

Petroleum GIS *Perspectives*

Esri • Summer 2011

GIS for Petroleum

OMV Migrates from ArcIMS to ArcGIS Server

OMV's GIS Environment

For many years, OMV has used an enterprise geographic information system (GIS) to integrate data sources and create maps in all phases of the exploration and production (E&P) life cycle. GIS data has been available through the desktop ArcGIS client to the web GIS based on ArcIMS. Recently, OMV advanced its web GIS environment by transitioning from ArcIMS to ArcGIS Server.

In addition, OMV is using an adapted version of WebOffice from SynerGIS Informationssysteme GmbH, Esri's distributor in Austria. WebOffice, in conjunction with ArcGIS Server, offers highly sophisticated user interfaces and incorporates analytic ca-

pabilities into web applications. The solution supports lean mobile devices and enables users to do web-based data editing. It uses a fine-grained role and permission concept.

OMV's GIS team has been developing procedures for converting and smoothly integrating E&P heterogeneous datasets, such as seismic navigation, well locations, well-related assets, and production data, into GIS formats that are used by many E&P departments. This deep integration of GIS with OMV's information management environment has made it possible for employees to create comprehensive maps and perform spatial analysis.



OMV Production Operations in the Vienna Basin, Austria

In This Issue

Esri News	p3
Esri on the Road	p3
Are Cloud Services Right for Oil and Gas?	p4
PUG Conference Broadens Enterprise Vision	p5
Brits See the Ground beneath Their Feet	p6
Petroleum GIS User Group Conference Platinum and Gold Sponsors	p8
Portal for ArcGIS	p11

Traditionally, OMV has had two GIS user groups. The first includes power users that process huge datasets using the strong mapping and analysis capabilities in ArcGIS. The second includes moderate to casual users that work with the front end of OMV's web-based GIS (WebGIS). OMV wanted to extend the capability of its GIS to more users within its vast operations.

"The bandwidth that is so prevalent in the US or in North and Central Europe, where OMV has most of its branch offices, we do not have in North Africa or in the Mideast," said Achim Kamelger, OMV's enterprise information architect and member of the CIO IT strategy and architecture group. "For instance, in remote areas such as Tunisia, we have very limited network capabilities. Therefore, we require smart, lean technologies that allow data exchange and team collaboration in these regions."

"We considered technological trends, data management, and data quality assurance, as well as the limited Internet infrastructure within the countries in which we operate," continued Kamelger. "Based on all these criteria, we determined that ArcGIS Server would improve our company's ability to create, manage, and distribute GIS services over

continued on page 2

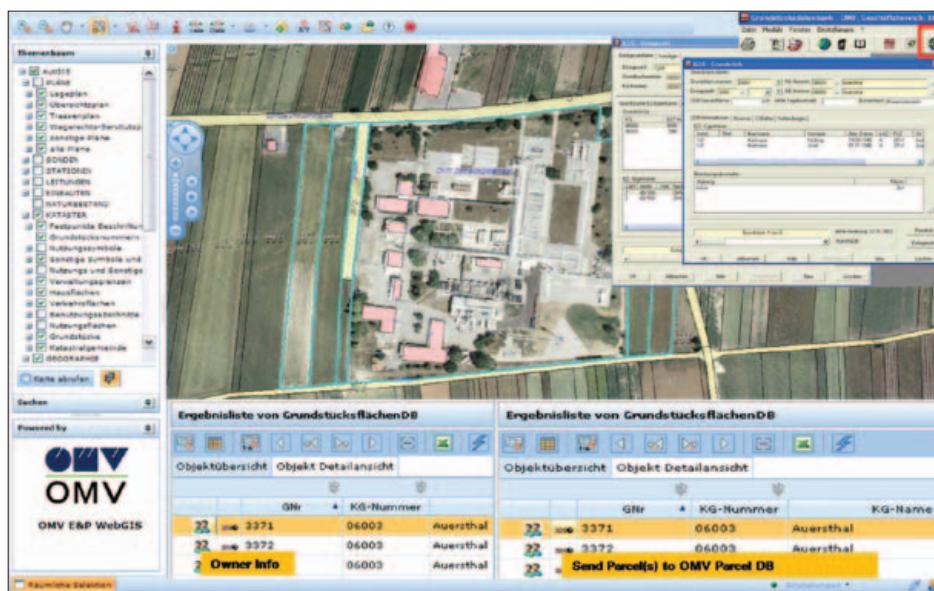
OMV Migrates from ArcIMS to ArcGIS Server

the web that support desktop, mobile, and web mapping applications and deliver the exact information users need for the task at hand."

OMV worked with SynerGIS to create ArcGIS Server applications that would be available to all E&P staff. SynerGIS set up its WebOffice solution, which is built on ArcGIS Server. This web map service does not require any local installation or browser plug-ins. It integrates geographic, tabular, and content data from OMV's different databases.

In addition to basic GIS functionality, such as navigation, querying, basic spatial analyses, exporting, adding data, and printing maps, the solution has bidirectional link capability. It exports geographic data in various GIS and CAD formats. This means the user can link CAD data from the parcel database to ownership information in ArcGIS. The user goes online to access the geology and geophysics (G&G) archive (G&G maps and horizon grids), perform a query, select an area, preview the archived map, and select and download data types.

