



©Hexagon Safety & Infrastructure

HOW WEB SERVICES UNLOCK THE VALUE OF NETWORK DATA

WEB SERVICES, PORTALS AND SERVICE-ORIENTED ARCHITECTURES OFFER UTILITY COMPANIES THE CHANCE TO PROVIDE INFORMATION TO ANYONE WHO NEEDS IT ON WHATEVER PLATFORMS THEY WANT IT, ARGUES MICHAEL BAKER

Good decisions depend on getting good information in a timely fashion. Unfortunately, good information isn't always readily available to those who need it. For utilities and communications companies, the network model is critical for informed decision-making. But data access is often limited to certain departments.

While the will may exist, more widespread sharing of information requires time and effort to modify formats, translate data and overcome internal challenges, such as data synchronisation and fears of uncontrolled access. For the enterprise, limited visibility results in limited value. In contrast, expanding the use of data greatly enhances its value – not linearly but exponentially. This increased visibility fosters peer-to-peer interaction, which promotes innovation.

The key to unlocking this value is web services. A web service is a way of sharing data to applications. It's based on standard, open protocols and uses the Internet or a corporate intranet to distribute information. Web services work independently of operating systems and programming languages, enabling flexibility in the use of client applications.

When a web service is enabled, a client application makes a request through standard web protocols. That request goes to an application server, which accesses information and sends it back to the client in a

standard format. As an example, Hexagon's Intergraph G/Technology manages complex network models, stored in open Oracle databases. Using Intergraph NetWorks, GIS administrators who aren't developers or experts in Internet Information Services (IIS) use a simple administrative console to set up a web service in just a few hours.

Once a web service has been created, its use on different clients is limitless. It can be as simple as visualising the network model in the client application. Users select the layers and the client application generates the same map view seen in the backend GIS with the same symbology – the colours, fonts and other symbols used to display the assets featured in the desktop system and hardcopy maps. It can also be as complex as allowing the user to make edits to both the attributes as well as the graphic features. Users can even add new features.

It is unrealistic to think that every department will use the same client. Each department in a company uses the client that best fits their needs. Some may use a web viewer, others a GIS application, some an open-source solution. Web services enable the enterprise to extend the visibility of its network data to different users for different purposes on different clients. With this type of enablement, the capabilities of web services are endless.

Web portals

Through web services, the network model can be viewed on thin-client web portals. But the potential of these applications goes well beyond simple viewing. Users can query data, review redlines, perform network tracing, edit information about assets, perform analytics, create PDFs and more. Data from multiple sources, such as inspection videos or live weather feeds, can be visualised with the network model, providing a comprehensive operating picture. This operating picture leads to informed decision making.

Not simply a snapshot of data in time, web services provide data in real-time, allowing the enterprise to better respond to incidents and events. For instance, staff at home in the middle of the night could quickly view an unfolding situation from a tablet. Portals allow for more advanced analysis and reporting as well. For example, portal dashboards could show supply reliability, trends and failures over time. This ultimately creates a more proactive organisation. One that has dealt with events before they occur and responds quickly to those that do.

Web services also enable external, outward-facing portals. Customer satisfaction is a major topic for utilities and telecommunications providers. Portals can provide customers with more up-to-date information, at their convenience, and enable a positive customer experience. It's essentially the same information available to internal viewers, but governed by different rules and presented in a more generalised, yet still meaningful, way.

In addition to these direct customers, web services support non-company users as well. Contractors could use web services to support a variety of tasks, including vegetation management and call-before-you-dig workflows. In emergency situations, emergency services could access critical infrastructure information in a timely manner. And as local governments move to smart cities, the network model will provide a crucial layer.

Field automation

By extending data to the field and back, web services also power productivity. They help eliminate or reduce paper and radio-based workflows, permitting users to dispatch, update and close service orders from their devices. They also extend capabilities beyond traditional mobile GIS applications for map viewing and data browsing, enabling the automation of critical workflows.

