

KyFromAbove

Kentucky's Aerial Photography and Elevation Data Program

A Successful Multi-Agency Collaboration

Category: Cross Boundary Collaboration & Partnerships

State: Commonwealth of Kentucky

Site: <http://kyfromabove.ky.gov/>

Project Initiation: December 2011

Project Completion: November 2017

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Executive Summary

The most current digital leaf-off aerial photography of the Commonwealth was acquired in 2001 and 2002 but only east of 84 degrees longitude (ie. East of Winchester – only ¼ of the state). The photography was captured in a black and white (grayscale) format. Aerial photography for the remaining ¾ of the state was acquired earlier during the 1992-1998 timeframe. State and Federal Funds were leveraged at that time for the purchase of the photography.

As it relates to elevation data, Kentucky's widely varying topography was only reflected in a very coarse, federal government digital elevation model that lacked both accuracy and currency. The surface of the Commonwealth had undergone widespread and significant change and new, high-resolution elevation data was needed to truly visualize Kentucky's unique landscape.

A common digital basemap, including current color leaf-off aerial photography and new elevation data acquired using Light Detection and Ranging (LiDAR) technologies, reduces the cost of developing GIS applications, promotes data sharing, and adds efficiencies to many state agency business processes. Until recently, this type of digital basemap was only available for areas like Louisville and Lexington but not for the balance of the Commonwealth.

The KyFromAbove collaborative effort focuses on the building and maintenance of a current digital basemap for the entire Commonwealth that meets the needs of its users at the state, federal, local, and regional level. Through this effort, duplicative spending on these data resources has been reduced and the common digital basemap has encouraged the standardization of Geographic Information Systems (GIS) assets throughout the Commonwealth.

Significance

KyFromAbove exemplifies collaboration given the engagement that occurred at all levels of government from its very inception. The KyFromAbove technical advisory committee collectively defined the data standards, obtained letters of support, and worked to secure funding as they realized the value it would bring to their specific business processes.

With COT's leadership, nearly 20 program partners (listed below) leveraged a collective of technical knowledge and funding to reduce the cost of acquiring and distributing the data. Nearly \$13 million in pooled funding resources have been contributed by program partners since its inception. Each partner has found great value in the data which provides us with an unprecedented view of Kentucky's landscape.

Partner Listing:

KYTC - Kentucky Transportation Cabinet

AML - Kentucky Abandoned Mine Lands

DGI - Kentucky Division of Geographic Information

DOW - Kentucky Division of Water
DLG - Kentucky Department for Local Government
KGS - Kentucky Geological Survey
NRCS - Natural Resources Conservation Service
USGS - United States Geological Survey
FEMA - Federal Emergency Management Agency
TVA - Tennessee Valley Authority
KSU - Kentucky State University
LOJIC - Louisville-Jefferson County Information Consortium
FPB - Frankfort Plant Board
DOD - Department of Defense - Fort Knox
Link-GIS/NKAPC
Boone County Planning Commission
City of Florence
Hardin County Fiscal Court
Hopkins County Fiscal Court
Paducah/McCracken County

Kentucky achieved the status of statewide LiDAR coverage with completion of the 2017 acquisition. Only a handful of states have statewide LiDAR coverage and few have the level of detail acquired in the Commonwealth. All of the data acquired during this program's lifecycle has been made available in the public domain and is being used widely in both the public and private sector.

Impact

The impact of the KyFromAbove program has been profound, enabling government agencies at all levels to improve their decision making process so as to serve the public's needs and interests in a more efficient and timely manner. The public can view the data from the website (<http://kyfromabove.ky.gov/>), while all state agencies have streamlined access to the LiDAR and photography in the Commonwealth's Data Center. This level of access promotes utilization for decision support, situational awareness, environmental and biological analysis and economic development. Making well-informed decisions saves both time and fiscal resources in the government arena. The data resources acquired via KyFromAbove are one of Kentucky's most valuable assets in supporting our state's priorities, including the strengthening of our financial foundation, growing our economy, creating a healthier public, and protecting and strengthening our communities and our environment.

"Myriad local, state, and federal agencies are incorporating this dataset into their business process and their ongoing work will impact our lives in ways that we never imagined. It's truly about more efficient access to big data in order for decision makers to make more informed and quicker decisions," said Kentucky Office of Homeland Security, Executive Director, John Holiday.

Public Value

Investments by public agencies in aerial photography and LiDAR acquisitions have always proven to exceed a return on investment of 20:1 or higher. The Kentucky Transportation Cabinet alone is saving thousands of dollars per mile during Phase I of construction projects. During 2012, the Phase I savings were nearly \$8 million and over the past few years Phase II savings have been ~\$35-\$55 million. The Kentucky Division of Water is employing the LiDAR data to evaluate dams and levees that if breached, could affect lives and properties of many Kentuckians. The private sector is using the data for infrastructure engineering, community planning, environmental analysis, and precision agriculture.

A full listing of agency uses can be found @
<http://kygeonet.ky.gov/kyfromabove/pdfs/AgencyUses.pdf>

It is known that this new digital basemap impacts the lives and well-being of Kentucky's citizens. For example, the digital elevation model (DEM) derived from the LiDAR data is used to determine if a property or structure lies in floodplain. This directly impacts the insurance premiums paid by individuals. This same data is used by the Kentucky Transportation Cabinet (KYTC) to design and construct new roads that we all use daily to move about. The Kentucky Department of Fish and Wildlife Resources (KDFWR) is leveraging this resource to study quail and other wildlife habitats. Their studies will have a positive impact on our State's environment and can improve the hunting and fishing experience for many citizens. Abandoned Mine Lands (AML) uses this data on a daily basis to study and mitigate landscape issues that directly impact personal property and structures in the coal fields and the U.S. Forest Service (USFS) is performing the environmental analysis that is necessary before they lay out new hiking trails that all of us can enjoy.

The Commonwealth of Kentucky is leading the way in how we can use LiDAR and aerial photography to improve the lives of the public, allow timelier and cost-effective solutions to environmental and regulatory efforts, and ensure compliance with federal and state requirements. We have come a long way since our initial efforts in the 1980's, and the Commonwealth is on the cutting edge of what we can do, and where we want to go next, thanks to the KyFromAbove partnership.