Esri SMART COMMUNITIES case study series

THE BUSINESS CASE FOR GIS Collin County, Texas

COLLINCCOUNT

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What Is a Smart Community?

Local governments are looking for ways to build safe, healthy, resilient communities for their constituents. Citizens are calling on governments to be more transparent, efficient, collaborative, and productive. A government that meets these challenges is a *Smart Community*. How will you strive to meet these needs?

Technology is the defining factor for a smart community. It is modern technology that enables departments to increase communication, effectiveness, and openness. Technology gives governments and their citizens access to powerful information that they can leverage to make more informed decisions.

Smart Communities promote efficiency. Time no longer has to be wasted in duplication of efforts by different staff. Departments can now share relevant and timely information throughout the organization, helping staff across all departments collaborate and deliver a higher level of service. With a common information system like GIS, staff have access to the tools they need to create, manage, and share authoritative information and applications.

It doesn't matter how big or small your community is, where you are located, or how unique your needs may be, *any* community can be a Smart Community.

THE BUSINESS CASE FOR GIS Collin County, Texas

bout twenty-five years ago, when Collin County needed to turn on 911 service, it quickly determined that a significant number of the addresses on file were for old rural routes with box numbers. To come into compliance with current public safety standards, the county needed to adopt a citylike street address system that would enable public safety crews to quickly identify the exact location of a service call. In 1991, recognizing that GIS provided the platform needed to manage the structure of the addressing effort, Collin County purchased ArcInfo, and about a year later it hired a senior GIS applications manager, Tim Nolan.

Defining Community Needs

When the topic of e-democracy first emerged on the public agenda, the Collin County GIS team began sharing more of its work with the community. In particular, a web-based interactive map became extremely popular, generating some 2 million page views from residents and business people between 2004 and 2010. The county's current ArcGIS Server Interactive map (http://gismaps. collincountytx.gov/) is also very active, generating 15,000 maps and averaging about 200,000 page views a year. "It's a bit like the *Field of Dreams*," Nolan says. "We built it and they came. We didn't seek out community needs in a formal sense, but rather the community let us know what their needs were by using the products we developed and did so in ways that we couldn't have anticipated."

Nolan explains how changing technology often requires the county to replace an online tool. Every time it makes such a change, however, the IT department is flooded with requests to reinstate the previous tool. He describes the situation as the double-edge sword of success in that people come to depend on a particular product and are upset when it is replaced, but the county benefits by staying current with the technology.

Nolan also points out that the county's current Internet mapping tool is used internally by county staff as well



as externally by citizens. Having the tool available online has enabled many departments to scale back on the number of full GIS licenses needed. Instead of purchasing more than 200 individual licenses as other agencies have done, the county has been able to sustain support and meet community needs with a core GIS staff that requires only eight full concurrent licenses. Most departments can use the Internet tool to generate the maps they need for their work.

Making the Business Case

With the decision to make GIS a platform system for the county, the use of GIS technology has become ubiquitous throughout the organization. GIS is seen as part of the required infrastructure needed to make the county run, similar to the IT department, and so its budget is accepted as a necessity given the low cost of the technology and its great value to the county.

Elected leaders see the value of the technology for managing data for a wide variety of uses. From a performance measurement standpoint, the GIS team tracks and reports on the following data on a quarterly basis:

- Addresses assigned
- Annexations
- Population
- Road mileage
- Interactive map web stats (page views, custom maps)
- Jury trial maps
- Fire district maps
- Standard maps printed
- Custom maps printed

Beyond capturing these data, which enable the county to measure its efficiency in providing services to the community, the technology adds to that efficiency through convenience, revenue generation, cost savings, and cost avoidance.

Convenience

Every app that the GIS team develops must have the citizen experience in mind. Much of what the team produces has not been done before, such as the Elections Office's Voter Line Wait mobile app (see sidebar) and on-demand redistricting (see below on "Cost Avoidance"). The team has proven the value of its work many times over in the past twenty years, and the trust it has built allows it to experiment with ideas that can benefit the public as well as county staff. The GIS team works to provide county information needed by residents and staff alike. By providing the online interactive map solution, it enables citizens to engage with their government on their own terms. They do not have to come into the office or call if they can get the information they need at their convenience.