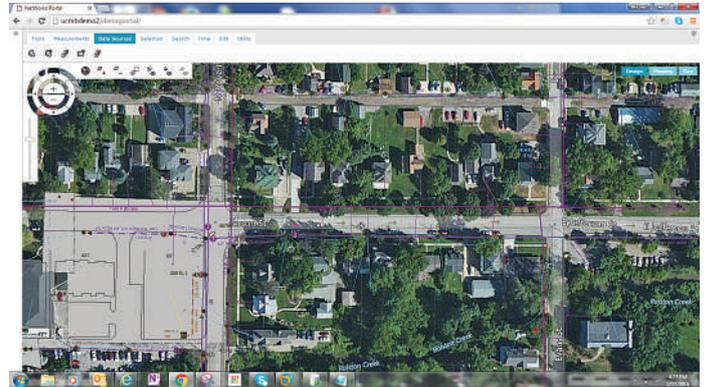
Field automation itself is moving beyond the map. In fact, an enterprise may not be interested in the map at all, but the data itself. For example, by leveraging a phone's GPS, users could pinpoint the nearest asset and update information, removing the need to run a query or click on a map.

These applications are more location-aware than map-centric, taking traditionally non-spatial data and adding a spatial component. This allows the users to focus on the workflows and not the tools. This helps eliminate some of the inefficiencies in typical tasks.

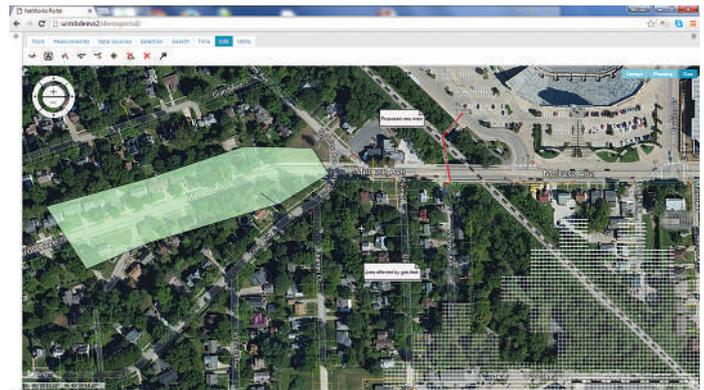
Task-oriented applications

This type of field automation leads to another, related topic: web services provide a service-oriented architecture for the creation of task-oriented applications. These applications are geared toward very specific workflows solving unique problems. For example, a web service-based solution could leverage outage management, materials systems and a device's GPS to automate storm damage assessment and restoration work. Supervisors could use portals and dashboards for web-based visualisation of network damage, including outages and crew locations. Portals would provide management a tool for analysis and reporting of damage and restoration plans. Field crews could use mobile apps to collect data and manage their work assignments.

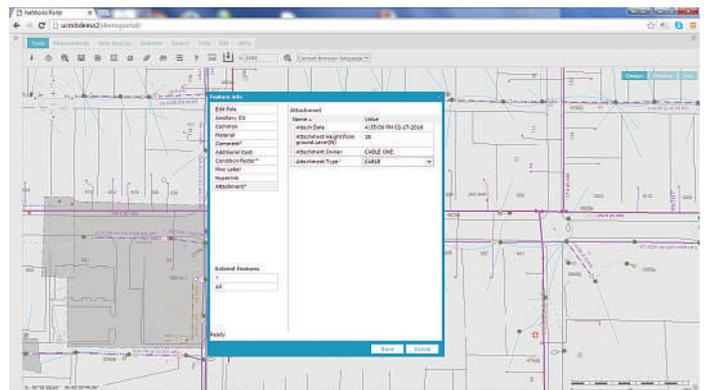
The ability to access network data via consumer-grade devices also helps lower the total cost of ownership for these task-oriented solutions. Because web services can be used with any language or client, an organisation can quickly and affordably deploy very specific field applications on consumer devices.



With clients enabled by web services, users can view facility data on consumer maps



Users can perform important tasks, such as redlines and annotations



Users can add new records of network assets.

Improved operations

By using web services to share data, utility and communication companies can unlock the value in their existing geospatial investments. They can enhance the reach, quality and currency of enterprise information. Web services provides a method of making the network model available and usable wherever needed – by planners, call centre staff, operations centre personnel, field crews and even customers. All organisations that rely on their network model should consider how web services – and the portals, apps and task-oriented solutions they power – could help deliver value to their business.

ALL ORGANISATIONS THAT RELY ON THEIR NETWORK MODEL SHOULD CONSIDER HOW WEB SERVICES COULD HELP DELIVER VALUE TO THEIR BUSINESS

Michael Baker is a product manager for Hexagon Safety & Infrastructure (www.hexagonsafetyinfrastructure.com)