# 2018 PTI Solutions Award Competition

## Required Information

Each entry must include the following information:

1. Select your jurisdiction's **Population Category: _____D_____**

      **A.** 1-99,000

      **B.** 100,000-349,999

      **C.** 350,000-749,999

      **D.** Over 750,000

2. Select your **Technology Category: _____D_____**

      **A.** Telecommunications and Information Technology (I.T. management, operations and infrastructure) and Cybersecurity (awareness, planning, breach protocol, practices).

      **B.** Cybersecurity (awareness, planning, breach protocol, practices).

      **C.** Web Services, E-Government and Mobile Apps

      **D.** GIS (Geospatial Information Systems)

      **E.** Public Safety and Emergency Management, Community Resiliency

      **F.** Sustainability (energy, including energy assurance planning; environment, public works, transportation).

      **G.** Data and Performance Metrics

      **H.** Innovative Uses of New Technologies (for example: Unmanned Aerial Systems, Autonomous Vehicles, Virtual Reality, Artificial Intelligence, 3D printing, etc.)

**3. Project Title** that best describes your entry: **Farm Tour: Telling the County's Agricultural Story with a Map**

**4. Abstract** (summary of your entry) of approximately 100-250 words, text only. Use multiple paragraphs where appropriate. PTI will publish this abstract on its website.

Agricultural activities occupy approximately one-third of Montgomery County's 500+ square mile land area, and the County's annual Farm Tour helps make residents aware of the diverse agricultural industry and products that are locally available during the growing season. The County's Office of Agriculture wished to provide a map for the 2017 Farm Tour on its website that informed and advertised as much as it displayed locations. The County Department of Technology (DTS) Geographic Information Systems (GIS) team (DTS-GIS) identified the Story Map template apps offered by GIS software maker ESRI as ideal for this application and worked to convert a spreadsheet of information about the farms participating in the tour into a robust and intuitive online map complete with photos, hours of operation, and assorted information that could be easily queried from a webpage.

The farm tour map can be viewed at the following URL:
https://www.montgomerycountymd.gov/AgServices/agfarmtour.html.

**5. Statement of the Problem.** Describe the need, problem or issue that your technology solution addresses.

In previous years, the Office of Agriculture has displayed a Google Map on its website to simply show County residents the locations of farms participating in the annual Farm Tour. Although there was some capability to display information about each location in Google Maps' popup windows when a farm was clicked, this was somewhat limited both in size on the screen and capability. Details such as whether or not animals were present at each farm or the availability of "Pick Your Own" fruits and vegetables were, if provided at all, buried in the details within the small popup windows. The Office of Agriculture wanted residents to be able to quickly find farms participating in the tour that offered features that appealed to them.

**6. Response.** Describe the solution or program you implemented.

The Office of Agriculture provided DTS-GIS with a spreadsheet of information it had collected on the 18 farms participating in the 2017 Farm Tour. This spreadsheet included the name and address of each farm, a description field often containing several sentences, a few fields describing the hours of operation, and contact information. Each record also included 14 fields of Yes/No data relating whether various amenities were offered at each farm, ranging from offering Christmas trees to hayrides, pumpkins to animals, crafts to locally produced beer or wine. The Office of Agriculture also provided photos of each location, some captured by staff and others pulled from a farm's website.

DTS-GIS quickly realized that this type of project presented an ideal application for the Story Map templates offered by ESRI. Story Maps are online maps that break away from the traditional mapping applications that simply allow users to turn on and off various GIS data layers; instead, Story Maps present geographic data in an intuitive and attractive way that goes beyond conveying locations, as the name implies, to telling a story about the data. ESRI's online platform will input GIS data prepared with specific data fields and output the data displayed within one of several Story Map templates, each designed to match different types of data. There were two template applications that seemed to match well with data about locations listed in a spreadsheet that also would display photos. After mocking up a draft of each, it became apparent that of these two templates, ESRI's "Shortlist" Story Map best suited what Office of Agriculture hoped to accomplish. The original spreadsheet could be adjusted so that some of the information contained in the Yes/No fields could be easily accessed by users via tabs at the top of the map. When a user clicks on an individual location, rather than a small popup like with the old Google Map, detailed information is displayed in a nicely sized pane next to the map.

DTS-GIS staff realized that the original 14 fields of Yes/No data might produce a crowded and confusing display of tabbed data queries for the end user and worked with the Office of Agriculture staff to combine and/or cull these down to a more workable number. They decided on a first tab displaying all 18 participating farms, and then six additional tabs displaying farms that offered "Pick Your Own," "Fruits/Veggies," "Animals," "Brewery/Winery," "Refreshments," and "Educational."

