

Title: 2015 Sensor Flight and Data Capture Project

Category: Open Government and Data, Information and Knowledge Management

State: District of Columbia – Office of the Chief Technology Officer (OCTO)

Contact: Michael Rupert – OCTO Communications Director, Michael.rupert@dc.gov

Office: 202-724-5178, **Mobile:** 202-657-3831

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Website: <http://octo.dc.gov/service/dc-gis-services>

EXECUTIVE SUMMARY

In an effort to develop a more comprehensive geodatabase, the District's Office of the Chief Technology Officer (OCTO) deployed its 2015 Sensor Flight and Data Capture Project. While this project is part of our recurring data imagery program, Washington, DC breaks ground as one of the first jurisdictions to capture multiple sensor and imagery products on a single flight. Unmatched by other territories, our innovation simultaneously captures True Ortho imagery, Oblique imagery, and Light Detection and Ranging (LiDAR) images. The result is a robust geospatial data set that comprises uniquely consistent data.

The impact of the District's enhanced geospatial products is far-reaching. Access to this open data can enhance the experience that our 1 million daytime visitors and 600,000 local residents have in the nation's capital. Whether residents need information about hazardous neighborhood conditions or visitors want to identify less circuitous road detours, our refined datasets are important. The seamless execution of events in the greater Washington, DC Metropolitan area often hinges on exposure to our locally collected analyses.

PROJECT NARRATIVE

Concept

With technology advances, expanding user base needs, and aging planimetric layers, OCTO's District of Columbia Geographic Information System (DC GIS) needed to capture more data to establish more thorough core datasets. DC GIS currently has 3D layers, LiDAR data, and oblique imagery; however, these data are a patchwork of various layers acquired from different source specifications. Supported by District of Columbia Mayor Muriel Bowser and Chief Technology Officer Archana Vemulapalli, this initiative provides a comprehensive and standardized collection of imagery and data collected. The District is now able to fully utilize the benefit and harmony of these datasets.

The project aggregates data more accurately by employing the following methods:

- Doubling the resolution of aerial imagery: images taken are 3-inches per pixel versus 6-inches per pixel.
- Using Aerial LiDAR: LiDAR lasers bouncing off the Earth's surface to precisely measure elevation and location of terrestrial objects and features.
- Collecting True Ortho imagery: these images do not have the typical "building lean." Alternatively, they clearly show surrounding streets and other demographic features ordinarily not visible in standard aerial photography.

The 2015 Sensor Flight and Data Capture Project costs \$800,000 and OCTO will make the data publicly via API and other platforms. OCTO augmented its data capturing efforts by securing an engineering partner for project support. Since the project's inception, OCTO has completely controlled and managed the outsourced partner contributions. To our credit, OCTO has successfully provided oversight of all data products; applied "lessons learned" from previous data updates; and seamlessly managed every project phase without schedule interruptions.

Significance

DC Mayor Bowser and CTO Vemulapalli place a high premium on open data. Both understand that data transparency fosters greater participation and collaboration from people and governments. The District's January 2016 Open Data Initiative continues to stretch public and government boundaries of engagement. In support of the District's Open Government Initiative -- relative to data transparency and accountability -- government operational data is made available to the public via various vehicles. Web-based applications developed by OCTO provide both visualized data and raw data in multiple formats. This framework sets the stage for enhanced service delivery for District residents and agencies.

With these policy principles as a backdrop, OCTO makes all 2015 Sensor Flight and Data Capture Project data publicly available. As owners of this data, the products are accessible on DC's Open Data portal. Washington D.C.'s open and free project data is used to support:

- The District's 911 emergency response applications.
- The District of Columbia Water and Sewer Authority's efforts to accurately capture data that calculates impervious surface area and justifies city-wide revenue raising initiatives.
- The District of Columbia Department of Transportation's use of geometrically accurate street centerlines for data and reports to the U.S Department of Transportation's Federal Highway Administration. Project data is also used for the District's Street Spatial Database.
- The District Office of the Chief Financial Officer's Office of Tax and Revenue property assessment efforts.
- Economic development and design efforts.

Our 3-product sensor flights also render clean cartographic images and data that accurately identify changes in the District's landscape. The resulting information can be accessed across all web applications because of our standardized tool of data sets.

While OCTO has set a high bar for the way that geospatial data is collected, our efforts are completely replicable. We have innovated on top of an already-successful geospatial data capturing program. With the use of existing, traditional data capturing methods, OCTO was able to acquire new-level images. Whether local, state, or federal agencies, the key elements of our program – solid geospatial collection practices and data transparency -- are foundations upon which other aspects of flight sensor programs can be built. Generally speaking, partnerships and collaborations are attractive and necessary for economic growth and stability. A jurisdiction's decision to make its geospatial data fully available will foster strong partnerships with local, governmental, and national stakeholders. These collaborations will ultimately create a “win” for the jurisdiction and all collaborators.

Impact

Unique to the nation's capital, there are airway restrictions and concentric no-fly areas around Washington, DC. As a result, OCTO received special permission from the Federal Aviation Administration and the US Secret Service, to contract a sensor flight that flies over most of the District to capture images. OCTO's pioneering, multiple sensor flight has impacted the government in a profound way. This level of data accuracy is an invaluable resource for District initiatives in every agency.

Open access and unlimited availability has benefited District government agencies in many ways. For example DDOT's Urban Forestry Administration's principal mission is tree canopy health. The tree canopy is directly tied to the District's stormwater runoff, energy conservation, and air quality. Data findings will reveal tree cover in commercial areas and residential areas. This information supports DDOT efforts to keep area canopies safe and flourishing.

Open data collected from this effort can also be used to strengthen many aspects of the city's economy. The District's Department of Small and Local Business Development can help prospective business owners locate viable areas for new enterprises. New District residents can access data to locate the District of Columbia Public School System's public and charter schools. The Department of Parks and Recreation data will also be available to help people have a more enjoyable experience while visiting or living in the District.

By capturing changes in land and building structures, our data is useful for Washington, D.C. firefighters. Under the direction of the District's Fire and EMS Department, these first responders can use our accurate data to determine dispatch strategies based on accurate building height data. In hazardous situations, where seconds matter, the accuracy of this data can save lives. In other instances, data-driven Line-of-sight analyses help the District's Metropolitan Police Department plan parade routes for official events, while safeguarding the city against potential threats.

OCTO's proven commitment to the Open Government and Data, Information and Knowledge Management arena reflects NASCIO's State IT Recognition Awards' core values. Our documented excellence in this arena makes our innovation an ideal award recipient.