"With its additional capabilities and functionalities, our WebGIS is a living application. This system is driven mainly by the E&P division," said Christoph Smolka, OMV's GIS



OMV's WebGIS links the parcel database (plants) with CAD and GIS data.

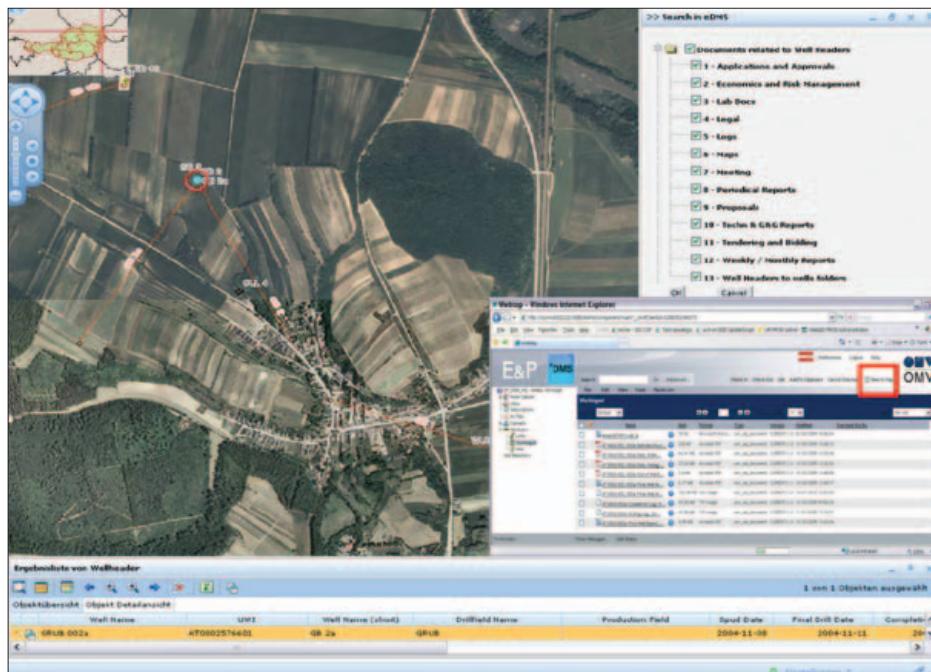
team lead. The GIS team established different groups of spatial layers to meet data requests from E&P departments such as portfolio; exploration; drilling; production; health, safety, and environment (HSE); and real estate management data.

Another bidirectional linkage is between ArcGIS Server and OMV's electronic document management system (eDMS). This GIS

eDMS linkage (based on GTI's PlaceLynx) allows users to select well data from the geodatabase and send it to eDMS documents or, conversely, select relevant documents stored in eDMS and display them in GIS. Employees appreciate the speed of this lean spatial service and make use of the functionalities within their everyday workflows.

OMV wants to transition its field GIS from heavy onboard technology to lightweight server technology that delivers thin applications for mobile devices. The GIS team has been testing various options to improve the mobile system. OMV employees already use GIS routing functionality to calculate routes to OMV wells, facilities, and HSE-relevant sites along public streets and OMV roads and to create reports. But thin applications will improve the GIS fieldwork environment with better data, editing, and analysis capabilities. ArcGIS Server supports ArcGIS Mobile, which delivers GIS functionality and data on various mobile devices. SynerGIS is developing a lean server application that OMV field staff can use to add equipment and facility status via a smartphone or smart pad.

"Lean applications will help our in-field workflows throughout all phases of the E&P life cycle," Kamelger explained. "For instance, in the acquisition phase, we will easily access



A bidirectional link between WebGIS and the electronic document management system allows users to bring documents into the mapping environment or bring maps into documents.



OMV operations at the Ashtart oilfield in Tunisia have limited Internet bandwidth and, therefore, are in need of thin applications from ArcGIS Server.

culture maps that support logistics during the asset setup. In this phase, informative road maps are essential in the field. For instance, a driver would be able to look at a map to see if a specific bridge can carry the weight of a heavy truck. In the asset phase, users can link production data with spatial data to create maps used for management dashboards or reports to local governments. And finally, thin applications and data can be served to users for performing environmental assessment and regulatory compliance. For example, the user could view high-resolution imagery of HSE areas; study comparison maps of environmentally sensitive areas; and create reports for the company, shareholders, and regulatory agencies."

OMV is now looking to extend the use of GIS outside the E&P division of the company. "ArcGIS Server has opened many new opportunities for us," concluded Kamelger. "Our goal is to serve GIS web applications to all departments in all divisions at OMV, such as refining and marketing or gas and power. Further, we are trying to increase the integration of our GIS with the OMV E&P MasterDataStore environment and other E&P-specific applications. This will add value to our information and bring efficiency to our work."

Find Petroleum Business Solutions at the Esri International User Conference

The Esri International User Conference (Esri UC) will show you ways GIS can help locate success in the dynamic petroleum market. Meet GIS experts and oil and gas professionals that can answer your questions about

- E&P
- Land management
- Imagery
- Logistics
- Market analysis

"Come to Esri UC and discover new ways to add value to your operations,"

said Geoff Wade, Esri natural resource industry manager. "ArcGIS 10 opens more opportunities for the petroleum industry with data management, mobile applications, and complete analysis."

