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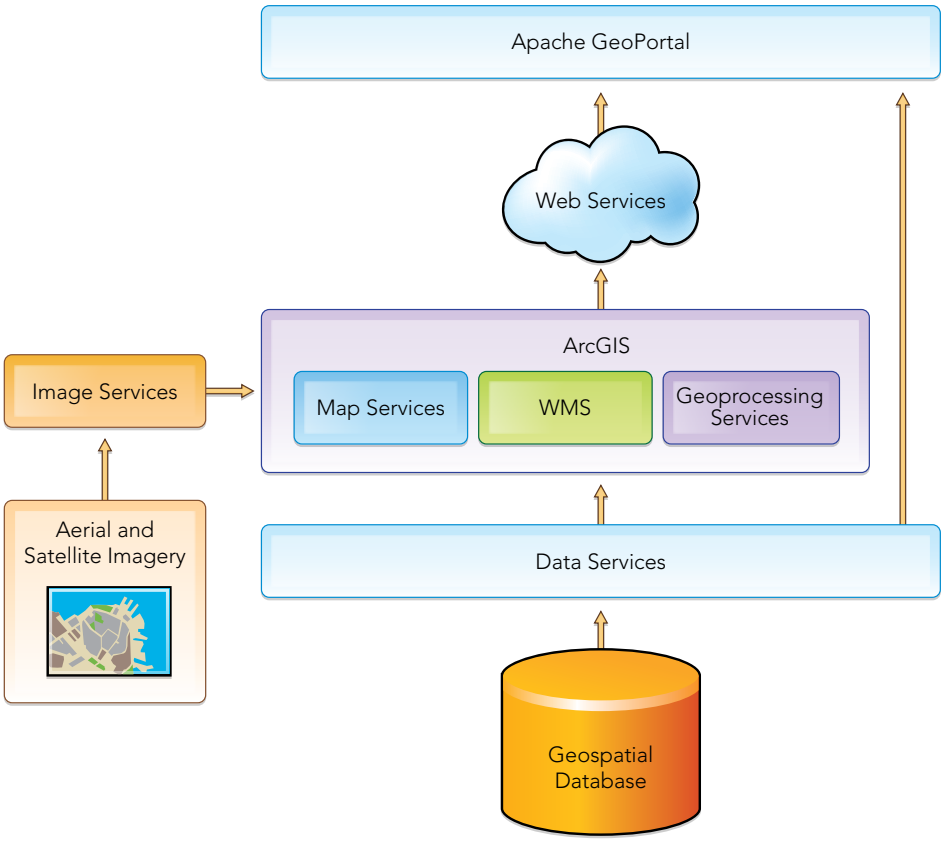
Portal Delivers Maps and Lightweight Apps

By Barbara Shields, Esri Writer

Apache Corporation uses ArcGIS as a core technology for its oil and gas exploration and production (E&P) and business operations. In 2011, the team launched Apache GeoPortal, a framework that allows staff to access and share GIS resources on a variety of computing platforms and mobile devices.

The portal's architecture is Apache's technical approach to disseminating GIS resources to all its regions worldwide. This architecture uses Esri's ArcGIS; Silverlight-based web maps; and an internally developed Silverlight-based website that serves Apache users looking for maps, spatial data, satellite imagery, and other GIS resources. Apache GeoPortal is an intranet solution that is only accessible by employees and contractors.

Apache GeoPortal is a distributed architecture. It has been implemented in Apache's Houston, Texas, office and is accessed by offices around the world. The company is now setting up portal frameworks in its Argentina and Australia offices. As individual regional offices come on board, they will have the same architecture along with their locally generated data and services from spatial data engines and ArcGIS. These self-contained systems link back to the central data server in Houston. Currently, the tie is through spatial data management scripts that keep the databases in sync. In the near future, many of the spatial layers will be synchronized through replication.



