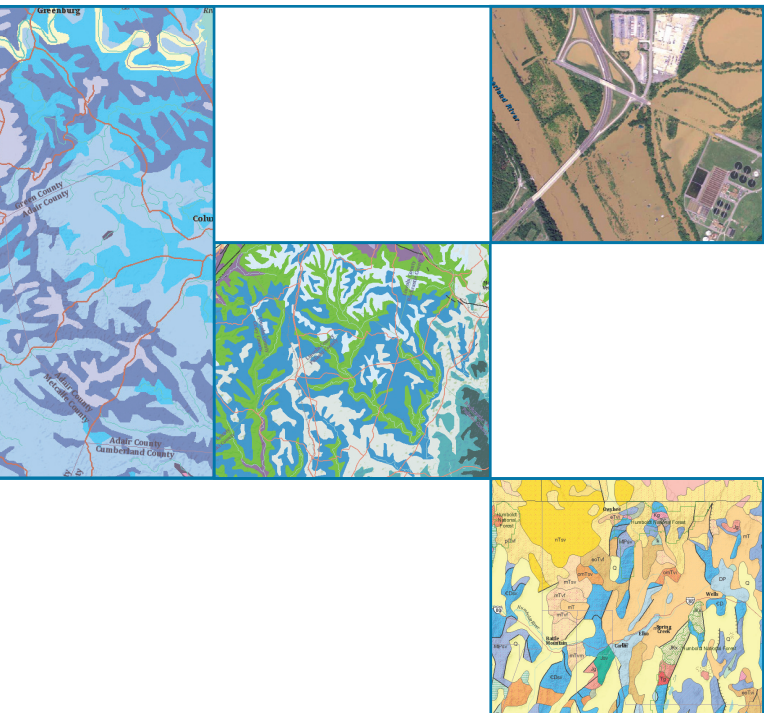


The Next Step

Extending the role of GIS



The convergence of abundant, current geographic data and simple, fast, and focused GIS tools supplied via the Web is having a greater impact on the way organizations and individuals make decisions.

Empowering people to use maps and geographic information to support scientific research, government operations, public access to information, planning, and resource and landscape management has always been the goal of GIS.

At the same time GIS technology has become more ubiquitous, it has also become less discernible. Using location as a framework for accessing and organizing information is taken for granted and is the foundation of sites like foursquare, which helps locate friends, places to go, and places friends like to go. Geographic information, generated by geospatial technologies, is the foundation for this and other similar social networking applications. However, the people using them seldom realize this because Web-based applications such as these are simple to use and don't require any special software or training.

Building on New Technologies

The underlying technology used to build systems that deliver geographic information has gone through significant changes. ArcGIS is now moving from a client/server-centric system that relies on workstations to a Web-centric system that focuses on building and configuring—rather than developing—applications. These applications allow geographic information to flow through the system from desktop to server to the Web and mobile devices.

The implications of this change include the use of federated network architecture and an emphasis on developing simple, fast applications that deliver a superior user experience to more people. This doesn't

mean that everything runs in a browser on the public Web. The work of GIS professionals using workstations for advanced analysis and compilations will be more—not less—important. Rather, Web concepts and technologies will continue to be integrated into ArcGIS to deliver better, expansive systems—whether those systems run on an intranet, private cloud, or public system.

Content Is Critical

The key element in these new systems is content. Content is shared using well-designed maps and map services. OneGeology exemplifies how GIS enables content sharing on a global scale. This initiative, coordinated by the British Geological Survey (BGS), involves 116 countries and makes geologic data residing on the servers of national geologic surveys available as a Web Map Service (WMS) through a Web portal created with the ArcGIS Server Geoportal extension. The portal, officially launched in 2008, is a series of virtualized servers provided and maintained by the French Geological Survey (BRGM).

