GIS Moneyball: How GIS Can Help Lay the Foundation for an Effective Broadband Launch

Use geographic information systems to improve business with data and analytics.

By Christopher Konechne / *Finley Engineering Company, Inc.*

When decisions need to be made, the importance of having quality data cannot be overstated. However, quality data *alone* may not be enough. In an environment in which the abundance of data becomes overwhelming, people need ways to get at the information that can intelligently inform a business's decisions.

Using quality and readily available data *in conjunction with* geographic information system (GIS) analytics can help uncover new opportunities and assist in planning and building out infrastructure with greater efficiency, providing visibility into who the people are in a given service area, what they need, and what it will take to get it to them.

By creating customized, purpose-built maps to develop reliable, accurate assessments, GIS analytics can present necessary, relevant, fact-based information in an easily digestible format, allowing people to discard the frequently unreliable, cookie-cutter estimates that get in the way of good decision-making.

This analysis reviews and discusses the availability of data, its sources, and the benefits that can be derived by converting it into detailed geographic representations – layered maps – that enable aggressive, forward-looking companies to visualize, discover and accurately evaluate new opportunities and convert them into working projects by eliminating guesswork from the decision-making process.

ESSENTIAL INFO

All necessary information is available – and that's the challenge. Understanding the geographic areas to which you have access is essential for locating new opportunities and developing effective strategies for imminent builds as well as future projects. Drilling down into the granular details required to advance a project with confidence frequently requires collecting and managing large amounts of data. Historically, this has involved the time-consuming, cost-intensive tasks of gathering physical data and working out the details with a pen and pencil or a complex spreadsheet.

Today, much of this data is available digitally – often free or at a very low cost – from public sources, such as city, state, county and federal offices. Grant studies and 911 databases at the state or county levels can also supply enormous amounts of information, and utilities often have helpful data in their databases. Within billing software, many companies have great amounts of usable data that is never effectively utilized. All of this data is available and waiting to be harnessed.

Over the last five years, the increase in available data has been phenomenal. The primary challenges arise in locating and

Aerial photography of a proposed serving area shows larger features that can impact the cost to build, such as rivers and canyons. However, finding and tabulating wetlands that may have a larger impact on the overall cost to build is time consuming. Tools within GIS can save time to obtain the necessary information and provide greater accuracy when planning broadband network expansion costs.

accessing the data that's *needed* – and then, managing and parsing the data without being overwhelmed by it. Simply put, it can be difficult to separate the signal from the noise – and this has been a stumbling block for many.

Learning to key in on the right information and scale it to a size that's both manageable and useful is essential. This is where having a strong GIS solution can be important.

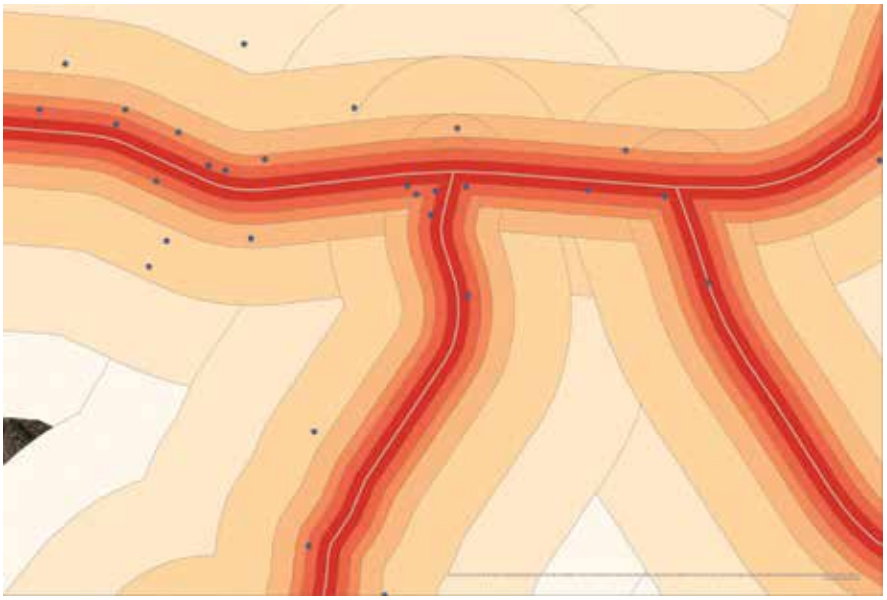
USING GIS ANALYTICS

GIS is a system that connects geospatial data to a map, integrating location data with descriptive information. In short, it can take enormous amounts of data to create clear and understandable custom maps that allow for the visualization of opportunities that exist and choices that are available in a selected region.

The visual component is crucial because it reveals patterns, relationships and geographic context clearly; it turns georeferenced datasets into visualized databases that allow someone to focus instantly on what can – and can't – be done. Furthermore, the information can be presented in a way that's understandable and digestible, even to board members who may not be well-versed in the significance of what the detailed data represents.

For example, GIS allows users to create easy-to-read, custom, color-coded maps that plainly indicate county lines overlaid by grids illustrating areas existing fiber already serves. Superimposed over that map, areas won in competing Rural Digital Opportunity Fund auctions, for instance, can be shown, along with road maps that help assess route miles that need to be built, with address points that exist within the area. Additional information that may affect planning decisions can be included, such as territory marked for endangered species and wetlands. The details and data are granular, but they can be composed quickly, layer by layer, into a robust map that reveals, at a quick glance, information that could take days or weeks to tease out from the raw data alone.