Attend industry-specific tracks, Special Interest Group meetings, exhibits, technical sessions, and the Petroleum User Group (PUG) social. Grow your skills, your vision, and your professional community.



Esri International User Conference

July 11–15, 2011, San Diego, California

Learn more and register at esri.com/uc.

Esri Career Opportunities

Are you looking for a career where you can apply your industry expertise in a challenging new way?

Join our petroleum team and help broaden the applicability of GIS within the wider petroleum sector.

- *Account Executives, Petroleum and Pipeline, Houston and Denver*—Support existing client relationships, advance relationships with Esri business partners, and cultivate new business within the petroleum and pipeline industries.
- *Solution Engineer, Petroleum, Houston*—Work closely with account executives to understand client requirements and help formulate appropriate GIS solutions.
- *Petroleum Industry Solutions Specialist*—Help develop, manage, and execute a comprehensive industry marketing plan in support of the GIS user community.

Learn more about a career on our petroleum team and apply online at esri.com/petrocareers.

Esri on the Road

Esri International User Conference

July 11–15, 2011

San Diego, California, USA

esri.com/uc

GIS for Oil & Gas Pipeline Conference (GITA)

October 24–27, 2011

Houston, Texas, USA

www.gita.org/oilgas

Clean Gulf 2011

November 30–December 1, 2011

San Antonio, Texas, USA

www.cleangulf.org

Are Cloud Services Right for Oil and Gas?



Cloud computing is a technology useful and affordable for natural resource management. It provides technology capabilities that are delivered on demand as services via the Internet. Cloud services are commonly managed from a central location rather than at the customer site and are paid as a subscription. More than 15 percent of large companies are adopting Software as a Service (SaaS) and Data as a Service (DaaS) cloud models. These hosted services have become popular because there is no client/server software installation or maintenance, they are quickly deployed, and the data is current.

Most people use cloud services every day for e-mail, online banking, and driving directions. But are these online services appropriate for the oil and gas business? Keith Fraley, geoinformation consultant for Shell E&P, Houston, Texas, says it's time for the industry to get "SaaS." A longtime user of GIS software for E&P, Fraley talked with *Petroleum GIS Perspectives* (PGP) editor Barbara Shields about the benefits that SaaS data vendors could bring to the industry.

PGP: What data management problems do you see being resolved by hosted data services?

Fraley: Speaking primarily from a DaaS perspective, Internet technologies and infrastructure have advanced to a point that using a cloud service could potentially be more advantageous than managing data in-house. About 90 percent of a petroleum company's data is from external sources. E&P companies spend tremendous amounts of money and time internally managing datasets that they don't own but rather lease. Moving to an externally hosted solution for vendor datasets would significantly reduce the footprint of the IT systems in place internally and allow companies to focus on managing their own internally derived data.

An oil company's data can come from hundreds of resources such as IHSE, Tobin, Pennwell, BLM, and NOAA. Internally managing so many datasets is a problem that forces you to be reactive. Because data providers' products have evolved over time, there is no uniform way of induction. Data is delivered by different means, from DVDs and FTP downloads to SDE imports and file geodatabases. It also arrives in periodic increments, some monthly, some quarterly, and some whenever the provider gets around to it. The GIS data manager is basically at the mercy of vendors' methods of delivering their data. It would be much easier if data managers could simply plug into a hosted service database whenever they need it. And if they don't need the data any longer, they could simply unplug rather than going through the task of expunging datasets and derived datasets (exported shapefiles, TIFFs, and x,y files) from their systems.

PGP: The Data as a Service model sounds good for the client, but why would a data vendor be interested in deploying cloud services?

Fraley: A data service provider is able to aggregate—build once, deploy everywhere—its operating environment and have new distribution channels. In addition, looking at access rates helps vendors see trends, predict growth, and meet demand. They would be able to simplify the pricing model that meets their clients' needs. Furthermore, rather than building monster-level patch rollouts and dataset pushes, the service provider could focus on smaller upgrades and real-time dataset updates.

Data and software web services are growing in popularity, and the change is inevitable. This trend cannot be ignored, and the data industry must act now to keep up with competition and the needs of their clients.

PGP: What basic ideology would data vendors need to address before making the transition from traditional data service to cloud services?

Fraley: The ideology that oil and gas software products should be "walled gardens" must change. Oil and gas companies have a hard time being agile managing data because a lot of our vendors' products are proprietary software and data. They don't see that building products focused on interoperability and standards are in their best interest.

PGP: Petroleum companies have yet to adopt data and software hosted services. Why should they consider it?

Fraley: The model of DaaS from the cloud makes sense in the oil and gas world. In fact, I would argue that it is the perfect scenario for us. We are a very data-intensive industry. Most oil and gas companies house mammoth amounts of geospatial data, which has traditionally been locked up by power GIS users. As geospatial professionals, it is in our best interest to get that critical information to the people that make business-critical decisions. With a cloud model in place, our ability to build rich Internet applications becomes greater. We can take our internally managed data and quickly mash it up with vendor web services and get it in front of the decision makers.

PGP: An often-heard argument by petroleum people is that cloud computing is a security risk and a bandwidth problem. Can you address these concerns?

