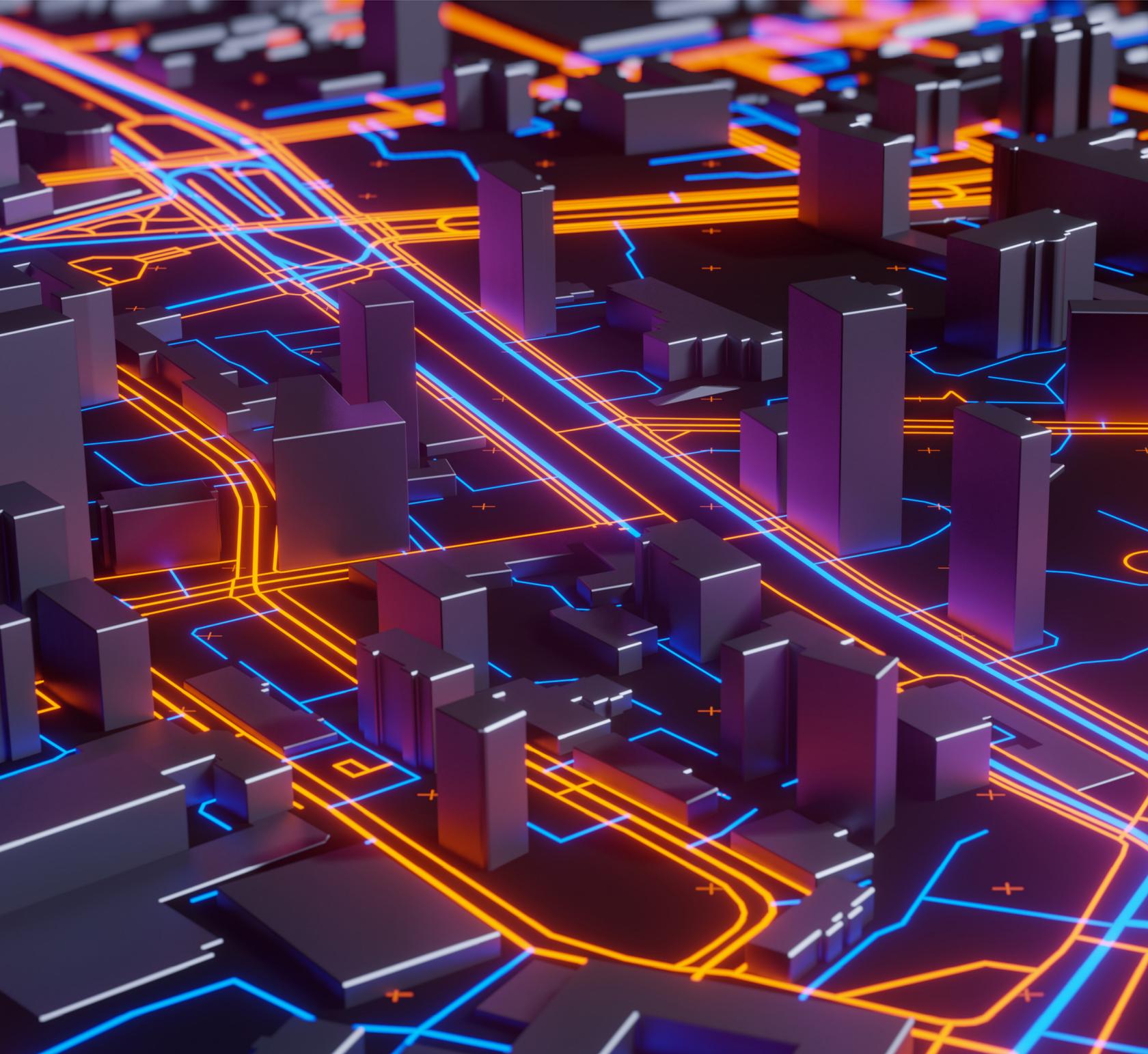


Fiber Optics

Network Management

Is Your City Smart-City Ready?

Are you able to make good decisions based on the information you currently have about your city?



EXECUTIVE SUMMARY

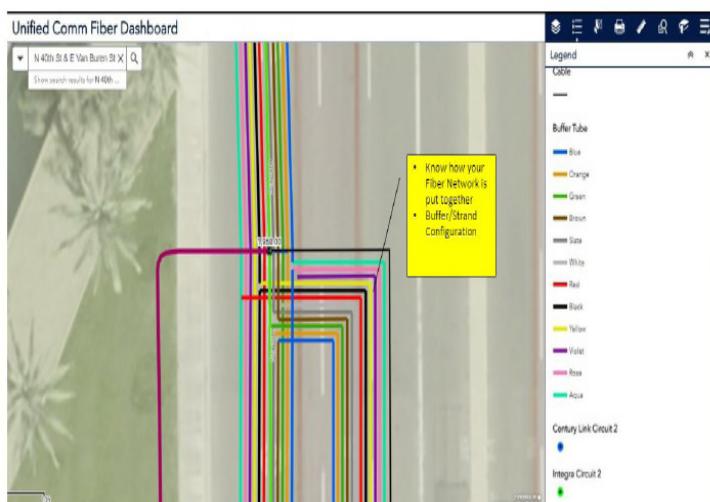
The rapid increase of fiber optic networks demands better documentation and tracking to provide risk assessments, predictive analysis, planning, and action-oriented decision-making abilities. Organizations and agencies realize that creating digital plans via a Geographic Information System (GIS) and, more importantly, keeping the data current is essential to having a single repository to manage and maintain the fiber network properly. Take your digital maps with you, anywhere. Connect your field and office operations by using shared data, and real-time data is at your fingertips.