Apache's Enterprise GIS Architecture

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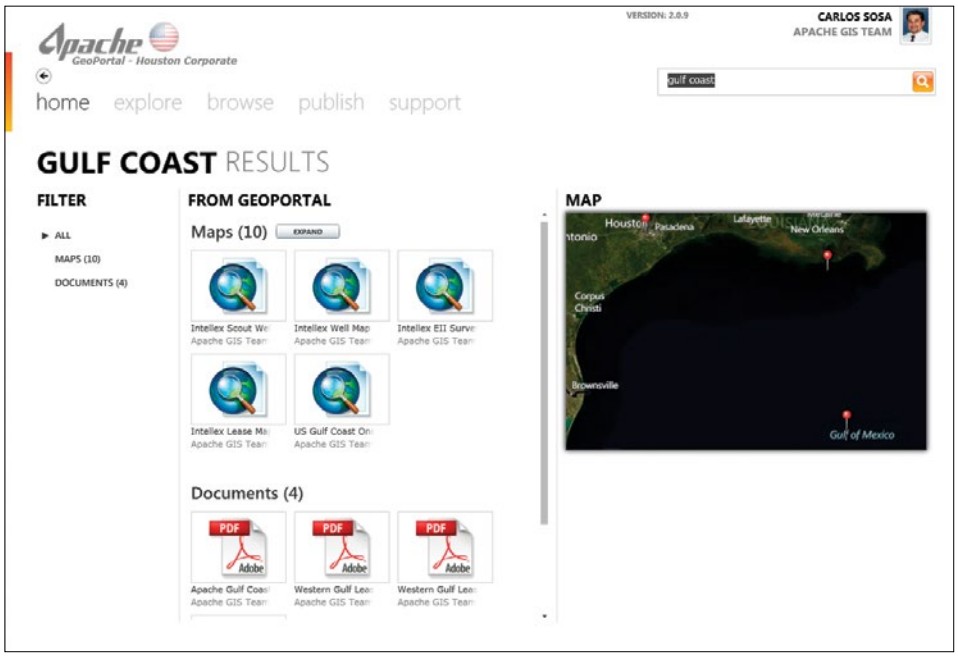
Apache GIS Architect

The GIS team is using ArcGIS API for Silverlight to build workflow apps for the company. This platform is a powerful tool for creating and delivering rich Internet and intranet map applications, all hosted via a browser. No installation is required, since Silverlight includes a lightweight version of the .NET Framework CLR (CoreCLR) and the runtime. "This combination provides more opportunity for our users to easily share and access content," explained Carlos Sosa, Apache GIS architect. "Lightweight APIs form a large part

of the services we deploy on GeoPortal. Our people really like them because they are fast and easy to use."

Apache has taken this one step farther by bundling the workflow with spatial layers in the Silverlight map viewer in a new concept that the company's developers call Map Apps. It allows users to quickly execute a business process that requires a map. Workflows are tailored to the map layer and can include custom thematics, search, and dynamic links to external data. Among the company's many apps is one that generates a bubble map of wells indicating petroleum or gas production. One can easily see wells that are producing and those that are not. Another Map App, which is updated daily, shows permits to drill held by Apache and its competitors, the target formation, and whether the well is horizontal or vertical. A Map App designed for Apache's land lease group extracts data from a tabular database and converts it into a map of Apache's leased areas. Lease analysts can use a search tool to find a specific lease, compare its information with other geographic data, and verify its accuracy.

Users find the Map Apps they need by using the robust search capability that is built into the portal. They can search for map applications using a keyword or geographic search or simply browsing through the various categories such as featured maps, types, and departments. They must have connectivity to the internal-facing website but do not need software installed on the device. The experience of accessing Apache Map Apps is similar to that of popular app stores. Users open a browser from a desktop or mobile device, log in to the system, go to the Map App store, find the app needed, and apply it to the mapping concept. In addition, users can rate content and add comments.



↑ Apache GeoPortal brings maps and data together.

"We could not have done this project five years ago—maybe not even two years ago," explained Bruce Sanderson, Apache GIS team manager. "We tried ArcIMS five years ago and found it just didn't have the horsepower or scalability for what we wanted to do. Our next attempt was ArcGIS for Server using Web ADFs [Application Developer Frameworks], and still it was too slow and clunky. Esri technology began incorporating popular web concepts into its services and pumped up its product performance in ArcGIS 10. Because Apache is committed to being on the edge of technology, we kept our system up-to-date with these technology changes, and now our enterprise GIS works the way we initially envisioned it. The system is scalable and can be used in the field on thin clients such as mobile workstations and ultrathin smartphones. When the lightweight ArcGIS APIs came out, we first went with Flex and then quickly changed to Silverlight."

Users also go to the portal to find content including ArcGIS map projects and spatial layers, satellite imagery, geotagged photos and documents, and resources such as information about training and upcoming events. Users can publish content either individually or as part of a team and can restrict access as needed.

Through the content socialization tools, users rate the published items and help promote the quality of the content being disseminated. Similar to social media sites, users can establish communities around this content, thus encouraging its use. Apache GeoPortal and data are secured because the entire system is behind the company's firewall, and the server platform is accessible only through granted privileges and credentials. Nothing is accessible outside the firewall.

"It is an interesting and exciting time for us, because we are reaping the benefit of all this investment that Esri has made in this technology," said Sanderson.

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