Title: Texas Imagery Service Initiative

Category: Improving State Operations

State: Texas

Project Initiation Date: January 1, 2015

Project Completion Date: August 31, 2015

Executive Summary:

The Texas Imagery Service initiative is a collaboration between the State of Texas and Google to provide high quality, continuous 6-inch natural color imagery resolution for the entire state. The pilot project was directed by Texas Natural Resources Information System (TNRIS) and Texas Department of Information Resources (DIR) leadership in partnership with three other state agencies. The on-demand mapping service is available to all public organizations (i.e. state, regional and local governments) and provides a current and consistent data source while offering the highest resolution imagery available for any statewide program. The solution is based on open-standard sources and can be incorporated into a wide variety of Geographic Information System (GIS) software and web mapping applications. Google hosts the imagery service on its Google Cloud Platform. In addition to gaining access to high resolution imagery at a fraction of the cost, the service reduces the need to pay large storage costs for serving terabytes of data by eliminating the need for each public organization to host the high resolution imagery. By using a distributive cost model, public organizations can recognize the benefits of the latest imagery technology at an affordable cost to all participants.

The business challenge was to reduce cost and increase the availability of higher resolution imagery. Statewide resolution imagery is a crucial component in support of many state agencies core missions. The ability to use the most accurate and detailed images for agencies that manage our roads and highways, carry out law enforcement duties, manage and conserve the natural and cultural resources, support our critical 911 call systems, manage our water and natural resources, monitor our air and water quality, manage our land, respond to natural disasters, regulate the exploration, production, and transportation of oil and natural gas and other key services is of paramount importance. Additionally, the high cost of acquiring imagery to less than a half meter as well as additional cost to store and distribute can be a barrier for most state agencies who need this type of service.

The Texas Imagery Service initiative provided numerous benefits in regard to visual imagery resolution for state, regional, and local governments. The program continues to grow as more governmental entities discover what an asset the service can be in supporting their core missions and service to the constituents of Texas.

Project Narrative:

Exemplar (20%): *The project represents visionary and transformational use of information technology in state government*

The technology used for the Texas Imagery Service Initiative was based on the success of Google Maps with performance and reliability of distribution of the Google Cloud Platform (GCP) as the infrastructure and the DIR Data Center Services (DCS) as the mechanism for contracting the service. Aerial flights of the State of Texas are on a pre-determined schedule to capture the most current available natural color imagery of the land, water and structures. This imagery is used as a base map to which other maps, shape files, i.e. counties, districts, are layered over to complete the map request by each individual agency or requestor. The storage and distribution issues are addressed and the aggressive cost model allows for more agency participation and utilization of the service.

Concept (20%): *The project successfully addresses an important dilemma in public service and/or encourages civic engagement*

The core features and functionality of the Texas Imagery Service Initiative are based on usability and scalability. The service offers a low cost solution to obtain high resolution imagery for state and local public entities throughout Texas. Security for the service is managed on an individual subscription basis in conjunction with unique government email addresses. The cost for the first year pilot was $2.3 million for the Google services and the cloud infrastructure. No additional hardware, software or infrastructure costs were expended for the effort. Agencies were able to utilize their existing mapping software to ingest the imagery to build their individual, unique maps. There was no traditional development cost/time as this was not an application but a service acquired through DIR's DCS program.

Significance (20%): *The project is consequential, relevant and transformational for state government and/or constituents.*

The service can be utilized by all Texas governmental entities. Governmental entities are defined as an agency within the state of Texas as defined by Section 2252.001, Government Code, including institutions of higher education as defined by Section 61.003, Education Code. From August 15, 2015 through March 23, 2016, the Texas Imagery Service was used by 251 public entities representing more than 5.3 million views for imagery for a total of 2.57 terabytes of transferred data. It should be noted that the 5.3 million views does not represent individual requests for imagery but rather each time an image was downloaded and manipulated, i.e. zoomed in/out, sized, cropped, shaped, refined, incorporated into other views or layered into other map shape files.

