

# Enterprise GIS Turns Infrastructure Data into Valuable Business Intelligence

A cable provider sales representative is at that critical moment when a potential client asks, “Can you provide cable at my location?” The representative knows that an affirmative answer is a crucial step toward closing the deal. Many cable companies rely on a manual procedure and, often, guesswork to determine serviceability for an address that is not already in their billing system.

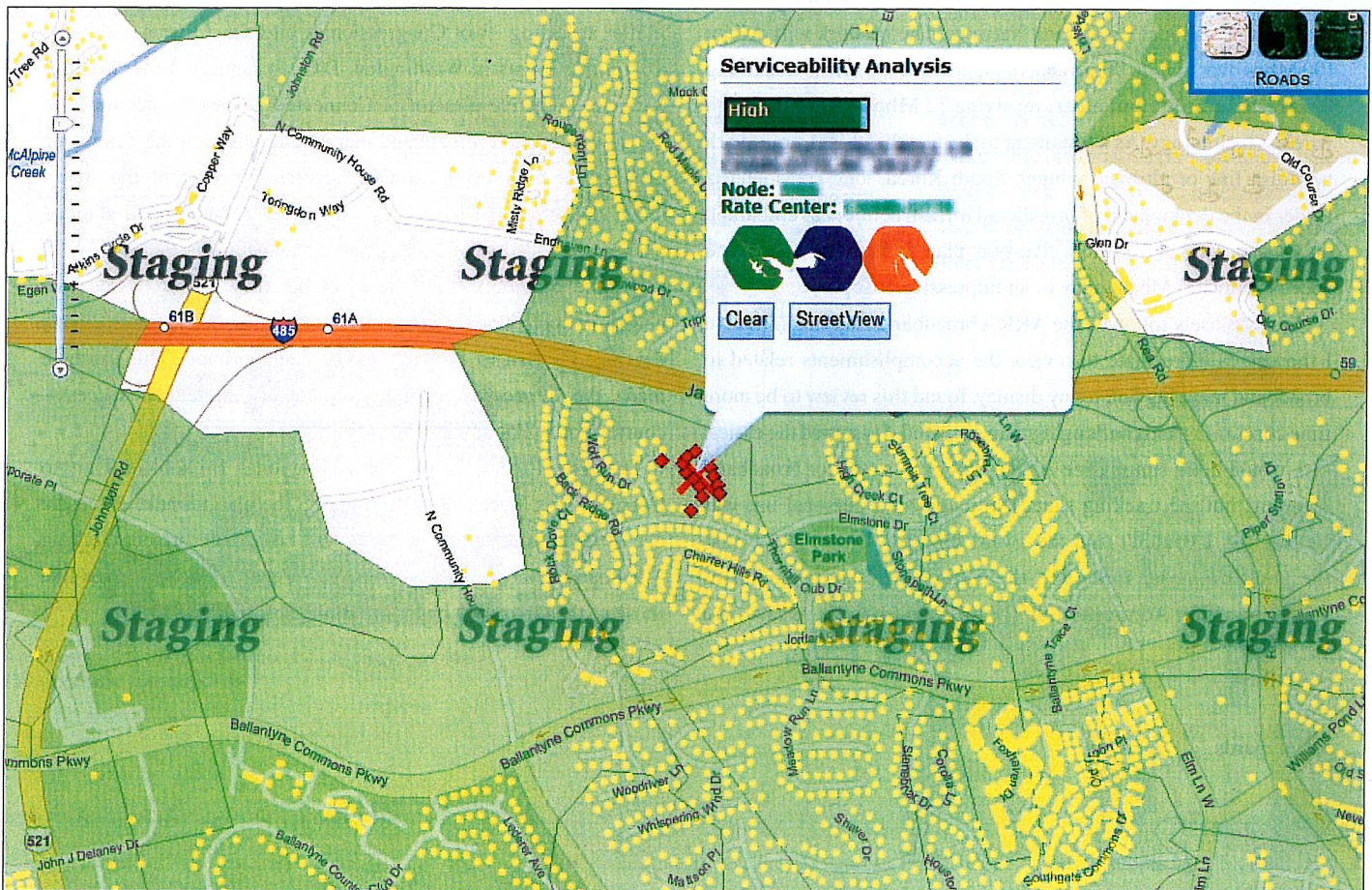
In most cases, a client’s serviceability is determined by a field visit, which results in numerous wasted trips to addresses where paying customers cannot be served. In addition, no client feels happy when told to wait a day or two for a technician to visit the residence and report back to the sales representative. Immediate and accurate determination of serviceability shortens that moment between service request and point of installation.

