

GIS A Success Story - Facilitating a Customer Journey from Design to Connection Using GIS

An Operational Practice prepared for SCTE/ISBE by

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Introduction

Our industry is undergoing a massive digital transformation that is evolving in the science of where and who our customers are. In order to begin this digital era within our outside plant data, Midco started by converting from an archaic AutoCAD/Lode environment to a GIS platform. The conversion to GIS technology allows Midco to fulfill customer serviceability inquiries more efficiently and optimizes network design for future customers. Midco was able to simultaneously convert to a GIS platform and bring coax design functionality in-house, resulting in lower design costs and faster design turnaround time.

For several years, Midco outsourced all system design, at significant cost, to perform these design and as built functions. Midco wanted to utilize an alternative method to design which would allow us to bring this functionality in-house. The structure enhanced facilitation of our core GIS fiber management system, through development of RF/AC Power Design, ICOMS Integration software and conversion.

Content

Geovisualization allows you to view and map the location of objects, structures, specific street addresses, latitude and longitude data, varying devices and can be accurately situated on a map using geocoding methods.

Patterns are often more clearly observed when viewing mapped data. GIS provides a very effective means for graphically conveying complex information. Layouts created with a GIS are extremely useful when included in reports and presentations.

Midco has been working in this environment since 2008 when we purchased a Fiber Management System. With a touch of a few keys, our software and use of Esri (Environmental Systems Research Institute) ArcGIS applications have allowed us to map, and model every fiber cable, buffer tube, fiber strand and circuit. This data allows us to view and identify any type of usage throughout our Northern Plains Network.

Esri is a software development and services company providing geographic systems software and geodatabase management applications. Midco currently utilizes ArcGIS Desktop, ArcGIS Server, ArcGIS Portal and several other extension licenses. Schneider Electric's ArcFM, Fiber Manager and Designer Hybrid Fiber Coax (DHFC) product suite extend functionality of the core Esri platform to provide specialized tools for telecommunications companies.

These tools have permitted us to quickly respond with accuracy to several large scale Request for Proposals and expansion of residential and commercial areas while applying cost analysis to determine hotspots, as well as payback.

Our GIS database links all of our organization's digital data together based on a location, such as addresses, customer and network data of all capacities. This enables all departments of our organization to

have access to, and share the same data, and ensure all departments and individuals are using the most up-to-date information. Enhanced access to better quality and time-relevant data helps our organization discover new patterns in our data and the ability to make crucial business decisions.

Midco's GIS designer tool, DHFC allows us to provide instant feedback to the designer with clear understanding of what parts of the design need attention. DHFC's knowledge of the component catalog and infrastructure allows for extremely simple workflows with minimal clicks for design and redesign. All of this is driven by a centralized specification catalog where the specs drive the calculation engine on the client. The architecture allows for better ROI of the infrastructure being designed.

We have many home grown systems at Midco, most of which we have already integrated into our GIS environment. There have been many wins for Midco such as exciting spatial analysis which allows us to make smarter financial decisions at a much faster pace. Our design turnaround is one week versus 30 days and we're working in a single enterprise platform for engineering, network, GIS analysis and viewing of outside plant.

Midco is blazing the trail in GIS. The next beneficial step was to have the ability to provide our Account Executives instantaneous Good Faith Estimate (GFE) quotes for business sales. GFEs used to take 48+ hours, giving our competitors the upper hand. The Service Qualification App affords us the ability to provide automated quotes while in front of the customer which will significantly improve our close rate. Development of this application was in line with our on net, near net strategy. The application provides an in depth analysis of an area giving us the ability to capture additional business opportunities.

Customer Journey

Midco built a solution that automates the process of creating GFEs (Good Faith Estimates) that is required for Midco's service qualification workflow. The application was architected to integrate with our existing Esri ArcGIS for Server and Portal platforms. No additional investment was required other than development of the Serviceability App.

The Fiber Serviceability App captured additional on net, near net business opportunities. The application has the ability to provide a single cost to the business requesting service and/or estimate costs of building the business area. Previously GFEs are performed manually by designing the business area in-house then providing a bill of material. The Fiber Serviceability App performs these functions, saving time and resources.

In 2017, we've experienced a 35% increase in GFEs which made Midco's model even more favorable.

