

# Steps for successful migration to the utility network model

BY Brian Hiller

The ArcGIS Utility Network allows utilities to improve operational efficiency and asset utilization while strengthening relationships with regulators and consumers. But migrating to the new model can be challenging. Completing a readiness assessment can help an organization plan for the migration.



Today utilities struggle to obtain timely, accurate data about their assets. Information on the size, location and condition of assets — not to mention how assets are connected and how to communicate with them — is spread across multiple systems, in spreadsheets and the institutional knowledge of staff.

The ArcGIS Utility Network aims to change that by allowing users to create, manage and share information about electric, oil and gas, water/wastewater and telecommunications assets. It provides a new foundation for utility geographic information system (GIS) solutions, so systems, stakeholders and workers can share critical data more easily.

Migrating to the Utility Network isn't required now, but eventually you'll limit your ability to leverage new technology. Completing a network readiness assessment will help you understand how prepared your organization is today and the level of effort you'll need to make to migrate to the Utility Network in the future.

### Searching for answers

Getting the right answers to your network questions is difficult when asset data is stored in many places. It can take days, or even weeks, to find the right person or resource. For instance, to find the right regulator sizes and settings, you may need to consult both an asset database and the regulator database, which is likely a spreadsheet. Then you'll need to call the planning engineer for confirmation.

Doing planning work can require traveling to the physical area where the asset is located to record what is actually in place. If traveling isn't feasible, you may have to rely on legacy documents or anecdotal information instead. Sometimes this approach provides accurate asset data. When it doesn't, you end up wasting valuable time and effort on the modeling, simulation and planned projects based on that information.

### Risks to organizational efficiency

Models based on inaccurate or incomplete data invariably produce bad simulations that generate misleading results. When utilities operate using bad data, network functionality suffers. Ruptured pipes, blown transformers and excess pressure in natural gas pipes become more common. Repair crews may be sent to the wrong location. Usually, they can locate aboveground issues quickly, but it may take a long time to find the correct buried asset.

### ■ Is your network model supporting your business?

When you're used to workarounds, you may not realize your existing network model is no longer supporting your business. Some symptoms of an inadequate network model include:

- Routinely consulting “cookie” cards, transformer cards, meter cards or other component cards.
- Carrying paper drawings with handwritten corrections into the field each day.
- Frequently hearing, “Call Jim. He'll know what's out there.”
- Calling a meeting to find out how an area is configured and what has changed recently.
- Sending a patrol to the field to document equipment types and condition.
- Hearing crews call in to say they can't find “X” because it's not where they were told it was.
- Having a new engineer spend several days looking for information before coming back with questions because it's missing.
- Having customers and potential customers call several times for the same information and having to tell them you're still working on it.
- Increasing the time needed to repair or restore service.

If your business has experienced two or more of these issues, it's time to think about upgrading your utility network model. Completing a Utility Network readiness assessment is the first step.

Often, stock levels in depots and on trucks are wrong. This results in dead inventory and emergency orders. Because many utilities rely on historical usage to determine stocking levels, the problem perpetuates. If asset health is estimated, maintenance or replacement may be prioritized incorrectly. New service requests result in the wrong costs, capacity available or other mistakes.

Plus, “best guesses” and estimates are almost always based on highly conservative engineering. Decisions you make based on this incomplete information can carry a higher cost.

## Profitability on the line

Incomplete information also threatens your relationships with regulators and customers. Entering the wrong information on a regulatory filing or discovery question can cause permitting delays, a reduction in the capital spending allowed by the regulator and other problems. Likewise, long delays in answering customer queries can lead to low customer satisfaction, bad orders for material and incomplete or bad work orders for crews and delays.

If you are seen as hard to work with because it takes you too long to produce answers, new business may be hesitant to locate in your service territory. Existing businesses may choose not to seek additional use of your services. Or, regulators may impose larger tariffs.

All of these factors impact your utility's profitability and your ability to deliver needed services. The ultimate issue, though, is being considered "too broken to fix." In this case, you risk being sold to another utility operator who is perceived as having a better culture and work ethic. Both municipal utilities and investor-owned utilities (IOUs) have faced this result in the past.

## Unlocking new capabilities

Unlike today's ad-hoc systems, the Utility Network is a high-performance model that was built to scale for use by small and large utilities. It is web-based and optimized to work in web applications and on mobile devices. As such, it can be used successfully by organizations with very large numbers of assets.

The model offers a number of advantages over traditional methods of tracking assets, including:

- **Accurate modeling.** The Utility Network provides the ability to define exactly how assets in your network are connected.
- **Clear representation of dense areas of the system.** A containment model allows you to choose when to display assets that are contained within one another. This means you don't have to cluster or stack assets on top of each other to capture the detail of all assets in a small space.
- **Data integrity.** The data creation/data editing environment includes tools that enforce data quality. This built-in functionality checks predefined rules for how the system is constructed and what can and cannot connect.
- **Advanced utility tracing and analytic capabilities.** The Utility Network provides a series of predefined and user configurable traces that can intelligently trace the network and return details about assets and customers.
- **Integration with external systems.** The Utility Network and its advanced analytic capabilities are easily accessible through well-documented Web services.