Fraley: Security is absolutely a primary concern, and it should be. The Internet, by its very nature, is inherently insecure. This is the main reason why the concepts being discussed here are mainly SaaS as a one-way street. Oil and gas companies are consumers of data and do not push internal confidential

data into the cloud. However, the security aspect will evolve and eventually get to the point where companies will not have great concern about storing critical, confidential information in the cloud, much like we as individuals do already in regard to the banking industry. Regarding bandwidth, many data services are delivered over standards and protocols such as XML and JSON, which are not heavily bandwidth intensive. The beauty of this is that I can send spatial and nonspatial information through a simple REST URL, which is not a huge bandwidth hog.

PGP: What role do you see Esri playing in web mapping services?
Fraley: Esri has come a long way since the ArcIMS days, in terms of web services. It is building products that focus on interoperability and standards. ArcGIS Server is an excellent cloud-based product.

Some petroleum companies have stepped up to ArcGIS Server but are still using an ArcIMS approach, thinking that the new technology is merely a way to make pretty maps on the web. That is the tip of the iceberg of what the product can do for you. One example of ArcGIS Server as it relates to DaaS is the product's geodata service. This service gives the data vendor the ability to easily and quickly push data products (updates, deletions, and replication) to its client, eliminating the need for DVDs or FTP downloads.

Another example of Esri's commitment to and understanding of the cloud is ArcGIS Online. My company is leveraging the free web mapping services of world imagery, topos, and street maps—and many more—available there; this saves us the cost and hassle of trying to manage that data in-house. From an SaaS perspective, the Esri cloud-hosted web APIs for JavaScript, Flex, and Silverlight provide a robust yet lightweight solution for developers.

PGP: How do you foresee the oil and gas industry moving into cloud services?
Fraley: The industry migration to the cloud will be an incremental process. There is no magic bullet for migrating decades of legacy systems and workflows to a new model, no matter how great the new model is. In the end, vendors and clients must understand the need for fundamental changes in the way data and software gets delivered in our industry. Then they must have the technology, infrastructure, and knowledge in place to implement that change.

Learn more about cloud GIS at esri.com/cloud.

PUG Conference Broadens Enterprise Vision

Oil, gas, and alternative energy professionals gathered in Houston, Texas, at the Esri Petroleum User Group (PUG) Conference April 18–21, 2011, to see how the new generation of Esri's GIS technologies can make their companies more efficient, competitive, and successful. This was the world's largest GIS for petroleum meeting in 2011, and it included more than 1,000 people, 400 organizations, and 80 Esri partners. The conference provided attendees with learning opportunities by offering 60 papers and 20 workshops that described a full spectrum of successful petroleum GIS projects and applications.

Opening the conference, Jack Dangermond explained how he sees GIS changing the way we work, moving from visual to analytics, to design, to communication, to action. "GIS mapping is a language that engages everyone, making us more collaborative," he said. Technical presentations showed advantages of using ArcGIS Online map services as base data for operational data; employing portal technology to support enterprise-wide data access; and new functionality that provides improved QA/QC, integrates imagery, and compacts data cache. They also showed models, applications, and tools for production, HSE, and sub-CAD infrastructure.

Presenters showed the newest geospatial technology trends for petroleum. The Microsoft Upstream Reference Architecture (MURA) initiative for the oil and gas sector is a collaboration for which Esri provides the geospatial component that is coordinating interoperability of geosciences applications. GIS for renewable energy featured applications for wind power generation such as site location analysis. Cloud technology is becoming a business opportunity for efficient access to external and internal data and to provide hosted map services that incorporate ArcGIS Server and ArcGIS Online. Among ArcGIS advancements is seamless access to imagery from the GIS environment that provides functionality to make exploration easier for geologists. ArcGIS Mobile gives field-workers access to well data and land management information through thin clients such as smartpads and smartphones. They can capture and edit location, access those coordinates directly from the mapping environment, and perform GIS analysis while on-site.

The 2012 Esri Petroleum User Group Conference is slated for spring in Houston, Texas. Watch for the date and location, as well as 2011 proceedings, at esri.com/pug.

Brits See the Ground beneath Their Feet

By Barbara Shields, Esri Writer

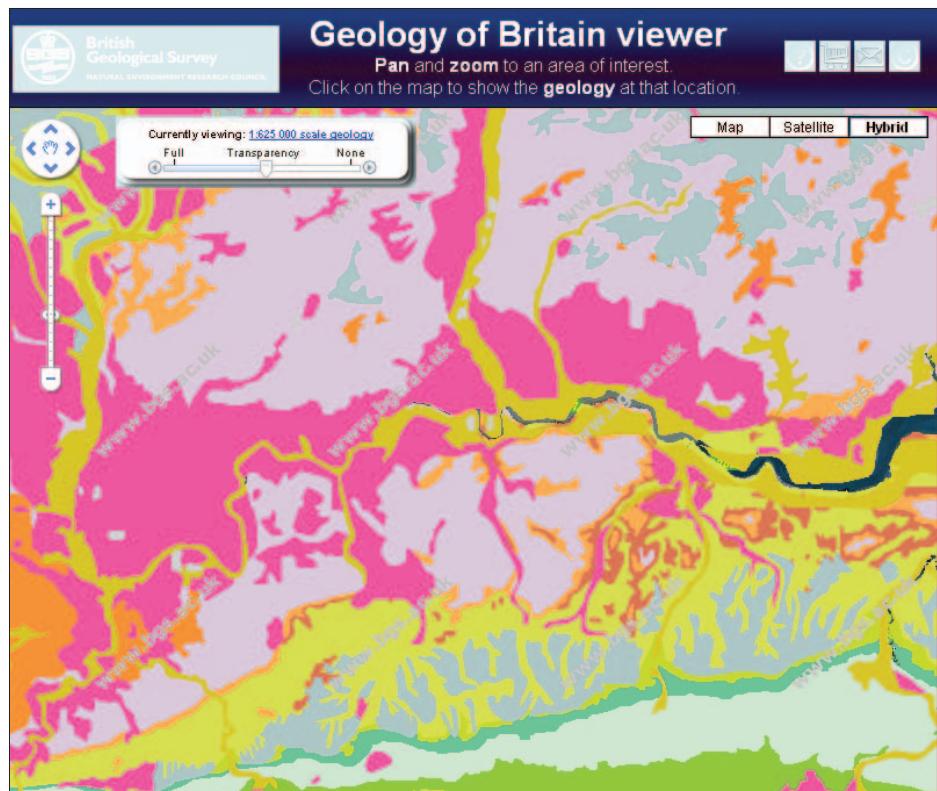
OpenGeoscience is a GIS web map server that shows site visitors geologic maps of the whole of Great Britain at a scale of 1:50,000. By delivering geologic detail to about 50 meters on the ground, the British can virtually see the ground under their feet. The site is sponsored by British Geological Survey (BGS).