Internally, the GIS team integrated foreclosures into their mapping work. Linking foreclosure information with an associated property enables the county to have a complete picture of the status of that property rather than needing to pull data from multiple sources. When the team approached the county clerk with this idea in early 2016, the clerk responded by saying that she trusts anything that the team wants to try because she believes it will make her job easier.

Revenue Generation

Collin County tracks its return on investment. For example, through an interlocal agreement, the city of

Cutting Voter Wait Times

In 2009, the state of Texas opted to allow local governments to establish voting centers throughout their jurisdictions rather than require citizens to vote at specific precincts. Essentially, citizens can vote at a location of their choice. But while voting centers provide greater flexibility for citizens wanting to vote, they offer a challenge to election officials trying to anticipate the number of voters who might choose a given location.

As Bruce Sherbet, Collin County's elections administrator, explains, long lines can serve as a deterrent to voting. The longer the wait time to vote, the greater the chance that a citizen will give up and go home without voting. So the Elections Office began looking at possible solutions for rerouting citizens to voting centers with shorter wait times. With heavy voting anticipated for the 2012 presidential election, the Elections Office met with the GIS team to discuss options.

The result of these discussions was the creation of the Voter Line Wait mobile app (http://gis.collin countytx.gov/electionpollingplace/?findme). Available online, this tool serves two purposes during an election. First, a voter can find the polling location closest to the address entered. Second, the voter can look up other polling locations to determine which have shorter wait times. Since 2014, the number of individuals using the Voter Line Wait app has increased by 114 percent, or nearly 31,000 additional people. This significant increase makes it clear that voters appreciate being able to explore their options for making voting easier.





Collin County's Election Polling Place Finder helps citizens determine where to go to avoid long lines when they want to cast their votes.

Wylie (population 44,575) pays the county a standard annual fee to analyze its calls for emergency service and its service response districts (SRDs) (see sidebar and map on the next page). The SRDs are an important component of the city's ability to retain its ISO 1 rating for insurance purposes. Under the terms of the agreement, the city provides updates on where new growth is occurring, and the county, in turn, digitizes maps for Wylie's police and fire departments. All the data created by the county are owned by the city.

Cost Savings

GIS has helped the county promote policy changes that save residents money. Collin County has more toll road miles than any other jurisdiction in the Dallas–Fort Worth

The Benefits of GIS for Public Safety in Wylie, Texas

Response times are critical for public safety providers. Whether it's fire, police, or emergency services, having accurate data for routing and locational analysis is key to saving lives.

Collin County and the city of Wylie are part of the greater Dallas-Fort Worth metropolitan region, which has one of the fastest population growth rates in the country. In 2014, Wylie found that it needed maps to reflect the new street addresses and neighborhoods that were being built throughout the community. The city created paper maps but realized that it needed access to more current address data to ensure better response times. (To maintain its ISO 1 rating, Wylie's fire department has a goal of being on site within six minutes of receiving a call 90 percent of the time.) City officials decided to approach the Collin County GIS team to contract for GIS services so they could better track response times.

Through their interlocal agreement, the city and the county have worked together to digitize the city's street addresses. In addition to using the new data to track response times, Wylie has used the data for locational analysis to determine where new fire stations should be built within the community—that is, where the city can get the biggest bang for its buck in terms of protecting the general population (residential areas) and minimizing damage (business corridors).

"GIS has provided us with some ingenious ways to do things that don't cost the city a lot of money," says Cory Claborn, a captain with Wylie Fire-Rescue. "For example, Collin County developed a mobile app for us to inspect fire hydrants and note maintenance work needed. What used to take four to five hours to complete now is done in five seconds. They also developed a preplan program form that we use when working with developers. It's a simple-to-use Adobe Acrobat Reader form that helps us better plan for emergency response in new developments."

area. When the state government refused to authorize the construction of new highways within the state's transportation system unless they are toll roads that pay for themselves, it meant that county residents would have to pay pass-through tolls every time they drove on a portion of the road.