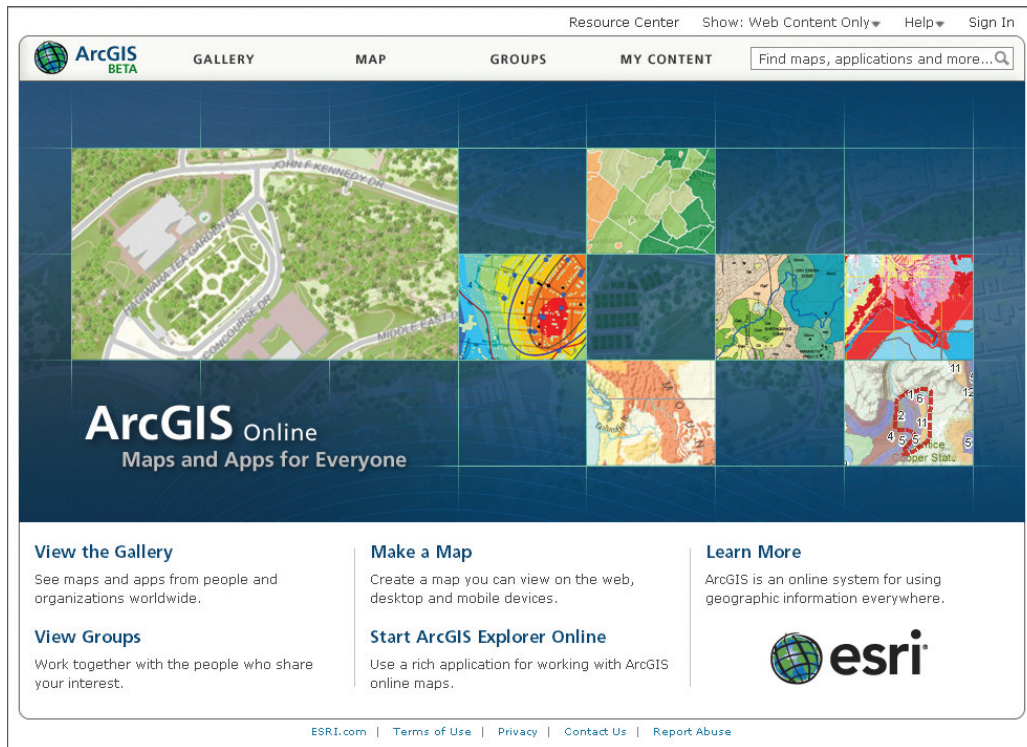
Making shared geologic data and maps readily available creates new opportunities for countries to work more closely together whether for scientific research, disaster management, or natural resource development. OneGeology makes geologic data from across the globe available at a scale of 1:1 million and, in some countries, at scales of 1:50,000. ESRI supports OneGeology with GIS technology and a grant.

Content is now also acquired not only through authoritative sources but also through collaborative activities such as community map projects and volunteered geographic information (VGI). For example, the ESRI Community Maps Program provides a repository for sharing and locating GIS basemaps and furnishes tools and templates to streamline the process. [See “Creating Authoritative Online Maps: ESRI Community Maps Program makes sharing easier” in this issue.]

Like the venerable Wikipedia and the much newer Wiki.GIS.com, VGI relies on user-generated content. OpenStreetMap is a well-known example of a VGI project that is creating a free editable map of the world using data from portable GPS devices, aerial photography, and local knowledge. Other VGI maps have a more finite mission. ESRI's Gulf of Mexico Oil Spill map incorporates links to online photos, Web sites, GeoRSS feeds, tweets, and YouTube videos about the massive oil spill that occurred April 20, 2010, off the coast of Louisiana. This information is combined with authoritative basemap data from ESRI's ArcGIS Online and government agencies like the National Oceanic and Atmospheric Administration (NOAA). It organizes, makes available, and places information in context in a manner that promotes situational awareness and further analysis. [To learn more about VGI sites and how to set one up, read “Getting in Touch with Volunteered Geographic Information: Use a JavaScript API live sample to build a Web editing application” in this issue.]

