)"

"Although there is no consensus on which unit is best suited to perform maintenance and upkeep, it is apparent that IT is not the preferred source." (4-2)

"The benefit of entrusting end-users with data maintenance is clear: these users have the greatest knowledge of the data and system, as well as a daily stake in its improvement for their work processes." (4-3)

"Although the old GIS model required a core team of GIS technicians and mappers to produce paper maps as requested for users, increasingly GIS access is being provided to more users." (4-5)

"GIS data provides benefits to many users and will rise in importance as increasing numbers of functions are reliant upon its quality." (4-6)

"Some utilities have realized data improvements through concerted efforts. Improvement is attributed primarily to two actions:

- Field feedback as part of regular work; and
- Automated electrical tracing of circuits and business rules. {such as OMS traces}" (4-8)

"Presently, poor location and ID information results in wasteful time-based maintenance strategies which do not make use of the full lifespan of the asset." (4-9)

"Many utilities are thrown into disarray during disaster events because existing maps do not accurately reflect the system at the time of the event." (4-9)

"Respondents indicated that on average, correction to the rate base was unlikely." (4-10)

The Big Idea

This section starts to talk about a common dilemma for utility GIS managers. How do you present a value proposition to invest in GIS data efforts that will resonate with non-GIS executives when the value is difficult to quantify. The value of other IT systems like those of Finance, HR, Asset Management, and Supply Chain are more easily understood by senior leaders. GIS can be relegated to a second tier importance. We've all experienced the conversation of map conflation. "You want to spend X millions of dollars just so your maps 'look prettier?!?' How does that help us do work?" As GIS leaders we need to get more comfortable and adroit at presenting the facts, figures, and true value that GIS brings to business operations and insights.

That will put our technology on par with other enterprise IT systems.

Critical Questions //

This section began to give metrics from the utility survey the report is based on. Out of the metrics presented, which metrics were the most interesting for your utility? Why? What research and actions do they inspire?

What do you think about the discussion of GIS department ownership and how that relates to GIS data accuracy?

If you are under the IT organization, how much do you mix with the larger IT group versus keeping your own specialized GIS employees? Would cycling general IT employees through your department broaden your advocates within the IT organization? What about rotating through engineering or business users?

Do you have an understanding of all the integrations into GIS as well as out of GIS? Does this inventory of dependent systems broaden your value proposition to the utility? Does this give your department additional functions or use cases you could support to build coalitions?

Is a rate base adjustment an unspoken fear at your utility that would create hesitance to data clean up programs? If so, does the information in this report help alleviate the concern for your executives? What else needs to be done to address this fear?

The Big Idea

This Chapter introduces three areas of improvement – Process Changes, Technology Investment, and Integration to other data systems – and discusses a few best practices in looking at each. The section finishes with detailed lists of the study Benefit Parameters, Cost Parameters and their definitions.

Data Quality Migration

Section 6

Key Quotes //

"Although many contractors provide resources for field surveys, utilities have found small scale deployments of retirees and light-duty staff to be cost-effective solutions." (5-1)

"Many utilities have demonstrated the efficacy of a two-fold strategy for data maintenance and improvement through (1) business process and (2) technology and integration." (5-2)

"GIS data must be treated cohesively with an end-to-end perspective which gives rise to a process inclusive of work order initiation, design, review, construction, billing and close out activities." (5-3)

"Technology projects are too complex to succeed without people. The early and regular involvement of stakeholders cannot be underscored enough. As with any capital and time-intensive business endeavor, the support of management is critical to success. Without an active and enthused executive sponsor, the intricacies of data improvement are destined for failure." (5-5)

"Although data is separated and spread across these different systems for optimal storage and maintenance, the systems must be integrated to form a 'virtual data store'. … Although only some data is stored in the GIS, for end-users, all data appears to be stored and accessible through the GIS." (5-6)

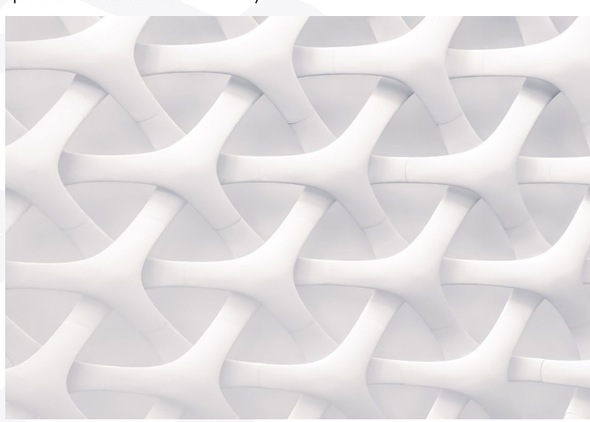
"The optimal data management strategy must leverage the spatial strengths of the GIS and the data and historical management strengths of the CMMS." (5-6)

HDS Point of View //

The text discusses 4 areas of process issues that affect data quality on page 5-2. When you analyze your process, do you stop at the boundaries of your department or do you enlist engineering, ops and the other departments involved in design and construction? The process and inefficiencies are shared and so the solution should be as well. For example, do you deal with late, inefficient delivery of AS Built or field markups from your construction managers? This doesn't immediately impact their department, but has a big impact on your ability to update the GIS. Later however they complain when maps are not correct. You can have the most efficient, well managed process inside your department and still stumble as an organization on the handoffs. Taking the lead to solve a cross department problem like this with your peers elevates both your department and personal contribution to your organization to show value.

Page 5-6 discusses the concept of the "Virtual Data Store" and says all data should be accessible through the GIS. HDS has long supported the idea of a Master Data Model between systems like GIS, EAM, etc. The state of the industry today though makes this difficult to fully realize at a typical utility. Since these systems have grown up isolated they many times already have duplicate fields and data. Step one is to determine which system will be the system of record or creation and which will in the future receive the data. This can be a complicated step.

HDS also would advocate that it's not just the GIS that all data is accessible through. The EAM and other systems part of and connected to the Virtual Data Store should also share the benefits of accessibility as the platforms allow. Many current enterprise solutions now include support for GIS map viewers to enhance functionality. This is one way GIS adds value to other departments and expands its reach and influence in addition to just producing maps.



Critical Questions //

Which of the 58 benefits appeals to you the most? Which would appeal to your executives and their strategic initiatives the most? How can you align your objectives with supporting theirs?	What do you think about the suggestion to use retired employees with first hand system knowledge to perform field audits? What would this look like at your utility?	How well and quickly does your utility incorporate changes to GIS data from Work Orders and Service Requests? Is this done manually or through an interface with your WMS / EAM?	Who are the stakeholders and executive sponsors in your GIS efforts? How have you as leader and principle advocate for your department cultivated them?	How does your utility combine the spatial strengths of GIS with the historical / transactional strengths of EAM? Where do you set the boundary between which system holds what data so that the GIS is not overloaded with "extra" data that's not mission critical for GIS?

EPRI Monetizing GIS Summary

Final Summary
Section 7

Key Quotes //

"There exist a variety of options and paths to data quality improvement. **Technology investments, Integration** and **Process** can each yield data benefits." (6-1)

"However, the rising experience, level of expectation for GIS functionality, and realization of promised smart grid benefits, will encourage the investment in data quality." (6-1)

Critical Questions //

How can you perform an analysis to weigh Technology versus Integration versus Process investment versus cost and effort of each?

How would you and your utility answer the survey questions?

The Big Idea

This section contains a summary as well as Appendices detailing the questions asked in the Survey and the Cost Analysis methodology.

To connect with Jeremy Myers, scan here or go to hdspatial.com