To identify alternative ways to fund new highway projects, the county turned to GIS. Rather than impose a tollway designation, Collin County hopes to gain support



Collin County conducted a spatial analysis to determine the best locations for new fire stations in the City of Wylie.

from the Texas legislature to fund highway improvements by capturing a portion of new sales tax revenues in the highway corridor. Revenue projections will be provided to the state legislature in order to assess the viability of this approach. The desired goal is to keep the lanes on a busy regional highway free from tolls and thereby improve the mobility of county citizens.

Cost Avoidance

GIS has enabled certain county departments to avoid unnecessary costs. The District Attorney's (DA) Office tracks the results of jury trials and maps the verdicts (i.e., convictions or plea bargains). The office used to pay an outside contractor to produce these maps but turned instead to the GIS team in January 2001, when one of his attorneys asked the team to produce a map for a capital murder jury trial. In some cases, the team is asked to perform a spatial analysis, such as mapping cell tower reach and distance from a crime scene to prove that a defendant was at the site of the crime. The GIS team now produces about twenty maps a year for the DA's Office, covering jury trials that range from misdemeanor accidents to capital murder cases; it refers to these special GIS/DA Office projects as "maps of guilt." The DA's Office reports that in all but one case, the GIS map produced for the trial resulted in a conviction.

The GIS team has also been used for in-house consulting on a variety of issues, saving the county thousands of dollars in consulting fees. The county's population estimate model has been used for many projects; most notably, it is used to perform on-demand redistricting. Because Collin County's population is increasing so fast, some county commissioners were representing many more citizens than the other commissioners. Using the population estimate model, the county built several redistricting plans to adjust the commissioners' boundaries in accordance with the estimated population prior to the decennial census. Data analysis enables the county to determine automatically when redistricting needs to occur.

"People are using GIS in Collin County. It's an important tool that allows us to be creative in our response to community needs," says Nolan. "We have designed various maps services that are specific to a certain department. As a result, we have been able to keep our maintenance costs low and can support many people with few GIS staff."

Study Methodology

The author conducted individual interviews with representatives from the Collin County GIS team, the Elections Office, and the City of Wylie Fire-Rescue. One set of interview questions guided the interviews. The author used a conversational interviewing technique to more fully explore the participants' experiences and perceptions of the GIS program. All interviews were tape recorded and reviewed in compiling notes for this report. The author sought written permission prior to attributing a quote to an individual. The author wishes to thank all the study participants for taking the time to discuss the Collin County GIS program. Their contributions to the study were invaluable.

Study Participants

- Tim Nolan, Senior GIS Applications Manager
- Bruce Sherbet, Elections Administrator
- Cory Claborn, Captain, City of Wylie Fire-Rescue

Acknowledgment: ICMA would like to thank Collin County for its contribution of photographs and other graphics used in this case study.

About Esri

Esri inspires and enables people to positively impact the future through a deeper, geographic understanding of the changing world around them. Our technology enables organizations to create responsible and sustainable solutions to problems at local and global scales.

At Esri, we believe that geography is at the heart of a more resilient and sustainable future. Governments, industry leaders, academics, and nongovernmental organizations (NGOs) trust us to connect them with the analytic knowledge they need to make these critical decisions that shape the planet.

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ICMA, the International City/County Management Association, advances professional local government worldwide. The organization's mission is to create excellence in local governance by developing and fostering professional management to build better communities.

ICMA identifies leading practices to address the needs of local governments and professionals serving communities globally. We provide services, research, publications, data and information, peer and results-oriented assistance, and training and professional development to thousands of city, town, and county leaders and other individuals and organizations throughout the world. The management decisions made by ICMA's members affect millions of people living in thousands of communities, ranging in size from small towns to large metropolitan areas.

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