Originally there was a misconception that the new Master Address Database (MAD) provided the same information as the Fiber Serviceability App. MAD currently contains fiber pricing information about business opportunities; however, MAD fell short in providing reliable GFEs for a number of reasons:

- **MAD** – Blind geocoding addresses and unable to ensure the address is getting placed in the proper position.
 - **Service Qualification App** – Allows the user to visually confirm the location.
- **MAD** – Only accounts for underground routes.
 - **Service Qualification App** – Has the intelligence to determine underground or aerial routes. Aerial is a less expensive option.

- **MAD** – Limited due to prepopulated addresses and cost calculations; therefore, if an address is not in MAD, it will not have an address associated.
 - **Service Qualification App** – When an address is entered, it instantaneously provides the fiber cost calculation or allows the user to manually place the point.
- **MAD** – Unable to determine multiple route choices due to prepopulated addresses.
 - **Service Qualification App** – Captures multiple route choices which allow us to visually see the best route that will pass additional business opportunities.
- **MAD** – Unable to automatically create a PDF map.
 - **Service Qualification App** – Allows a user to create a pdf for upload into CRM (Customer Relationship Manager).

The Fiber Serviceability App provides us instantaneous quotes and a better close rate. Not only does this benefit our future customers, it also saves time, resources and ability to visually see the bigger picture.

Connecting our Customers Using GIS

An enterprise GIS provides broad access to geospatial data and applications throughout the organization. The advantages to deploying an enterprise GIS include:

- Using a common infrastructure for building and deploying GIS solutions
- Extending geospatial capabilities to an enterprise community
- Improving capabilities of other enterprise systems by leveraging the value of geographic information
- Increasing overall operating efficiency using GIS across our organization
- Enable viewing of geospatial information via mobile devices in the field
- Integration with other enterprise systems

GIS experts maintain control of the information and applications, yet productivity skyrockets as more users have access to geospatial information. Geospatial information can also be integrated with other enterprise applications to geoenable executive analysis and decision-support systems.

Midco delivers digital maps online, replacing paper map requests and quickly realized how much easier it is to click a check box to populate a basemap with data rather than fumble with existing AutoCAD maps to get the same result. Through training and partnering with our other departments, we were able to adapt our users to a more efficient digital workflow.

Midco understood our Strategy needed to be robust to accommodate our many field technicians. Our field requirements were:

1. Must be mobile
2. Easy to use
3. Quickly find features on map
4. View all records based on type of technical review necessary (installers, technicians, PM engineers, construction teams, etc.)
5. Trace RF and fiber
6. Make notes and drawings that can be saved to the database
7. Be able to view aerial photography
8. Be able to integrate GPS tracking

Geovisualization is one of the most powerful features of GIS and can be used to improve departmental collaboration. The overall benefits of spatial analysis:

- Enhance reports benefiting all departments
- Visualization aspect of data display
- Analyze data that will be interactive
- Capturing RF levels at the tap will allow us to identify plant problems before a truck roll is required
- Interaction between the NOC, dispatch and Field Operations will ensure plant performance
- Difference and Heat mapping will display customer preference and spending patterns
- Customer data will provide us the opportunity to upsell our products
- Customer call volumes, by Region, will visually identify concerns and allow Customer Service and other teams to respond accordingly
- Trouble call reports will be thematically displayed identifying other potential patterns of concern
- Any data the Call Center currently analyzes can take advantage of the system
- Other areas that will benefit from completion of this project included NOC software, Facilities, Capital and Operating performance, by Region, amongst many others
- Further investigation and development through APIs will allow our fiber management system to interact with network information
- Centralized AV system, providing a quicker customer response

Conclusion

Through the use of GIS, Midco has the benefit of an in-house mapping scheme and is no longer dependent on outsourced labor. After our initial investment and implementation, costs for mapping have decreased substantially and provides an efficient, accurate, streamlined process for all users all while delivering services to our customer base expeditiously.

Abbreviations

GIS	geographic information systems
FM	fiber manager
DHFC	designer hybrid fiber-coax
Esri	environmental science research institute
ROI	return on investment
GFE	good faith estimate

CRM	customer relationship manager
ISBE	International Society of Broadband Experts
SCTE	Society of Cable Telecommunications Engineers