

A. System

1. Name of system and ESIG™ category for which you are applying (Enterprise System or Single Process System).

System Name: Mobile Voter Line Wait Application

Single Process System

2. A letter from the executive administrator authorizing submission of the system application (letters must be signed and scanned).

Submitted with the ESIG Application

3. One (1) page, or less, summary of what the system accomplishes and why it is exemplary.

Collin County, Texas Information Technology (IT) collaborated with our Elections Office to provide a solution to address long line waits during popular elections. The Elections Office needed an answer to alleviate long voter line waits without giving the impression that voters were being sent away from a polling site. The IT staff learned that it is a violation of voter laws to send people from a polling location – even if it is to help out the voter. How do you inform voters that they can vote at another location with a shorter line without explicitly telling them? The solution – strategically placed QR Codes (Quick Response) that show the closest polling location and the approximate line wait time on the voter's mobile device. The voter can then chose for themselves to leave their place in a long line to seek out shorter one.

The Voter Line Wait Mobile Application benefits Collin County voters. The voter has the convenience of knowing where to vote and what will be the line wait expectation when they arrive. If they do not want to wait in a long line then they can use this application to determine another location.

However, Collin County, had a history of server downtime that interrupted online services for citizens. Most specifically, access to a polling place locator was interrupted. In preparation for the big election on Tuesday, November 4th, 2014, the county implemented Esri's Polling Locator template application with updates from GISi that improved citizens' online experience. Part of the ArcGIS for Local Government solution, this application allowed voting citizens of Collin County to locate the most convenient polling location in their area. This was accomplished through the access and use of QR codes in order to scan and lookup the wait times at voting centers in the area, with their locations and directions easily accessible through the application. In addition, the application was far more lightweight on their server than a previous application the county was using, which relied on several processes running at the same time and sometimes required multiple server reboots. In contrast to past elections, the 2014 Mid-term elections proved to be an enormous success with zero server reboots, 174,242 total page views, 19,020 visits to the Election Polling Place Mapping Application, and 26,842 routes generated from the Election Polling Place Application.

4. Three “user testimonials”. These testimonials should include the title of the system, the person’s name, job title (if relevant), a statement of what specific ways the system improves their work and/or the work of their organization, and how frequently they use the system (testimonials may be signed and scanned).

Submitted with the ESIG Application

B. Jurisdiction

1. Name of jurisdiction

Collin County, TX – Dallas/Fort Worth Metroplex

2. Population served by the organization/agency

942,063 people

3. Annual total budget for jurisdiction

\$301,450,396

4. Name, title, and address of chief elected and/or appointed official

Keith Self, County Judge

5. Name, title, address, telephone, FAX, and email for contact person for system

Tim Nolan
Collin County IT
2300 Bloomdale Rd, Suite 3198
McKinney, TX 75071
972.548.4588 Office
972.424.1460 x4588 Metro
972.548.4494 Fax

C. System Design

1. What motivated the system development?

A history of server downtime interrupting online services for citizens during election dates contributed to the “remarkably average” environment that existed before GISi’s upgrade to Esri software.

2. What specific service or services was the system intended to improve?

This upgrade had the goals to spread the word about voting centers, help reduce long voter lines, enable the software to go mobile, utilize if possible QR codes, and meet a November 2012 deadline.

3. What, if any, unexpected benefits did you achieve?

Positive press was received when the Voter Line Wait Mobile Application received the “Best Application Serving The Public” award from “Best of Texas” in 2014.

4. What system design problems were encountered?

Issues occurred with IT audit compliance both internally and externally, conflicting problems regarding the webserver (DMZ vs Reverse Proxy), GISi being unable to recreate issues/problems, a few configuration problems, having missed early voting deadline, beginning to run low on contract hours, an extremely late system configuration, and having to prep to use VLW v1 on an old system, meaning no new technology.