DIR leverages its IT contracting, procurement and chargeback capabilities to provide the financial and contractual structure necessary to make this statewide program possible. TNRIS offers its GIS expertise and leadership of its active and knowledgeable GIS community to assist in making sound decisions regarding future purchases that ensure the service provides relevant, high quality data to its customers. In order to accomplish this, the ongoing governance, communication, networking and collaborative environment of the Texas Imagery Services Initiative is coordinated through the Geographic Information Systems (GIS) Solutions Group, which is part of the DCS Governance Model. This governance model is key for customers to successfully leverage the benefits of sharing services with other governmental entities. The GIS Solutions Group defines the enterprise GIS technology strategic goals for implementation which is managed through DIR and TNRIS's Geographic Information Office (GIO). DIR's Statewide Data Coordinator, along with the State's GIS officer at TNRIS, co-chair the governance group that manages the effectiveness of the imagery service and decides what additional critical GIS technology services to offer. Collaboration between TNRIS's State GIS Office and DIR's DCS contract management capabilities is crucial to the overall success for the group. Members of the group are those agencies that directly contributed to the purchase of the Statewide High Resolution Imagery Services, GIS data, GIS Software or any other GIS solution procured through the DCS program on behalf of the state. Associate Members are those agencies that do not contribute financially to the purchase of Statewide High Resolution Imagery Services but will have representation in the meetings to assist and consult with the group about future GIS related requirements and acquisitions.

Impact (40%): *The project leads to substantial and measurable change; it makes state government better.*

Overall the Texas Imagery Service Initiative has provided broad improvements across all areas of state government in regard to visual aerial imagery. Three of the largest users of the service highlight the following benefits.

- *The Texas Commission on Environmental Quality (TCEQ) strives to protect our state's public health and natural resources. The aerial imagery has an incredible impact on the validation, assessment and resulting actions within the multiple programs of air, water and remediation in order to verify local and regional source locations, track the changing environmental surroundings and accurately assess the impact of modifications downstream of a potential environmental concern. The TCEQ also uses the aerial imagery in research activities, in compliance issues, but most of all to assist the public in identifying just about anything and seeing it in proximity to their homes, schools, churches, and offices providing the citizens of Texas the most timeliest information available.*

- *<u>The Texas Department of Public Safety (DPS)</u> uses the Google-provided imagery as a critical layer for the DPS TxMap Common Operational Picture which is used in approximately 2,500 Texas DPS Law Enforcement vehicles, offices and operational command posts throughout the state. TxMap provides access to more than 1,000 data layers, including the location of all state troopers and the recent Google imagery data as the user zooms down into selected region. Previously using imagery of considerably less quality and more age, the Google imagery is now frequently relied upon by Texas DPS Troopers, Special Agents, Rangers, SWAT/Bomb team and DPS Special Agents for a wide variety of uses including crime scene/accident investigation, SWAT/bomb incidents, search warrants/narcotic stings. It has been particularly valuable, and in continuous use in Operation Secure Texas. It directly supports the mission of conducting border security operations by providing micro-terrain level detail, directly improving the success of the operation, as well as the safety of the law enforcement officers assigned to the mission. Additionally, the imagery is used by the Texas Department of Emergency Management (TDEM) State Operations Center for all crises planning and response. The TxMap system has recently been made available to every law enforcement agency in Texas, further expanding the use of the recent and high-resolution imagery throughout all levels of Texas local law enforcement operations as well.*

- *<u>The Commission on State Emergency Communications (CSEC)</u> 911 Program, which handles about 10 million calls annually, requires our regional partner centers (RPC's) to maintain data to provision automatic location identification (imagery maps) for critical, timely emergency response to 911 calls. Additionally, RPC's are required to collaborate and resolve boundary issues with neighboring RPC 911 entities. Older technology provided a web portal loading process to resolve overlap errors which in some situations was challenging. The Texas imagery service provides a more visual capability to resolve these overlap boundary issues in a more effective manner and the lowered costs for the imagery used by our RPC 911 entities is a significant benefit for challenged regional budgets.*

In addition to offering the service through the DIR DCS program, representatives of TNRIS and DIR work in partnership to identify potential new users of the Texas Imagery Service that are not currently customers of the DCS program. Currently, there are 41 strategic mapping partners that are affiliated with TNRIS and 30+ customers of the DCS program. Updates and progress on the Texas Google Imagery Service Initiative are made available at the quarterly meetings of the GIS Community Group that include representatives from all levels of state, county and local government. The TNRIS website also prominently highlights the imagery efforts, updates and provides a comprehensive FAQs section. TNRIS contact points are also listed for government entities to find out more information on how they can subscribe to the service.