Telecommunication GIS Software

BPG builds data models for your fiber network management using out-of-the-box ESRI software. These models take existing data like aerial maps, facilities, and fiber networks from conduit to strands and convert them into a technology decision-making engine. Models also include all handholes, pedestals, manholes, all buildings, city facilities and can even include traffic cabinets. All work done is added to the data model, and there is no need to duplicate efforts to maintain the data. External data sources can be added to allow for advanced analysis, planning, and quick decision-making.

Blueprints of Facilities

Facility as-built plans are interactive and can be pulled up in the field on an iPad or phone and updated as work is done. Click on the jack to get the info, add changes and keep them updated as you go. There will be no more waiting for architects to send plans. If your floorplans are currently not up to date, BPG will do an audit and create accurate floorplans for you, particularly IT Network as-builds. The app can go down to the level of outlets. Add BPG to the closing out process, send updates to BPG, and we will update the maps. Another option is to house a permanent employee at the facility – full or part-time to make sure all data is entered accurately.



Collect your Data, Build your Network and Keep it Current!

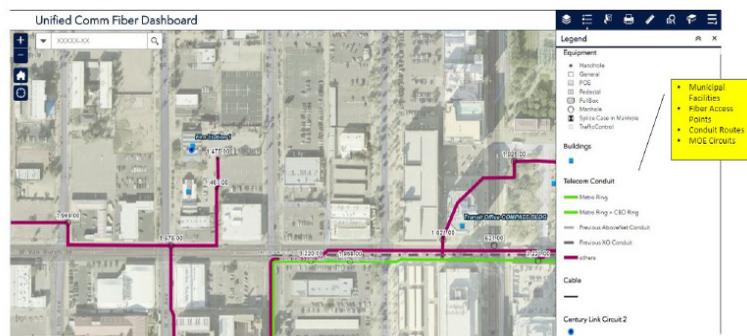
BPG can help conduct audits or tailor a mobile app to collect data using phones or tablets to improve your data model.

- When new buildings are considered, the map shows the fiber network closest to the building site.
- The data gives you the ability to search for the beginning and end of fiber routes.
- The map shows where cities or agencies may have available conduits to lease.
- Project Design Functions - functionality /network design directly from the application, including Wi-Fi. It'll show you network configurations and problems, such as walls or potential issues for your network configuration.

Fiber Network Management

BPG provides a wide range of services that help municipalities create and manage fiber network databases. The first step is to assess the existing databases. The next step is to coordinate with different business units to update the asset attributes required. Finally, BPG develops a relational database to integrate existing databases and information to create a system that can maintain relevant information such as routes, ownership, and asset attributes. We tailor this information to the specific needs of the municipality and business units. To maintain data integrity and network effectiveness, BPG conducts regular database reviews. These reviews also ensure that strategic visualizations can be acquired from the data. The result is a conduit inventory that provides municipalities with accurate fiber route information.

Maintaining data is a struggle of every database. One of the methods that BPG has used to mitigate these issues is by updating information as projects are completed. The blue stake and as-built information from the project is received and uploaded into the database. Once in the database, we assign relevant information to the fiber/equipment. This information has included ownership, lease availability, and descriptions; however, the data collected can be tailored as needed. By uploading project data and updating relevant details after every project, the database is kept up to date. BPG has successfully reduced the burden of entering and updating information on the municipality while also improving coordination by placing liaisons at the client's site.



In addition to knowing the fiber route, BPG has incorporated information from butterfly and splice diagrams with the conduit inventory to produce a network fiber path. The network fiber path allows information on the relationships between cables, fibers, and strands to be examined. This results in the ability to allocate individual buffers to businesses, aiding in maintaining the ownership information of fibers.

Once we create the fiber network, the data and information can be used in planning and decision-making. The first of two areas that BPG has seen this prominently used is supplying detailed information to 811 agencies. The other area that has saved municipalities time and money is using the detailed information about network access points. Knowing which access points contain fiber splices and which provide other types of access allow maintenance crews to be dispatched to the correct locations, saving them the time looking for the correct type of access point.

This system is also used to incorporate MOE circuits and information. The database can include information that keeps the MOE circuits up to date and easily displayed in a map. The data stored can be used to allocate business units to MOE circuits allowing for a more efficient design. Finally, BPG has used the MOE information to coordinate with the circuit provider to acquire inventory and equipment attributes on the circuits.