Panic ensued on Election Day when the “unable to load proxy” error occurred after 5pm prior to the day of election. Approximately 9:27pm Monday November 3rd, GISi received an email about the error. At 5:24am on the day of Election, GISi saw this email, followed by pre-dawn troubleshooting by the company and client. The issue was resolved by changing “rateLimit” setting in the proxy configuration.

5. What differentiates this system from other similar systems?

The flexibility provided to the voter to be able to locate the nearest voting center along with the one with the shortest time to vote from a computer or mobile device in real time is the biggest differentiating factor. Combining that with the driving directions to the voting centers on a desktop or mobile device we have not seen another system that can do something similar.

D. Implementation

1. What phases did you go through in developing the system?

The project began with 1) **partnership** through planning to combine the new Esri architecture (ArcGIS 10.2) with an upgrade by GISi. 2) **Consolidation** of the GIS servers from all parties was done. 3) **Utilization** of Collin County, TX infrastructure occurred as well as use of a modified Esri Polling Locator template for the voter application. 4) **Identification of the challenges** that lay ahead and the solutions to overcome occurred, with the various issues that happened and 5) **the resolution and contingency planning** that followed appropriately.

2. Were there any modifications to the original system design? Why? What?

Troubleshooting that occurred due to the “unable to load proxy” error led to a change on the “rateLimit” setting in the proxy configuration. The “rateLimit” refers to the amount of routes per minute. The default setting is six (6) routes / minute. We found that we were surpassing that limit prior to the polls opening on Election Day. The max number of requests in a certain period of time had to be increased continually (6 -> 30 -> 100 -> 200).

E. Organizational Impact

1. What user community does the system serve and how?

Voters of Collin County, TX were the user community for this system. The mobile application helped voting citizens to locate the most convenient polling location in their area through its access of QR codes to scan to lookup the wait times at voting centers in the area, with their locations and directions easily accessible to the application user.

The Voter Line Wait Mobile Application was designed as a convenience to the voter. We extended our existing Election related applications such as our line wait dashboard and interactive polling place locator to the mobile platform.

2. What are the ultimate decisions/operations/services being affected? If appropriate, provide a few examples including, but not limited to: screen input/output forms, paper products, or other descriptive graphics.

Collin County may be the only Texas County to use existing technology to alleviate long line waits during a popular election. Our Elections Office placed QR code signs at strategic locations so that the voter could decide to leave one location to seek out another with a shorter line. Collin County is one of the few that have an interactive mapping system for polling locations. We may be the only County that has an hourly updated line wait dashboard that includes links to our interactive polling locator as well as search tool to find the closest polling location to an address. However, integrating the line wait dashboard with interactive GIS mapping by scanning a QR code on a personal mobile device is extremely innovative.

3. What were the quantitative and qualitative impacts of the system?

The Collin County, TX website had three times the daily usage with this mobile application, with 54% of the website activity being election related. There were 174,242 total page views during the 24hr period on Election Day, 93,553 of those page views being election related. Election Day is clearly our website's high-water mark.

The Mobile Voter Line Wait Application is very simple to use. Our goal was to minimize the need for training and instruction. The QR code sign merely stated "Scan the QR Code for other Polling Locations and Wait Times" (also in Spanish). The compelled voter scanned the QR code with their own device which launched the mobile GIS site. The mobile GIS site displayed the other polling locations with their associated line wait times on the voters' mobile device. The application is self-explanatory, simple and innovative. The Elections staff and volunteers are able to focus on the election at hand without having to manage the application.

4. What effect has the system had on productivity?

With knowledge of the most convenient voting centers to use on Election Day users in the community were able to partake in the voting process on their schedule and in their region. For instance, you can vote near your work instead of the traditional polling location near your residence. The data gathered from this mobile application helped not only voters in the county but also the local government learns about voting trends from its citizens.

5. What, if any, other impacts has the system had?

Collin County, TX struggled during our first Vote Centers for Federal Elections. We experienced extremely long voting lines and electronic poll book failures. We rolled out our first version of the Mobile Voter Line Wait App for the following Federal Election two years later based on earlier failures. Now, Vote Centers and the improved Mobile Voter Line Wait App are expectations of Collin County voters. In fact, both major political parties accept the Mobile VLW app as positive and promote the app to their constituents.

