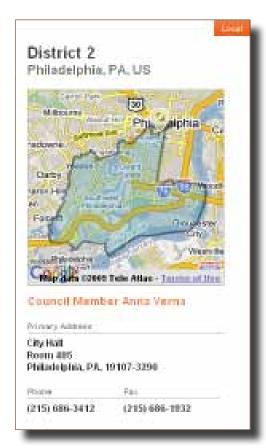
PROMOTING LOCAL POLITICAL ENGAGEMENT WITH GIS-BASED WEB SERVICES





CHAPTER TEN

Geography is at the heart of democratic representation. Though political systems vary from place to place, representation is always determined geographically. People who live in a particular ward, district, or state vote for representatives of that area. Geographic boundaries shape both the ballot choices of individual citizens and where they go to cast their votes. This geography is stable but not static; it is constantly changing as districts at all levels are redrawn in response to population fluctuations and shifting political power. These constant changes in the political landscape create significant data management challenges for organizations seeking to understand the relationship between members and political districts.

One such organization is the Greater Philadelphia Cultural Alliance (GPCA). GPCA is a membership-based service organization serving arts and cultural institutions throughout the Philadelphia region. Its services include advocacy, marketing, grant preparation, and direct assistance to member organizations. GPCA works proactively to provide advocacy, research, convening, and planning services that make the case for public funding of arts and culture, respond to threats to cultural programs, encourage arts-based revitalization projects, and chart future directions for the non-profit culture industry. It regularly engages in email-based advocacy, informing its members of legislative concerns and encouraging them to contact their representatives. Though GPCA's work focuses on the Philadelphia region, it occasionally engages in state and federal level advocacy. Recent efforts have included campaigns to encourage the Pennsylvania Senate to prevent a decrease in funding for the Pennsylvania Council on the Arts and to discourage the National Park Service from installing a 7-foot iron security fence in Independence National Historical Park.

To support its advocacy efforts, GPCA published an annual resource directory. In addition to information on GPCA members, the directory also contained advocacy information, a media guide, and other reference material. While GPCA was looking for ways to make the directory smaller, it became clear that members were looking for a more dynamic source of legislative information. An initial attempt to improve access to legislative information called for putting it online, but this was soon found to have the same problems as the book format. Changes in legislative representation had to be updated manually, and members still contacted GPCA for support in making contact with appropriate representatives.

GPCA developed a wish list of desired features and went looking for an off-the-shelf software solution to meet their needs. They soon found a number of products designed to facilitate advocacy on the state and federal levels, but none for the local level. This led GPCA to consider creating their own local solution for use in conjunction with one of the off-the-shelf products. Ultimately, this process led them to Avencia Incorporated, a Philadelphia-based geographic software development company.

GPCA and Avencia discussed various options for creating an interactive system that would connect users to local representatives, ultimately agreeing on an application that would use geographic data to pinpoint an address, locate it within a local district, and thereby link it to a legislator. Such a system could also store background information on the legislator. As a web service, this system would also

be integrated into a larger advocacy program that would manage and track activity. And thus, Cicero was born.

have the ability to

Perform a search above to find your elected officials



R POLITICAL

cicero

Cicero is a web service API (Application Programming Interface) hosted by Avencia. It uses mapping technologies to interpret addresses and determine the corresponding governmental unit such as congressional

CICERO: WEB SERVICES FOR POLITICAL ADVOCACY

standing one's own political geography. As a web service, Cicero is something akin to a utility, like electricity or gas. The web service is built and ready for an organization to simply plug it into their existing website or database. The existing website communicates with Cicero through use of Simple Object Access Protocol (SOAP), a standard protocol that allows a web service to be integrated into any other web-based application. Since the service is hosted and maintained by Avencia, there are no data updates or other maintenance required on the part of the end user. In addition, there is no need for an organization's software or web developer to learn sophisticated mapping technologies.

