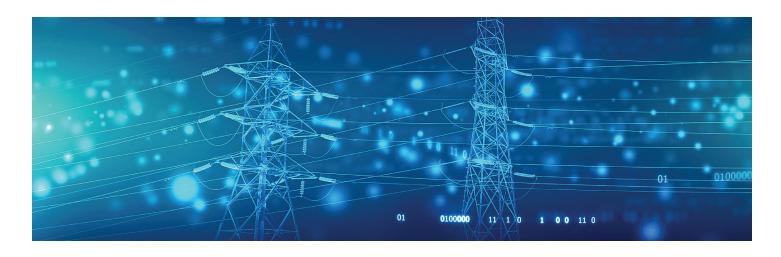# Coordinating Successful Utility GIS Projects

By Aaron Germundsen and Kyle Gallagher



A geographic information system (GIS) is a tool for storing, analyzing, visualizing and understanding geographic data. These systems have come a long way in the past few years, what started as a digital replacement of paper maps has become the heart of utility modernization.

GIS can be presented in various easy-to-use ways, including interactive maps. This data, also referred to as geospatial or spatial data, is used to chart where utility assets are located, monitor how assets are functioning, identify what operating conditions are like and alert any immediate or expected issues Data is critical and data quality is crucial.

GIS systems do not operate in isolation within any organization. An information technology (IT) infrastructure retrieves data for users, and operational technology (OT) serves as the access point for GIS by remotely detecting, interacting with or controlling utility assets. IT and OT are complementary systems that are not only necessary, but should be coordinated within any planning for a GIS system upgrade or new project implementation.

## Getting the Most Out of GIS

Utilities manage an array of physical assets over wide and diverse geographic areas and serve as the foundation for services provided throughout a community or region. Servicing, maintaining, monitoring and repairing utility infrastructure is ideally suited for GIS. And when planning and implementation is coordinated with a utility's IT and OT processes, the range of potential applications and benefits is limitless.

- Improve service reliability by using real-time monitoring of devices, circuits, systems and field operations and personnel.

- Enhance disruption preparedness for weather events by monitoring vegetation management and creating risk-planning scenarios.

- Prolong asset life by monitoring and tracking maintenance needs, performance, outages and emergencies.

- Reduce the risk to service disruption and increase safety with accurate event identification, location, tracking and repair dispatch.

- Realize utility cost efficiencies and increase organizational preparedness with a coordinated approach among the critical in-house functions of data collection, interpretation and management.

## Keep It Clean

While the advantages of GIS are evident, internal coordination with IT and OT to enhance data quality and accuracy brings the most long-term value. Imprecise, inaccurate and error-filled data will create a "garbage in, garbage out" environment that can undermine all the potential of GIS.

Data errors — such as those resulting from formatting, old data, scale of mapping, labeling, and topology — can come from anywhere within a system, making IT/OT coordination a key to project success. Inaccurate data can lead to errors in critical decision making.

Realizing improved data accuracy and quality starts by developing the GIS deployment strategy with IT/OT coordination. All data requirements, including what will be deemed good-quality data in the technical specifications, should occur early in project planning. High-fidelity data requirements may surface that are different among the GIS, IT and OT functions. Consideration should be given to what is needed, how the data required will be captured, and how data quality assurance is achieved. While the newer versions of GIS software have mechanisms to ward against errors, quality assurance requirements identified upfront can serve as a rulebook as a living quality assurance plan.

## Benefits From a Strategic Approach

Whether upgrading enterprise GIS, updating an existing system or deploying cloud-based solutions, utilities can realize business benefits faster and mitigate project risk through GIS and IT/OT coordination. Using a five-step process approach is the place to start developing an aligned GIS strategy:

1. **Revisit or define goals.** Exploring the ultimate objectives of any project is a sound first step. Including IT and OT goals in a wider GIS initiative provides broader insight, clarity and buy-in from key stakeholders.

2. **Assess the current state.** Using goals as the touchstone, mapping out the current state of an organization follows. From personnel to timing to budget constraints, spelling out advantages, limitations, restrictions and opportunities is key.

3. **Understand capability.** Folding in an honest evaluation of existing in-house capabilities with the current state picture is a prudent way to identify what will be needed for success. What resources are required to progress the project successfully? How will identified gaps be addressed? What is the way forward to proceed most efficiently? How sustainable is the outcome?

4. **Define the future.** Using goals, considering realities and weighing the way forward helps to explicitly define what future utility operations will look like when GIS, IT and OT is coordinated and in place.

5. **Build a road map.** With a clearer view of where a utility is, where it wants to go, what is needed and what is missing, an execution road map for GIS, coordinated with IT and OT, can be developed. Initiatives should be defined that are manageable, and workstreams created to achieve success.

Given the complexity of GIS projects, the criticality of quality data, and the potential benefits for utilities, governance is important. It is key that limits are set on the project plan and implementation to keep activities as focused and streamlined as possible. A control system created and adhered to can keep expectations in check as a robust GIS foundation is built for a utility. Establishing a clear direction that is agreed upon among stakeholders improves accountability and decision-making to promote project and long-term operating success.

## Working Together With Change Management

Overriding all successful GIS project initiatives is a crucial need for change management. Volumes of data, thousands of sources, multifaceted analytics, intricate software and integration of technologies make GIS projects a complex undertaking. Complexity is heightened given the criticality of coordinating work among multiple stakeholders, departments and interests.

Several approaches and tools exist, but deploying an organizational change management program will increase the chances for project success. Utilities should consider developing a change management framework early in GIS project development. Successful methods will center on creating a flexible but structured approach that addresses both individual and organizational change.

## Opportunities Ahead

Enhancing utility operations resides within the appropriate deployment of people, processes and technologies. GIS systems present an opportunity to maximize the potential of all these essential areas if approached in a strategic and aligned way. By coordinating GIS project plans with IT and OT operations, utilities can realize faster business benefits and lower project risks while working to advance reliability, safety and efficiency.

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