"OpenGeoscience provides the public with a wealth of geological information including maps, photos, digital data, research reports, and software," said Richard Hughes, BGS director of information and knowledge exchange. "These can be combined with other environmental information to help people better understand their world."

OpenGeoscience is built on Esri's ArcGIS Server, which provides the map data services using web map service (WMS) and REST services. Data is in a file-based geodatabase in a central repository. Delivering DigMapGB-50 data as a WMS means that users can view the data within their own systems and integrate it with their own data.

GIS users can access 1:50,000-scale mapping data via the OpenGeoscience web mapping service and bring it directly into the ArcGIS environment. To do this, the user copies and pastes the BGS URL link to a clipboard, then, in the open ArcGIS environment, adds a data layer, a GIS server, and a WMS server. Next, the user pastes the URL from the web page in the WMS server, clicks Add layers, adds the service, and sets the transformation. An additional legend item appears in ArcGIS. The user can see all the layers or access them individually. Layers include 1:50,000 linear features, mass movement, artificial ground, superficial deposits, and bedrock.

Available datasets are accessible using BGS GeoIndex, which is a map-based index of information that BGS has collected or obtained from other sources. It includes geologic indicators of flooding; fossil localities; waste sites; BGS rock samples; active mines and quarries;



Geology of London Area

superficial deposits, faults, dikes, and bedrock geology at a scale of 1:625,000; and Landsat imagery.

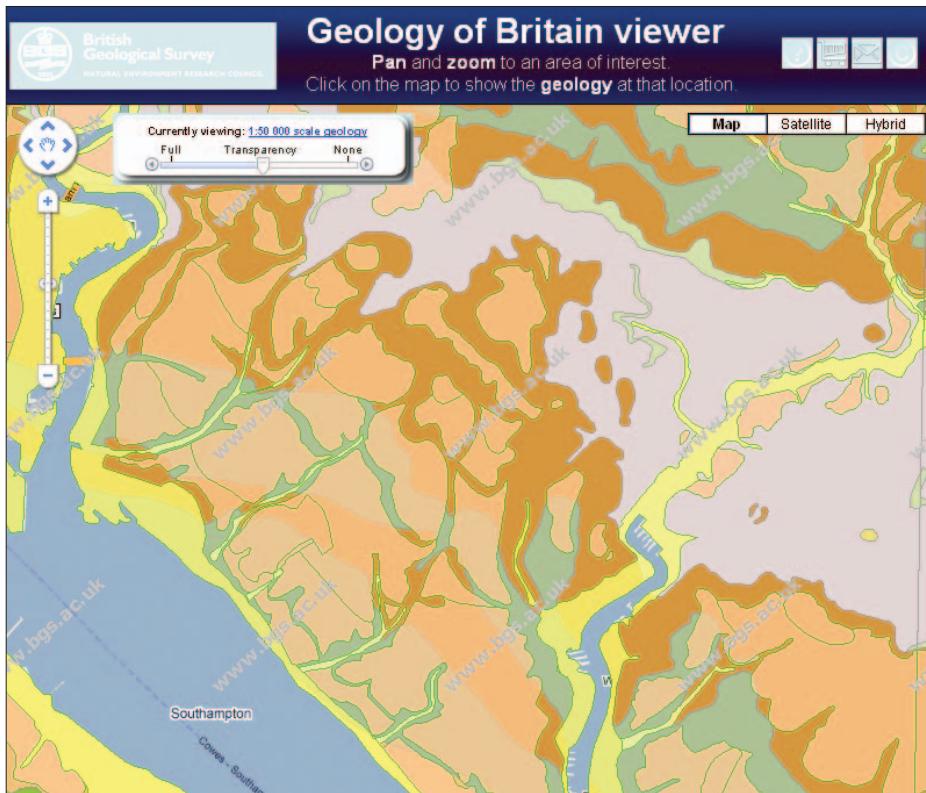
The primary mission of BGS is to provide geologic knowledge to the United Kingdom (UK), so BGS widened its user base by providing a simple viewer for the data service. This add-on proved to be the tool that has made the website so popular in the UK and a model for others to follow. People who otherwise would never have known what to do with a WMS were able to easily interact with the data. The web-based map viewer, called the Geology of Britain viewer, is built with the ArcGIS API for JavaScript Extension to the Google Maps API.