Interestingly, Cicero actually relies on other web services as well. While Avencia has gathered city council information for more than 90 major metropolitan areas in the United States and Canada as well as state and national-level data for the United States, Canada, New Zealand and Australia, the process of assigning coordinates to a street address – geocoding – typically uses street data that must be current in order to locate addresses in newly developed areas. Rather than maintain this data itself, the Cicero system calls another set of services provided by Environmental Systems Research Institute (ESRI). These services, called ArcWeb Services, provide a range of capabilities including map generation, spatial queries, demographics, and gazetteer services. For Cicero, however, only geocoding is required.

Cicero reaches out across the Internet and sends a snippet of XML that includes the address, city, state, and zip code. In 200-400 milliseconds, the ArcWeb Service returns a scored list of location candidates. Cicero selects the top scoring coordinate pair and then does its own work. It uses the coordinates to select the council, state, or federal polygon that contains the location, reads the council district information from the polygon, assembles its own snippet of XML, translates it into SOAP, and returns it to the application that called it. This Cicero workflow is depicted in Figure 1.

So why is this important? After all, in GIS terms, these capabilities are relatively basic. The significance of the web services approach is that GPCA did not need to purchase, develop, or maintain those capabilities. Conventionally, a Cicero-like set of capabilities would require an Internet map server and street data, plus all of the hardware and software to support them, as well as a software developer experienced in GIS technology.

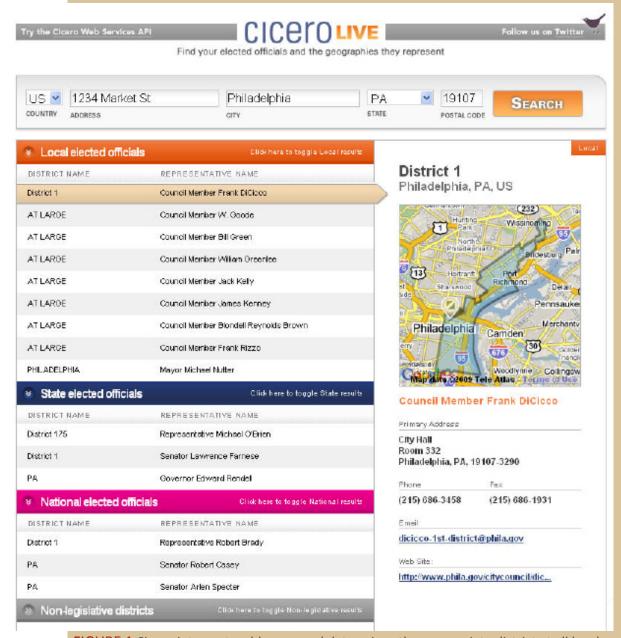


FIGURE 1 Cicero interprets addresses and determines the appropriate district at all levels of government, returning maps of districts and information about elected officials. The system also includes data about non-legislative district: police, schools, and watersheds.

MOVING BEYOND ADVOCACY

Though Cicero was originally conceived as an advocacy-oriented service, its uses have proven to be much more varied than anticipated.

Using Cicero for Data Maintenance

Because of the flexibility of web services, there are many possible scenarios for using Cicero. It is currently being used in support of arts and culture organizations by both GPCA and the Pennsylvania Cultural Data Project (PACDP). GPCA's use of Cicero is primarily advocacy oriented, while PACDP uses it primarily for data collection.

PACDP uses Cicero not for direct advocacy but for ease and accuracy of information gathering. PACDP is a statewide data collection effort that was launched in September of 2004. It was created as a repository for data on arts and cultural organizations throughout the state. Individual arts organizations are able to upload information and then use it for a variety of purposes including better understanding their own organizations over time and in comparison to others, streamlining grant proposal writing, and promoting arts and culture in their regions. PACDP also represents a wealth of information for researchers seeking to analyze and interpret the cultural sector.