Implementing the Utility Network model supports efficient operations, improves asset utilization and minimizes wasted engineering hours. It also helps avoid complaints and fines, and improves overall relationships with regulators and customers.

## Assessing your readiness

While you may not be ready to migrate to the Utility Network now, you can still benefit from starting to prepare for the transition. Completing a readiness assessment allows you to identify the areas you'll need to improve and plan for any capital investment necessary to support those improvements.

A comprehensive readiness assessment includes the following:

- **GIS architecture review.** A team of experienced data practitioners will assess key elements of your existing geographic information system.
- **Data quality review.** This review assesses the GIS data in a small subset of your system. It includes looking for data issues that will impact migration and setting up batch checks that are structured and repeatable.
- **Data model review.** This phase provides recommendations on how best to fit your legacy data structure into a new data structure. The goal is to keep all needed information and also set your organization up for success in the future. This review includes asset package update recommendations to accommodate your organization's specific needs in the new model. It also helps you define containment rules for two different asset types, such as pump stations, substations or transformers.
- **Data editing workflow review.** This assessment determines how the move to ArcGIS Pro will impact the workflows of map and data editors. It includes mapping documents to Pro Projects and a review of how branch versioning will impact your editing and QA/QC processes. Organizations that use Attribute Assistant will also need to assess whether similar functionality can be replicated with Attribute Rules and Dynamic Values.

- **Third-party system integration review.** This phase evaluates how the utility network structure will impact third-party integrations with GIS.

Following this process, GIS professionals will document their recommendations. You'll receive a report highlighting the areas that will require the greatest level of effort for migration. You'll also receive three-month access to an ArcGIS Enterprise environment so you can test Utility Network functionality and get comfortable with the new system. You can then begin to formulate a road map for your migration.

## Migrating to the future

Utilities have used GIS to manage asset data for years, despite some limitations. Now the Utility Network presents an exciting opportunity to expand GIS capabilities.

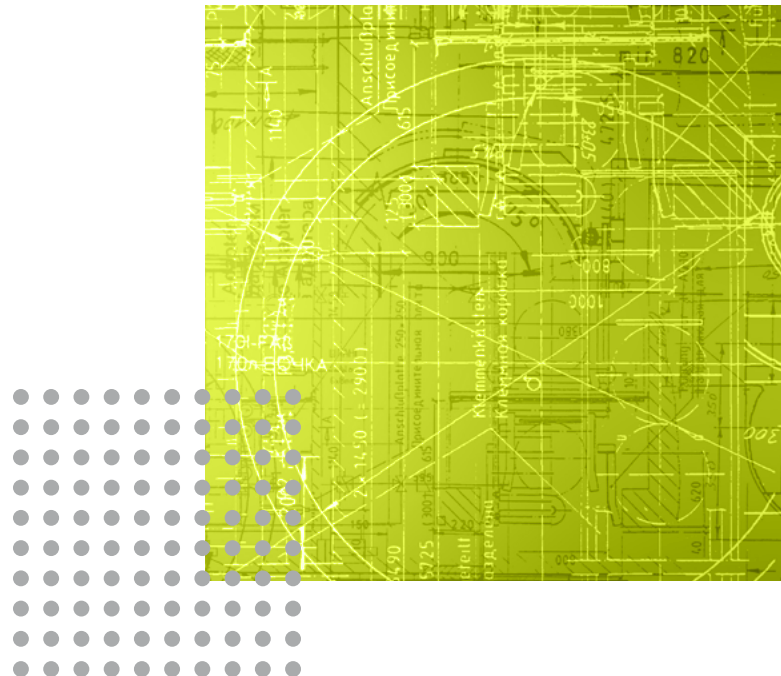
Though migrating to the new model can be intimidating, it doesn't have to be. Completing a readiness assessment allows you to prepare for the software migration, staffing and other challenges you may encounter. A Utility Network team that understands the breadth and depth of these issues can guide you through the difficult, but ultimately rewarding, process of migrating to the ArcGIS Utility Network.

## Biography

**Brian Hiller** is a geospatial technologies manager at 1898 & Co., part of Burns & McDonnell. He has more than a decade of experience helping utilities and governmental organizations make efficient use of technology to better manage and maintain the assets they are responsible for. Currently, Brian is heavily involved in the implementation of GIS technology within the municipal sector, including water, wastewater, storm water and public works organizations. He has a Bachelor of Arts in geography-GIS from the University of Kansas and a Master of Business Administration and Management from Baker University, as well as certifications from Esri for Enterprise System Design and Enterprise System Administration.

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