6. How did the system change the way business is conducted with and/or service delivered to clients? Give specific examples comparing the old way with the new.

Previously, when a voter showed up to cast their vote at the voting station they were unable to quickly see where the nearest voting center was and the amount of people in line at that voting center. Now, with a quick look-up on their cell phone they can now locate the nearest center and also see the wait time to cast a vote. So while the closet station might be the 1 mile away, a voting center that is 3 miles away may have zero wait time to vote and be the best option. After they make this selection, driving directions directly to the center can be obtained. All of these same features are available to be secured from a desktop computer as well so they can be printed out before a voter leaves home.

F. System Resources

1. What are the system's primary hardware components? Give a brief list or description of the hardware configuration supporting the system.

We completely virtualized (VMWare)our ArcGIS Servers and placed them behind an F5 appliance with the aid of GISi. Our Collin County Enterprise GeoDatabase resides in a SQL Cluster (MS SQL Server). Other hardware components required for this application are all of the GPS-enabled devices that use the application.

2. What are the system's primary software components? Describe the primary software and, if a commercial package, any customizations required for the system.

Collin County, TX has been an Esri shop since 1992. We use our own map services for the local maps and Esri routing cloud services for the routing to other polling locations. We worked with GISi to modify Esri mobile templates based on Esri's Local Government Model. We also used a QR generator to create the QR Code signs to be posted at popular vote centers.

3. What data does the system work with? List and briefly describe the database(s).

The Mobile Voter Line Wait App uses Collin County's Esri GIS database. The modified Esri template called our own map services. The app also used Esri's cloud services for our routing capabilities.

4. What staff resources were required to implement the system? (i.e., report approximate staff and consultant time as FTE's)

The Mobile Voter Line Wait Mobile Application development took 50 hours. This application was jointly developed with an FTE and GISi Consulting Services. The measurable return was that citizens used the application. We received some feedback at polling locations on how convenient the application was the voters.

5. Comment on anything unusual about the resources used to develop your system, such as data, software, personnel and financing.

The Mobile Voter Line Wait App utilized Esri's routing cloud services. All Esri customers receive an allotted amount of credits based on their licensing and maintenance cost. Collin County almost used its entire allotment on Election Day. We had not had any experience with credits prior. We had one FTE monitor our credit allotment all day. We eventually had to buy more credits to ensure that we had enough to get us through the final hours of Election Day. At least, we learned that voters were using our designed system.



COLLIN COUNTY

Information Technology
2300 Bloomdale Rd
Suite 3198
McKinney, Texas 75071
www.collincountytexas.gov

Date: April 30, 2015

To whom it may concern,

Please accept this letter as an authorization to submit the Mobile Voter Line Wait Application for URISA's ESIG Award consideration.

Best Regards,

Caren Skipworth, CIO
Collin County, Texas
2300 Bloomdale Rd, Ste 3198
McKinney, TX 75071

Title: Mobile Voter Line Wait Application

Name: Caren Skipworth

Job Title: Chief Information Officer

Testimonial:

When Collin County went to vote centers we where challenge with long lines. I couldn't help to think about how Disney manages lines of people. So with that in mine Collin IT developed the Mobile Voter Line Wait Application that helps voters find location with the short lines "fast pass". It provides our voters with a choice.

Caren R. Skipworth

5-1-15

**Sharon Rowe, CERA
Elections Administrator**



**2010 Redbud Blvd. Ste 102
McKinney, Texas 75069
972-547-1990 / 800-687-8546
972-424-1460 Ext 1990 Metro
Fax 972-547-1914**

DATE: May 1, 2015
TO: Tim Nolan, Collin County IT
FROM: Sharon Rowe, Collin County Elections Administrator
RE: Mobile Voter Line Wait Application

A handwritten signature in blue ink, appearing to be "SAR", is written over the "FROM:" line of the email header.