One of the greatest challenges for PACDP has been ensuring the accuracy and consistency of its data. All data uploaded to PACDP is reviewed for omissions and gross errors, but PACDP relies on the contributing organizations to make appropriate changes and updates. It stores but does not actively manage the data. Legislative data was one area with consistent errors, as organizations misidentified their local, state, and federal districts and used inconsistent spellings of county names. PACDP decided that the problem was significant enough to automate the process of entering legislative information. They were interested in a single solution that would help to eliminate the errors they were finding. PACDP worked with software development services firm, August Development to create this solution, which ultimately incorporated Cicero web services to populate local district fields for organizations in Philadelphia and Pittsburgh, and more recently for cities participating in PACDP's sister program, the California Cultural Data Project. The use of Cicero by PACDP began in December of 2005 and has successfully addressed concerns over data error in legislative fields. Neville Vakharia, Project Manager for

PACDP, described Cicero as "an elegant solution to improve the consistency of [PACDP's] data." Upto-date and accurate information is vital for member organizations as they advocate to local councils.

Accessing Election Results

Other uses have been even more straightforward. The demand for legislative district identification takes on additional meaning during an election. Media outlets have used Cicero to inform users of their districts, and thus the races in which they will vote, leading up to an election,

as well as to providerelevant election results after the votes have been tallied.

The Importance of Web Services In each of these instances, the fact that Cicero is a web service is just as important as the data it provides. Web services

are an approach to using the Web for dataprocessing applications as opposed to interpersonal communication. These services rely on the same infrastructure as the rest of the Web, and they exchange messages using eXtensible Markup Language (XML)

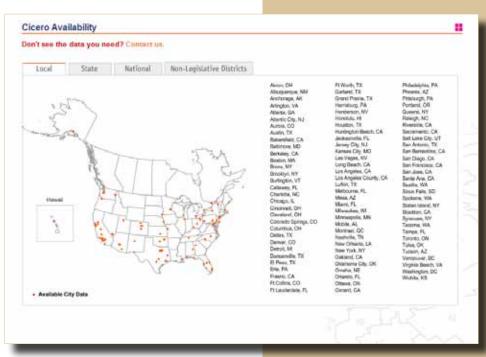


FIGURE 2

Cicero has data for more than 85 U.S. cities.

through a layer of protocols (such as SOAP and WSDL) that are themselves based on XML. The advent of XML in the late 1990's paved the way for data and functionality to be shared via the web, and the establishment of standard protocols made that possibility a reality by enabling systems on both ends of a connection to communicate with each other (Tang, 2003). Web services represent a valuable tool for adding significant functionality to web sites without requiring significant expenditures of manpower or resources.

Web services are simply collections of data or data-processing capabilities that can be made available to other applications through the Web. Web services involving geographic information systems (GIS) take on many forms, ranging from data access to complex spatial analyses. Among the challenges of using GIS on the Web have been access to GIS expertise and the need for regular maintenance of large datasets. For many organizations, these requirements make the cost of GIS technology prohibitive. GIS web services eliminate such requirements by providing mapping and spatial analysis capabilities through connections to hardware, software, data, and expertise that can be located anywhere in the world.

ALL POLITICS IS LOCAL

In a 2005 Associated Press article, Ron Fournier highlighted the role that the Internet has started to play in politics, particularly on the local level (Fournier, 2005). Use of the Internet and the rise of the 'blogosphere' have opened doors for average citizens to voice their concerns over issues of the day and to hear what others have to say (Krueger, 2002). Local news that is not picked up through mainstream sources is getting out through alternative means. The blogosphere has helped to fill the gap in information and public discourse about issues of local concern.

In a similar manner, services like Cicero help to fill a gap in promotion of local engagement and advocacy. While many tools exist to support political involvement at the state and federal levels, the local politics that play such an important role and so deeply affect people's day-to-day lives have largely been ignored. Through use of web services, local political engagement can easily be integrated into existing advocacy and elections structures, allowing organizations and governments to more fully engage their constituents in local decision-making and supporting democracy at its most basic level.

REFERENCES

Fournier, Ron. Internet Fosters Local Political Movements. Associated Press. 12/26/2005.

Krueger, Brian S. 2002. "Assessing the potential of Internet political participation in the United States." American Politics Research. Vol. 30, No. 5 476-498.

Tang, Winnie and Selwood, Jan. Connecting our World: GIS Web Services. ESRI Press. 2003.