The photograph images of the farms that were originally provided by Office of Agriculture varied in resolution and orientation. DTS-GIS requested Office of Agriculture staff provide replacement photos for several images that apparently had been downloaded from the Internet and were such low resolution that they would have displayed pixelated on the Story map application. Furthermore, a thumbnail for each photo was needed that would appear to the left of the map before a specific farm was selected by the user; these were created automatically using an Adobe Photoshop's "Action" script. The thumbnails displayed as landscape format as they were arranged in a tight grid on the application, and original photos that were in portrait format would be truncated to fit those dimensions, not always in a way that optimally displayed the subject of each photo. For example, a portrait photo of a farm's welcome sign might display in landscape format with half of the sign cut from the picture. Therefore, landscape thumbnails for portrait photos were manually created using Photoshop software so they would be centered on the subject of the photo in the landscape thumbnail. All photos were hosted on one of DTS-GIS' web servers.

The spreadsheet was then adjusted to fit the requirements of ESRI's Shortlist Story Map. First, the spreadsheet was geocoded using an existing in-house geocode service and ESRI desktop GIS software, so that the record for each farm included latitude and longitude coordinates. Next,

several fields were renamed or reworked to fit the template. Hours for each farm were placed in a "SHORT_DESC" field that displayed the information in bold above the rest of the description. Components of the address and paragraph description of each farm were placed in fields for "DESC1," "DESC2," and "DESC3" so that they would be displayed below. URLs for both the original images and the thumbnails were listed in additional fields.

Perhaps the most useful feature of the Shortlist Story Map was the tabs that enabled the user to quickly query the farms with desired features. This was accomplished by creating duplicate records for each farm that was to appear in multiple tabs. For example, the spreadsheet record for Poplar Spring Animal Sanctuary was duplicated three times in the adjusted spreadsheet so there would be separate records with the TAB_NAME field populated with "All Participants," "Animals," "Educational," and "Refreshments." The Story Map would then output this record into all four of those tabs on the application. A number field was added, which the Story Map interpreted both for ordering the locations for each tab as well as numbering the icon on the map.

Using an existing account with ESRI's cloud platform, ArcGIS Online, DTS-GIS staff input the adjusted spreadsheet in CSV format into the Shortlist Story Map application. At the direction of Office of Agriculture staff, the title and subtitle at the top of the map were adjusted, and logos for both offices were added at the top right corner of the application. DTS-GIS staff then provided HTML code so the map could be displayed within a frame on Agriculture's webpage about the Farm Tour at https://www.montgomerycountymd.gov/AgServices/agfarmtour.html.

Much of the spreadsheet work for this project was performed using Microsoft Excel 365. Latitude and longitude coordinates were added by using an existing in-house geocode service with ArcGIS desktop software, including ArcMap 10.5 and ArcCatalog 10.5. Thumbnails for most photos were generated using an Adobe Photoshop "Action" script, with thumbnails for a few portrait photographs instead manually created to better display the subject on the landscape thumbnail. The mapping application itself was created by uploading the adjusted CSV into ESRI's online platform, ArcGIS Online, specifically into the Shortlist Story Map application.

DTS-GIS already possessed the necessary licenses for ArcGIS desktop and online software as well as Adobe Photoshop. A jurisdiction that needed to purchase such licenses to do similar work would have to pay $9,900 for the *ArcGIS for Desktop Advanced* license from ESRI.  An *Adobe Photoshop* license cost $2,300.

*Note: please see supplemental materials, figures 1 through 4, for additional information about the Farm Tour map.*

**7. Results.** Describe the results you achieved, including examples of how your solution enhanced services, improved productivity or effectiveness, and accomplished greater efficiencies or cost savings. Include a summary of any performance metrics/analytics you may have produced.

This project produced an attractive and user-friendly online map application for the 2017 Farm Tour. Users are easily and quickly able to view information including map location of farms participating in the tour that met their desired criteria. The Office of Agriculture is currently working with DTS-GIS to produce more maps that convey different information about farms beyond just those participating in the annual Farm Tour event. The application, like other created using ESRI's Story Maps, scales well when viewed in a web browser on a personal computer as well as various mobile devices.

For this program, DTS-GIS successfully identified available technology that was an ideal fit for data the Office of Agriculture wished to convey to constituents. The resulting application conveys a good deal of information originally collected in a spreadsheet via an application that is both attractive and easy to use.

**8. Key Participants.** Identify team members and any partners (government agencies, other organizations, vendors) that participated in the development or implementation of your solution.

- Montgomery County Department of Technology Services
- Montgomery County Office of Agriculture

**9. Contact Information.** Provide the name, title and contact information of the officials who will serve as a resource for additional information. List one contact person per line; do not use columns to present contacts. Provide E-mail addresses.

Ivan Galic

Division Chief, Enterprise Applications and Solutions

101 Monroe Street, 13th floor

Rockville, MD 20850

240-777-2898

Ivan.galic@montgomerycountymd.gov