Take the example of a large cable company that determined that such a system would save resources, time, and money and keep clients happier. At the same time, the company saw that an additional mechanism that recorded client requests would provide valuable data that could be used in marketing or network build-out analysis. The company had already invested in a migration of CAD data to an ESRI GIS technology platform to keep track of its cable network, and adding a serviceability application could provide an early win for the cable company’s GIS team. The company chose Enspira Solutions, an ESRI business partner based in Greenwood Village, Colorado, to create the serviceability application. The goal was to enable the sales representative to type a residential address on a computer keyboard and receive a visual, reliable answer about the

address’s serviceability—while making the client wait only a few moments.

The creation of a serviceability determination framework consists of many milestones. The factors that compose the concept of serviceability may vary from company to company. For this article, serviceability is defined as the quality of a specific physical address that measures the probability that it can receive the products and services offered by a cable TV and services provider. The products are cable-provided services, such as cable TV, high-speed Internet, and digital telephony (voice over IP).

The determination of the serviceability of a particular address is made by overlaying the address point on the cable service territory. In this case, the service area polygons (node boundaries) were already available in an



Results of the Serviceability Analysis give customer service representatives detailed information about serviceability.

existing ArcGIS schema, leaving only the geocoding of the address to be performed. Once a residential address point location was known, a simple point-in-polygon service could be used to overlay the point onto the service territory.

### Serviceability Algorithm

The serviceability of a given address is not a yes-or-no answer. It is the likelihood that the cable company will be able to serve the customer's location. At a high level, the algorithm has the following operands:

**$L \times C = \text{a percent score, where}$**

L = location of the customer  
in relation to cable service territory  
C = confidence that L is accurate

The determination of C in the high-level equation is the part that will change from company to company and, possibly, product to product. This confidence factor will also be adjusted over time as the results of the serviceability requests are analyzed. The components that make up this confidence factor are

- The geocode match score
- How far the address is located from the service territory

Each geocoder has a match score that determines the accuracy of the geocode. The higher the match score, the higher the confidence. Another key measurement is the location of the address in relation to the service territory of the cable company. If an address is found to be well within service territory boundaries, the score is higher. However, there are less apparent findings as well. Quite often, addresses that are just outside the territory are serviceable, leading the algorithm to be modified to give positive results for addresses close to, but not within, the service boundaries. This distance is the main adjustment point in the algorithm and, often, an indicator of the accuracy of the GIS service boundary data.

### Persistence and Data Analysis

An effective serviceability framework will save resources on the front end by requiring fewer truck rolls, but it can also do more. Saving, or preserving, a serviceability request is an important facet to any serviceability framework and therefore to the GIS data model. Once saved in a database, the requests can be analyzed to support other processes such as

- Network build-out planning—If an area has a high number of serviceability calls, a quick return on a new network is likely.
- Marketing—An existing service area with few serviceability requests could mean a marketing blitz is needed to perk up awareness.

### Application

Starting with the data entry point, a lightweight, simple application is the best practice. Despite all this talk about algorithms and probabilities, Enspira ultimately designed a computer screen that provided

- An easy form for entering address data
- A simple map to display the address and cable GIS data
- An unequivocal answer to the serviceability question

Enspira senior software engineer Glenn Goodrich utilized ESRI's ArcGIS Server technology to design a straightforward Web interface.

"The ArcGIS API for JavaScript is a perfect fit for creating an intuitive Web experience because it enables end users to work with GIS without being GIS experts," said Goodrich. "The result is a simple form and map with minimal GIS controls."

### Conclusion

The largest piece of the serviceability framework is the GIS, which provides the cable company with the locations of its own assets and potential customers. Preserving the serviceability information leads to an added

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ability to analyze the request database in support of many marketing and engineering functions. The serviceability framework will save money immediately and allow cable companies to more efficiently serve their customers.

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