More Ways to Build Systems with ArcGIS

In addition to configuring and exploiting standard GIS applications such as ArcMap and ArcGIS Explorer, developers can build new applications and extend existing ones. ArcGIS provides extensive support for Web applications using REST, SOAP, and Open Geographic Consortium (OGC) services and employing JavaScript, Adobe Flex,



ArcGIS.com, the geospatial framework in the cloud, inaugurates a new way to use ArcGIS.

and Microsoft Silverlight APIs. Web applications can deliver rich user experiences, sophisticated analysis, and focused solutions to end users without requiring any specific GIS knowledge. These Web applications are making the benefits of a geographic approach to decision making readily available to both organizations and individuals.

Deciding where to site a business, allocate resources, or launch a marketing campaign all hinge on relating geography to current demographic and business data. A Web-based solution, ESRI Business Analyst Online, combines GIS technology with extensive demographic, consumer spending, and business data for the United States to deliver formatted reports and presentation maps on demand. A new tool available from ESRI Business Analyst Online, Smart Map Search, guides users through a streamlined process that simultaneously evaluates, ranks, and maps areas identified as best meeting up to five specified criteria. *[For more information, see “Smart Map Search: New ESRI Business Analyst Online decision support tool” in this issue.]*

The Walkshed Web site helps people take steps (literally) toward urban sustainability by travel on foot to neighborhood destinations such as markets, restaurants, and parks. The online application calculates the “walkability” of these amenities by performing a weighted overlay operation and graphically presenting the results as a heat map. The site, developed by ESRI business partner Azavea, currently models only New York and Philadelphia but may be expanded to other areas.

A Simple Interface

Everyone understands maps. They are useful, well-structured, and powerful vehicles for integrating and communicating geographic information that promote collaboration. Maps are broadly defined to include not only static paper maps but also Web maps, mobile maps, real-time

maps, and analytical maps.

The mapcentric approach used by ArcGIS 10 is a highly intuitive method for accessing and using tools and information. ArcGIS is a unified system for managing and working with maps and geographic information that is powered by servers on premises or in the cloud and accessible through the Web, mobile devices, rich clients, and desktops. This environment enables the discovery, management, analysis, collaboration, and visualization and use of geoinformation.

ArcGIS 10 makes GIS available everywhere. In addition to local and enterprise servers, geoinformation and tools are available from the cloud, hosted by ESRI or by Windows Azure, Amazon, or another cloud provider. ESRI recently announced that users can now purchase a cloud-based annual

subscription that supplies a preconfigured ArcGIS Server instance on Amazon’s Elastic Compute Cloud (EC2) infrastructure. With this option, organizations can rapidly meet larger-than-average workloads and demand by scaling up or down the number of ArcGIS Server instances without investing in new on-premises hardware and increasing overall energy consumption. Users can begin publishing services and supporting Web mapping applications immediately.

The Central Web Gateway into ArcGIS

ArcGIS.com, the geospatial framework in the cloud, inaugurates a new way to use ArcGIS. It is a comprehensive Web-based interface to ArcGIS that extends and complements other aspects of ArcGIS. It connects users to all kinds of maps: basemaps from ESRI that feature high quality cartography and imagery, collaborative maps, live maps with APIs (services), and static maps (that package information). It is also a source of applications furnished as samples and templates from ESRI, contributed by user sites, and developed by business partners; demos; software development kits (SDKs); viewers; and focused applications for browser, mobile device, and desktop use. Services are also built into the site. These include services ESRI stands up and services that users stand up and manage. Resource centers, that show how to make the best use of ArcGIS, are part of this gateway. Finally, ArcGIS.com is shared and used by communities of users who have common interests and can find, share, organize, and use the maps, apps, and other resources available on the site.

With the release of ArcGIS 10 and the advent of ArcGIS.com, GIS becomes a more highly available, simple-to-use, and fast system that makes crucial information for shaping decisions both more accessible and actionable.