The Geology of Britain viewer makes available geologic data easy to visualize at a range of scales. This means anyone can select a location of personal interest and pan and zoom to it. They can click the imagery button to view a satellite image of the area with geology shown

as a transparency. This helps people get their bearings. The transparency can be changed by moving the slider bar. Clicking a geologic feature on the map provides information about the geologic details and a link to more information such as a description of bedrock geology.

BGS has a vast collection of geologic maps—some of the first having been produced in 1835. The UK has been mapped many times since then. When BGS was doing paper mapping, the country required approximately 600 geographic sheets. Today, the national geologic map is a fully attributed vector GIS dataset.

"Today, what we have is not just a piece of cartography; it is a fully interpreted database accessible via a web mapping service," explained Ian Jackson, BGS operations director. "When a user hovers over a geological feature, the Identify tool shows what the rock is and what the superficial rock is above it. A user can enter a UK postal code and house number and



The Geology of Britain viewer gives website visitors an interactive experience with geology data.

see the geology under a house.”

Users can underlay and overlay geologic datasets with other datasets and compare them against land-cover and topography data. In addition, data can be brought into a project such as cadastre or hydrography. A working example of using geologic relationships is to compare geologic data with cadastral, topography, and hydrography layers to calculate insurance risk. In a study for mines, a user can combine geology with slope, mine, and sub-foundational data.

The data on the website is entirely that of BGS. BGS developed and manages the website, hosts and serves the data, and adds new datasets. The map data is the very latest version of the core geologic dataset.

“Web mapping services now enable us to reach out to the public much more than when we simply delivered GIS datasets to people,” noted Hughes. “We decided we were going to

harness the power of web services by delivering our geospatial data through that mechanism, and, of course, it has paid off. We now have millions of people using our data on a monthly basis when previously we had thousands.”

Indeed, the effort has paid off. The site received seven million hits the day of its launch. People enjoy going to the site and playing with geologic science in a fun and compelling way. People working in a variety of industries, such as oil and gas, groundwater, and utilities, are also taking a look at data via the website.

The OpenGeoscience program continues to evolve. An iPhone application is soon to be released that enables a person to download a UK geologic map related to an area of interest and, with GPS functionality, literally show the ground underfoot.

Experience the OpenGeoscience website at www.bgs.ac.uk/opengeoscience.



Portland stone, which is oolitic limestone, is extracted from this quarry on the Isle of Portland in the English Channel. (Photo by Mark A. Wilson, Department of Geology, the College of Wooster)

Data Governance in the Pipeline Industry

Tracy Thorleifson, Eagle Information Mapping

Pipelines transport tremendous volumes of crude oil, natural gas, and refined products on a daily basis. Pipelines are statistically by far the safest way to transport hydrocarbons. However, a recent spate of high-profile pipeline accidents has raised the visibility of pipeline safety concerns at the national level, and federal regulatory agencies are responding vigorously. The National Transportation Safety Board (NTSB) recently issued a series of urgent pipeline safety recommendations based on findings from the September 9, 2010, gas transmission pipeline rupture in San Bruno, California, which killed eight people and caused extensive property damage. NTSB determined that pipeline records were inaccurate, and the subsequent urgent safety recommendations called on pipeline operators and regulators to ensure that the records, surveys, and documents for all pipeline systems accurately reflect the pipeline infrastructure as built throughout the United

States so that maximum safe operating pressures are accurately calculated. It is clear that pipeline operators will face a higher level of regulatory scrutiny than ever before.

Esri GIS technology provides a solid foundation for digital storage and analysis of pipeline data. However, it is no longer sufficient simply to have a fully populated GIS-enabled database with supporting mapping, analytic, and reporting applications. The data in the database must be fully auditable, and robust management of change (MOC) procedures must be in place. This marriage of data management and business process management is referred to as data governance. Sound data governance minimizes data defects, optimizes data cycle times, and ensures complete data audit capabilities.

Eagle Information Mapping has been providing Esri GIS-enabled solutions to the petroleum and pipeline industries for over 20 years. Its goal has always been to help clients operate their facilities more safely and

efficiently by deploying state-of-the-art, GIS-enabled applications based on Esri technology. Eagle's pipeline applications cover the full gamut of operators' needs, including facilities management and mapping, smart alignment sheet generation, regulatory reporting, and complex geoprocessing. Its Pipeline Integrity Management (PIM) suite includes offerings for liquid and gas high-consequence area (HCA) analysis, Department of Transportation (DOT) class location analysis, maximum allowable operating pressure (MAOP) calculation, risk analysis, and emergency flow restriction device (EFRD) placement analysis. Its facilities management tools have long supported the Pipeline Open Data Standard (PODS) data model and the ArcGIS Pipeline Data Model (APDM). These tools now also support the recently released PODS Esri Spatial data model. Eagle's analytic and reporting tools support these data models, too, but may also be used with largely unstructured data.

Latitude Geographics: Do More with ArcGIS Server

With limited resources and rising expectations, GIS professionals are asked to sometimes do the seemingly impossible. With these increasing demands, there is a need to find new and innovative ways to do more.