BPG has successfully integrated this data model to improve Building Asset Management. Extending the data indoors allows for detailed information such as added/removed network drops, access points, and camera locations on floor plans. The data model also allows for equipment to be given attributes such as names, departments, or location codes. We create floor plans using everything from Lidar scans to PDFs and AutoCAD drawings to paper maps. Once created, these floor plans can easily be reproduced as PDF maps for users.

Application Development

BPG has a team of dedicated development personnel to provide tailored solutions. The web-based applications allow users unique opportunities to utilize the data. BPG has produced a few applications that are consistent across municipalities.

The first application is typically referred to as the Unified Comms application. This application displays the conduit network and fiber relationships. It allows users to visualize routes and asset allocations. This application also provides information on MOE circuits, Building assets, and floor plan information. One of the benefits of this application is that it allows field users to collect data and update information directly. This assists the municipality in keeping information up to date as the work is completed.

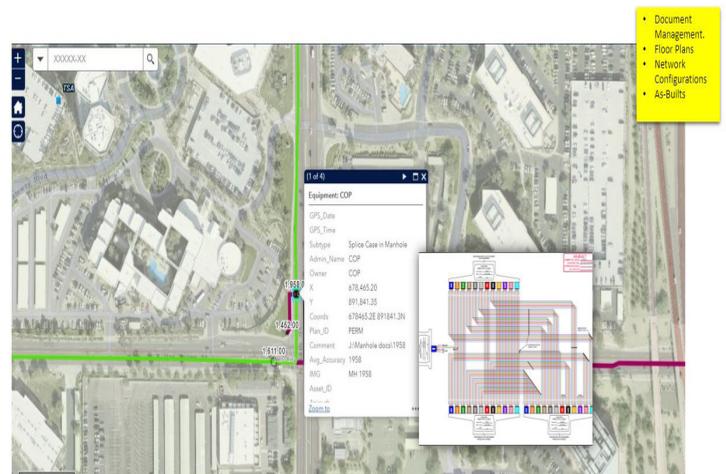
A variation on the Unified Comms application is the Street Cabinet Management app. This application provides the Streets Department with a web-based portal to view all fiber and cabinet relationships. This application includes a field version so their field users can upload documents of internal cabinet configurations.

Another application that we usually create is a Wi-Fi project management app. This is an application BPG has developed to allow users to prioritize Wi-Fi installations by providing information such as census population data and potential locations and allowing users to edit locations and range displays. This enables users to prioritize projects that will have the most significant impact. It will also assist in presenting information and defend decisions to stakeholders and the public.

The last app frequently produced by BPG is a Map-Request application. This app is a repository for all utility conflict reviews. The app allows access to the locations, communication, project owner, maps, and documents for projects. BPG uses this app in conjunction to answer map requests for utility conflict review. BPG reviews design submittals for City Departments and determines if there is a potential conflict with the existing telecommunications network. If there is a potential conflict, the communications engineers review the maps to determine if there is an actual conflict. The information for the submittal is then stored in the Map-Request App.

An additional benefit BPG provides is our experience presenting GIS services to other departments. This collaboration opens opportunities to partner on projects. This collaboration provides opportunities to move GIS services from being an overhead cost to billable efforts.

Every municipality is different. However, the commonality between them is the need to make decisions based on accurate and timely information. BPG has experience providing the structure for the decision-makers to have access to the information they require to make those decisions. The structure we use also reduces the burden on the staff and contractors supporting the decision-makers by making the process of updating and maintaining the information more efficient and effective.



MEET BPG AND THE TEAM

BPG offers a spatial GIS-centric, comprehensive yet scalable solution to survey, map and track assets and infrastructure by using a combination of general surveying, mobile LiDAR, static scanners, and UAS's to perform asset management data collection tasks. This includes everything from striping on roadways to above-ground utilities, tree inventories, signs, poles, pole connections, streetlights, traffic cabinets, buildings, and facility foot-prints (interior and exterior). Let us assist you in building your Smart City.

We also have many years of experience assisting cities with better fiber optics network documentation and tracking to provide risk assessments, predictive analysis, planning, and action-oriented decision-making abilities. Feel free to contact BPG at info@BPGdesigns.com or contact one of our experts directly with any questions you might have.

Ivan Morales - Project Manager

IMorales@bpgdesigns.com



Ivan Morales joined the BPG team in 2016 as a Mapping Department Manager. His depth of knowledge in GIS resulted in him being selected as a trusted expert to work exclusively with the City of Phoenix.

Ivan has worked with GIS technologies for over 20 years across multiple projects and platforms. He attended the University of Phoenix, and he obtained his Masters of Business Administration/Accounting and Business Management in 2000.

Brandon Sisco - Project Manager

BSisco@bpgdesigns.com



Brandon Sisco currently works in Tempe, AZ where he manages a team of geospatial professionals for a design-build telecommunications and utilities company. Brandon earned his Bachelor's degree from the United States Naval Academy in Control Systems Engineering.

He has also earned Master's degrees in Aeronautics from Embry-Riddle Aeronautical University as well as in Geographical Information Systems from Arizona State University. Brandon has over 1000 flight hours in various military aircraft and Unmanned Aircraft Systems and over 15 years of experience with remote sensing.



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