"With today's mapping resources and analytics, we can prepare a shovel-ready budget in a fraction of the time it used to take," says Dean Mischke, Finley Engineering vice president and project engineer. "GIS allows a company to proactively study a specific area at a fairly low cost and have that



The cost to place a drop can be one of the most expensive costs per foot, per establishment. By overlaying the roads and address points with incremental buffer zones representing the distance from the road centerline, software can be used to estimate the drop footages quickly and with greater accuracy.

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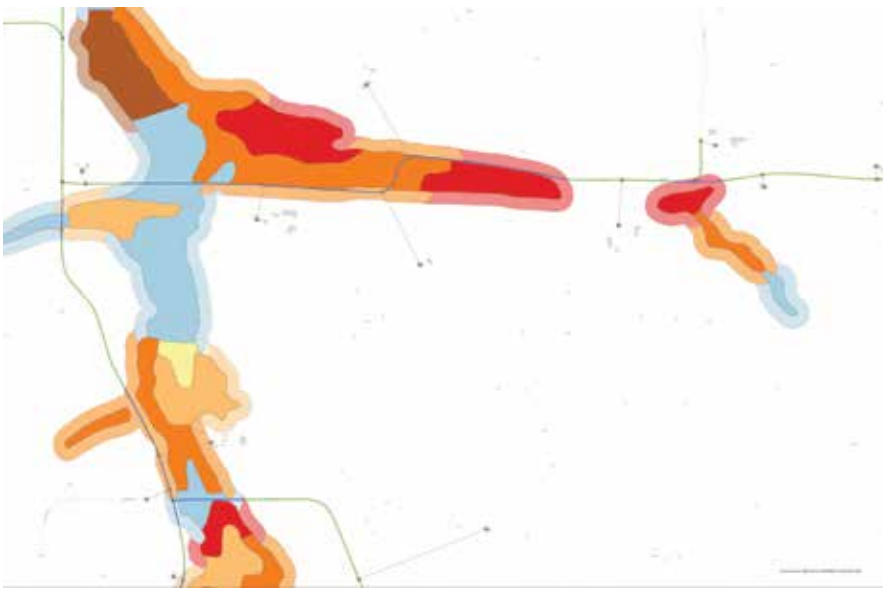
information, with a budget already worked out and in [the client's] pocket, before a program is even announced. It can turn what might otherwise have been an unworkable task of gathering enough information to make a meaningful submission to a grant authority into a situation where [the client has] been able to cost-effectively study a particular area in advance and [is] ready to run when the opportunity arises."

Roughly an hour and a half of preparation and analysis of data from readily available sources can yield enough information to make a solid cost estimate in many cases. In fact, creating area maps simply using currently available tools can represent time savings of up to 95 percent over attempting to manage the data manually – and this can result in substantial savings in terms of traditional investigation costs.

GIS OPPORTUNITY AND EFFICIENCY

For counties and municipalities looking to foster broadband programs, GIS mapping can be performed when assessing feasibility, taking guesswork out of financial estimates and helping assign hard numbers to projected costs. With these numbers in place, it becomes possible to work backward to determine the amount of assistance needed to build out a project, and to provide enough detail to encourage telcos and electric co-ops to engage.



In rural buried fiber construction, wetlands are often bored to reduce environmental impact. Boring can cost three to four times more than plowing. Wetlands can have a significant impact on the accuracy of probable cost to build an area.

"We can take areas that are not currently shovel-ready and create models that have reliable cost values assigned to them," says Mischke. "When an opportunity for funding becomes available, we can submit our GIS research to the applicable grant agency, and our models can be considered sufficient to qualify as shovel-ready. And this analysis can now be performed at roughly 25 percent of the cost that would have been needed in the past."

It's now possible to determine a number of critical factors that could affect the cost of construction without ever needing to put feet on the ground, while being far more accurate than competing methods allow. Uncertainties that can delay a project or lead to cost overruns are reduced by having key information earlier in the development process, such as how much aerial vs. buried fiber will be required, how many poles need to be touched or how many poles are at risk.

The value of this work is not lost once funding is in place or construction has begun. For instance, preliminary orders for fiber can be based on data that's been collected and maps that have been created. As projects and developments grow and change over time, the maps can be easily updated to assist in future project development.

Additional benefits include:

- **Reporting:** As FCC reporting requirements are updated, the type of granular details requested will be much more accessible. Data that's compiled down to a granular address level allows for easier reporting.
- **Funding:** When evaluating various funding options, including the National Telecommunications and Information Administration Broadband USA program, the Rural Digital Opportunity Fund, the American Rescue Plan Act, and funding from the U.S. Treasury and states and so on, GIS information can provide both clarity and perspective.
- **Marketing:** Even after projects have been completed, the maps

and data put together for specific projects can be used in targeted marketing campaigns.

Finally, data collected and managed through GIS analytics becomes a living document. If a project is put on hold for an extended period of time, nothing is lost; the information and maps can be updated quickly – usually in a matter of minutes, rather than days – as new data is simply integrated into the existing structure.

From gathering and managing data to creating detailed area maps that deliver the information necessary to move forward with confidence, GIS offers an efficient, reliable, low-cost option, especially when compared with gathering data and parsing it manually.

Timelines on many projects are incredibly short, and moving fast is essential. Intelligent GIS mapping offers the ability to identify and act on opportunities quickly. Additional benefits that arise from bringing GIS mapping into the picture affect planning, budgeting, efficiency and reporting, and can also lead to improved management and decision-making.

Finley Engineering staff are experts in working with data and GIS analytics in developing successful broadband and telecommunications projects. They know how to access the data clients need, often at little or no cost, and they know how to manage and manipulate data to create the maps and visual representations that help companies make critical choices. ❖

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