For years, creating GIS applications invariably implied a custom development effort, which was time-consuming and labor intensive. Given the underlying technology and development tools available at the time, a custom approach was the accepted reality.

However, as GIS technology has evolved, ArcGIS Server technology has become more powerful. Today, rather than build applica-

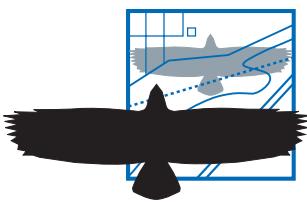
tions from the ground up, GIS professionals can take advantage of not only sophisticated developer tools but also advanced commercial off-the-shelf (COTS) software that complements the underlying platform with additional functionality. These prebuilt components can deliver the "last mile," thus accelerating the design and development of GIS applications from months and weeks to days and even hours. In addition, COTS software components, when provided as a supported product, can leverage economies of scale, thus minimizing risk and reducing cost. Geocortex, developed by Latitude Geographics, is an ex-

ample of a COTS framework that has been specifically created to complement and enhance Esri's ArcGIS Server platform.

Geocortex is a framework-based design, which gives administrators the premade components, infrastructure, and development tools to easily build workflow-based web and mobile GIS applications in a cohesive manner. All the features delivered with Geocortex are supported by a rich set of server and client-side application programming interfaces (APIs) that developers can use to build and extend applications efficiently.

A myriad of COTS software applications are available in the marketplace that complement ArcGIS Server and get you closer to the desired outcome. Geocortex is unique due to a hybrid design between pure out-of-the-box





Eagle Information Mapping

Eagle's newly released *gisgap* data governance framework provides a flexible and highly configurable environment for the definition and automation of GIS-enabled business processes and dataflows. The *gisgap* framework and applications automate data validation, verification, quality assurance and control, and approval from initial field acquisition through final load into a production database. Data capture mechanisms supported by *gisgap* include GPS handheld devices, smartphones, tablets, PCs, spreadsheets, and data-enabled smart alignment sheets.

Learn more about Eagle, *gisgap*, and data governance at www.eaglemap.com.

applications (viewer architecture) and custom development via supplied SDK/APIs. Rather than a one-size-fits-all solution, Geocortex has packaged development tools and universally required features people generally need. Specifically, Geocortex offers viewers, workflows, reporting, data-linking, security, and a variety of other administrative tools and functions that complement the ArcGIS Server platform.

So, given your next spatial application project and its time, personnel, and budget constraints, consider using off-the-shelf ArcGIS Server components, customizing in-house, or working with your consultant. Or, talk to us to discuss another approach—the Geocortex one.

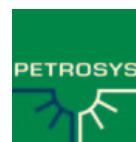
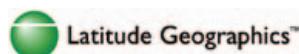
Visit us at www.geocortex.com.

Esri PUG greatly appreciates the support of the conference sponsors:

Platinum



Gold



Social



IBM Maximo Spatial Asset Management

Let's build a smarter planet together. The oil and gas industry is the most asset-intensive industry in the world. As such, an enterprise asset management (EAM) system can offer the industry tremendous benefits including improving safety, extending asset life, deferring capital expenditures, and improving asset reliability. At IBM, we strive to lead in innovation with the most advanced information technologies and translate these technologies into value for customers. IBM's EAM solution, Maximo Asset Management, is widely used in the oil and gas industry to manage all types of production and distribution assets including 8 of the 10 largest oil and gas companies in the world.

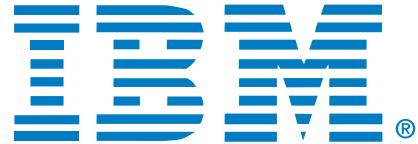
IBM's Maximo Asset Management solutions allow companies to manage all asset classes across the entire asset life cycle, from planning and purchasing to deploying, operating, and maintaining them to finally disposing of them. Instrumented, interconnected, and intelligent, Maximo is able to manage them all, providing the visibility and control for all levels of management for smarter decision making.

A new vision across oil fields, offshore platforms, pipelines, and refineries enables operational leadership to visualize and act on critical data and processes in new ways to make better business decisions, reduce opera-

tional risk, improve safety, boost production, decrease costs, and increase overall efficiency.

IBM Maximo Spatial Asset Management combines industry-leading technology from IBM and Esri and allows asset managers to visualize the spatial relationships among managed assets and other mapped features, such as oil fields, exploration and production equipment, and crude and natural gas pipelines. This creates a level of awareness and insight that tabular systems using numbers and text without graphics cannot provide.

It also provides users with visibility into complex GIS information without leaving Maximo. This solution provides a geospatial context of work, assets, and relevant land-based features, which improves safety, reliability, and efficient work execution. Maximo Spatial not only gives Maximo users insight into GIS-related data, but GIS users also gain visibility into the business processes around work and asset management activities, which is equally important. GIS is designed for tracking location-based spatial information, while an enterprise asset management system can be superior for tracking equipment information and inventory. Additionally, Maximo is configured with specific role functionality around work management, drilling and completions, regulatory compliance, inspections,



management of change, risk management, and continuous improvement.

Working together, Maximo contains a detailed location/equipment hierarchy and tracks all detailed equipment information, including specifications for drilling rigs, well field equipment, pipeline assets, and pumping stations, while ArcGIS Server provides GIS-based location information. Esri software users can fully track equipment because they have access to equipment specifications, maintenance history, and other details in Maximo.