The wait-time status dashboard feature on the County's website provided great information to voters; as long as it was updated when there was a status change. Election Officials became more comfortable with the messaging features at each Vote Center and were able to quickly communicate wait-time status changes to those responsible for updating the website. Tim Nolan, our GIS Guru, is always looking for real world applications of tools for solving problems. There were several areas of the County where we expected heavier turnout; additional equipment and workers had been sent, but what else could be done to inform voters of the available wait-time status information. The suggestion was to create a QR code and post it at various Vote Centers outside the room where the line might be considered "long". Election Officials loved the idea of providing information in this format. Large posters of the QR code were available at some locations with the intent of providing information to the voter before they got into the line or even parked their car; they could find another location close by with a shorter line and change locations if time permitted.

Title: Mobile Voter Line Wait Application

Name: Steve Ganey

Job Title: Manager

Statement: Voting, though an important civic task is normally a major inconvenience for me. During our last county election, while waiting in a long line waiting for my turn to vote, I noticed a poster with a QR code for line wait stats on other locations. Since I had nothing to lose, I thought I would give it a try. All I can say is "what a neat app!". The application provided information on nearby sites with no line waits and also provided a map to route me to the chosen site.

Steve Ganey

Title: Mobile Voter Line Wait Application

Name: Uma Chenniappan

Job Title: Collin County Citizen

Statement : This app is very useful for all citizens who are voting as it provides the wait line stats for all the nearby locations. It is great app that provides the map to the nearest location to vote. I like to try new things out and while waiting in the long line to vote, I did notice the sign to locate the nearest other locations wait time. I tried it and found another close location with zero wait time. I trusted the app and went to the other location and the prediction was true, there were only couple of people voting, I casted my vote and left. It saved me time and since have suggested it to other friends, but not sure if they used it or not. I will definitely keep this app in mind next election time around.

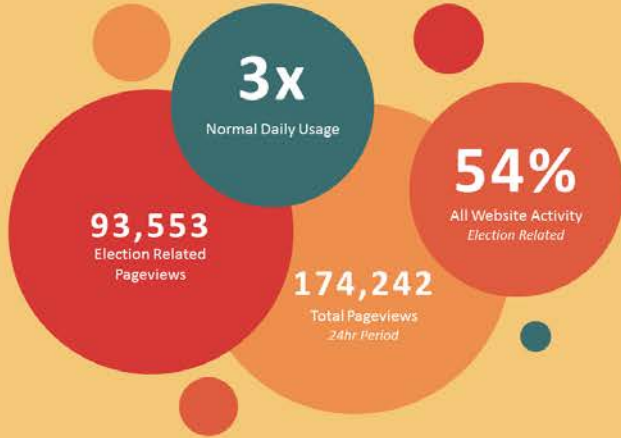
C. Uma

Election Day

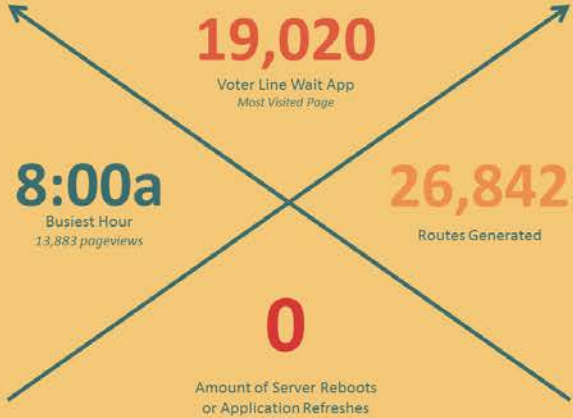
November 4, 2014



Election Day statistics reflect the entire Collin County, Texas website. The Election hits clearly dominate the day.



These numbers represent how the Voter Line Wait app responded on Election Day. The peak time for the app was 6a-6p.



Number of election related pageviews. This chart displays pageview filtered by "elect."



The Collin County, Texas website's "high-water mark" is always Federal Election periods (Early Voting and Election Day).