Esri and Maximo provide powerful, complementary, and effective means for collecting and analyzing location, asset, equipment, operations, and work-based information. Geospatially enabled enterprise asset management can deliver benefits far beyond those possible when the systems are operated independently.

For more information, visit www.ibm.com.

OpenSpirit, a TIBCO Software Group

Multivendor environments are necessary to fully leverage the diversity of analysis and tools needed to manage today's E&P workflows. The OpenSpirit integration platform has transformed the vision of best-of-breed workflows to an industry-accepted best practice. We enable your business-critical workflows across data management, intelligent GIS, data access, and cross-application interoperability.

For more information, visit www.openspirit.com.



Inner Corridor Technologies, TeachMeGIS

GIS, with its comprehensive suite of data creation, document management, and analysis tools, has become a requisite tool for the modern geologist, geophysicist, geotechnician, and engineer. Whether you are mapping pipelines to identify high-consequence areas (HCA) in west Texas, delineating source rock for a play assessment in Alaska, doing a site investigation study on the floor of the Gulf of Mexico, or trying to optimize well spacing in your lease in West Virginia, GIS can help you map the area, manage all the data and documents related to the project, provide tools for performing the analysis, and share this data efficiently among your team.

To get the most out of your GIS, your team needs to know how to push the buttons in the software as well as understand a select set of its more robust capabilities. It also needs to understand how GIS tools can help it perform

work more efficiently. But learning GIS can be a daunting task on your own, especially when it is just one of many software packages that the average geoscientist has to use on a daily basis.

TeachMeGIS trainers have spent the last 10 years mastering the technique of getting geoscience professionals not only trained in but also excited about using GIS. Teaching classes that use wells, lease, pipeline, and other datasets familiar to the petroleum industry geoscientist; bringing numerous industry examples into the classroom; and encouraging discussion of common industry challenges, our instructors work hard to make each course relevant to the participant's current needs. The instructors, all of whom are also Esri-authorized instructors, have a knack for making participants feel comfortable about asking questions and keeping classes open

and flexible. We often customize the private courses to use the client's data and workflows, making these classes even more relevant.

Based in Houston, TeachMeGIS, which is the training branch of Inner Corridor Technologies (ICT), has been providing GIS training and consulting services to the petroleum industry for the past 10 years. We offer petroleum-specific GIS courses monthly at our training center. Our team of trainers, certified by Esri, travels around the world to bring these courses to the petroleum industry.

Our trainers are GIS professionals with extensive experience working with and teaching GIS in the petroleum industry. ICT trainers have the special qualities of being experts in GIS, with years of experience in the petroleum industry and a knack for teaching petroleum industry professionals, especially being able to reach each and every participant by tailoring the classes to the needs of the audience.

To learn more about TeachMeGIS, visit www.teachmegis.com.



Portal for ArcGIS

At the 2011 Esri PUG Conference, Jack Dangermond announced Esri's new product Portal for ArcGIS. It provides businesses and agencies with the same collaboration and sharing tools as ArcGIS Online but within the secure environment of the company. This enables staff to

- Quickly create maps and apps using templates and web mapping APIs.
- Form groups to collaborate on projects or common activities.
- Share maps and apps with private groups or the entire organization.
- Embed maps and apps in custom web pages or blogs.

Learn more about Portal for ArcGIS at esri.com/portal.





Petroleum GIS Perspectives is a publication of
the Natural Resources Solutions Group of Esri.

To contact the Esri Desktop Order Center,
call

1-800-447-9778

within the United States
or

909-793-2853, ext. 1-1235,
outside the United States.

Visit the Esri website at esri.com.

View *Petroleum GIS Perspectives* online at
esri.com/petroleum.

Advertise with Us

E-mail ads@esri.com.

Submit Content

To submit articles for publication in *Petroleum GIS Perspectives*, contact Geoff Wade, industry solutions manager, at gwade@esri.com or Barbara Shields, editor, at bshields@esri.com.

Manage Your Subscription

To update your mailing address or subscribe or unsubscribe to Esri publications, visit esri.com/manageyoursubscription.

International customers should contact an Esri distributor to manage their subscriptions.
For a directory of distributors, visit esri.com/distributors.

Circulation Services

For back issues, missed issues, and other circulation services, e-mail requests@esri.com;
call 909-793-2853, extension 2778; or fax 909-798-0560.

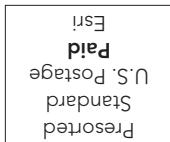
Petroleum Solutions Industry Contact

Geoff Wade, Natural Resources Industries Manager
E-mail: gwade@esri.com
Tel.: 909-793-2853, ext. 1-2391

126205
DUAL8.7M6/11tk

Copyright © 2011 Esri. All rights reserved. Esri, the Esri globe logo, ArcGIS, ArcIMS, arcgis.com, @esri.com, and esri.com are trademarks, registered trademarks, or service marks of Esri in the United States, the European Community, or certain other jurisdictions. Other companies and products mentioned herein may be trademarks or registered trademarks of their respective trademark owners.

My Esri News keeps you connected with GIS users and events in your area. Sign up today at esri.com/myesrinews.



380 New York Street
Redlands, California 92373-8100 USA

