Conference Presenter Abstracts and Bios

Presenter	Kent Anness
Agency / Sector / Company	Kentucky Division of Geographic Information
Title	The Commonwealth Geospatial Data Resources
Topic	GIS Data, Aerial Photography, and Elevation Data Resources

Abstract

To provide an overview of the Commonwealth's GIS data resources and an update on the status of the Kentucky Aerial Photography and Elevation Data (KYAPED) Program.

Speaker Bio

Kent is the primary technical staff person that maintains the Kentucky Geography Network (KYGEONET) at the Division of Geographic Information. The KYGEONET is one of the country's first implementations of ESRI's Metadata Services and offers a variety of geospatial resources for on-line viewing or download. Kent manages the components and related resources, that combined, comprise the DGI computing environment. The in-house development of internet mapping applications, web pages, data download portals, and other computer related services that are required to interact the myriad of State Agencies that leverage the DGI data resources are carried out by this Geoprocessor. Configuration and ongoing maintenance of the DGI server environment is conducted as well. Compliance with COT's Enterprise Architecture Standards is also insured and assistance is provided to other staff as required.

Presenter	Blake Bennett
Agency / Sector / Company	KYTC – OIT Information Services
Title	Kentucky's Railroad Crossing Inventory - Roads & Rails meets GIS
Topic	GIS Asset Management

Abstract

The Railroad Crossing Inventory (RCI) is a combination of handheld devices for field inspections, GIS and tabular web services, a browser-based app and a robust reporting system. All of this helps the Utilities & Rails Branch of the Transportation Right of Way Division to keep track of railroad crossings and work to make them safer.

Speaker Bio

A programmer from the age of 10, Blake has an IT career spanning 22 years, most of it in Microsoft technologies. A Microsoft Certified Professional, he serves the Transportation Cabinet as a Project Manager, Business Analyst, IT Architect, Team Foundation Server Administrator, and Release Manager. He is the Project Manager for the RCI program.

Presenter	Teri Dowdy, GISP
Agency/Sector/Company	KYTC – GIS Support Services Branch
Title	What's New in ArcGIS 10.1 for KYTC
Topic	GIS Desktop Application

Abstract

An overview of the changes between ArcGIS versions 10.0 and 10.1, obvious and behind the scenes, that a KYTC GIS User may experience at the Desktop and Citrix levels of ArcGIS.

Speaker Bio

Teri Dowdy is a recent convert to the KYTC GIS Support Staff, where she serves as lead for ArcGIS SDE geodatabase administration and the GIS Training Coordinator. Prior to her arrival at KYTC, Teri spent the majority of her GIS career in private consulting and as an Adjunct Instructor at the University of Kentucky, where she developed and taught a highly regarded engineering course on "GIS Applications in Water Resources." In addition to multiple undergraduate degrees in biology, geology and education, she also earned her Master's degree in Hydrogeology (with a GIS emphasis) at the University of Kentucky.

Presenter	Dan Farrell, PLS
Agency / Sector / Company	KYTC Statewide Survey Coordinator
Title	Blending of Airborne LiDAR with New and Traditional Survey Techniques
Topic	LiDAR - GIS - Modeling - Terrain - Visualization

Abstract

KYTC is a major partner with DGI in the Kentucky Aerial Photography and Elevation Data Program. The Transportation Cabinet's Division of Highway Design is using Airborne LiDAR data from the Elevation Data Program and Photography to expedite Phase 1 design. In addition, Highway Design is supplementing the Airborne LiDAR data with traditional surveying, mobile mapping, as well as conventional aerial surveys to aide in Phase 2 design.

Speaker Bio

Dan Farrell is a licensed land surveyor in the Commonwealth of Kentucky and is the Statewide Survey Coordinator for KYTC. He manages survey and photogrammetry contracts for the cabinet. He also provides guidance, training and support for Transportation's survey staff. Dan has worked for the Kentucky Transportation Cabinet for 36 years and is a graduate of Cincinnati State College in Cincinnati, Ohio.

Presenter	Jeremy Gould
Agency / Sector / Company	KYTC – GIS Support Services Branch
Title	Simplifying CADD/GIS Integration within KYTC
Topic	CADD and GIS Integration

Abstract

See how KYTC is leveraging new technology and developing custom tools to simplify and streamline CADD and GIS interoperability.

Speaker Bio

Jeremy Gould is a Systems Consultant with the KYTC – Office of Information Technology where he is the lead for ArcGIS Server administration. Prior to his current position, Jeremy administered CAD systems for Division of Highway design and also worked as a CAD/GIS tech for various consulting firms. He is a 2000 Graduate of Kentucky State University where he received his Bachelors in Mathematics. He is also a 2007 Graduate of the University of Colorado at Denver where he earned his Masters in Engineering GIS.

Presenter	Will Holmes, Branch Manager
Agency / Sector / Company	KYTC – GIS Support Services Branch
Title	2013 KY TransGIS Conference: Better, Faster, Safer…But how do we get there?
Topic	Welcome and Introduction
Abstract	

Speaker Bio

Will has more than 18 years of GIS experience in the public and private sectors. He works in the Transportation Cabinet as the GIS Support Services Branch Manager in the Office of IT, where he has helped the Cabinet as its desktop GIS use has grown by more than 500% and expanded into the web and mobile environments. He advocates broad sharing of data and knowledge. He is active in the larger state GIS community through KAMP work and GIAC. He sits on the Geographic Information Advisory Council's Executive Committee, GIAC, the GIAC Planning Work Group and the Standards Committee working to build a collaborative GIS community that serves the needs of Kentucky.

Presenter	Kelachukwu Ivonye
Agency / Sector / Company	University of Louisville
Title	Classyfiying Stress Levels of Bike Networks within Jefferson County
Topic	Transportation Planning

Abstract

Maps are generally made to give users better insight on their geographic location or the geographic location of a point of interest. Traditionally bike maps have taken a facilities approach, mapping out facilities that are of interest to cyclists. This method of mapping does not take into account user experience of using the routes or their propensity to take the best and safest route based on available data. Researchers found out that if bicycle use is to increase around the nation, roads serving as bike networks must have a low stress connectivity. Based on this conclusion it is important for local bike maps to categorize routes and road facilities according to how much stress they might pose a rider who chooses to utilize this mode of transportation.

The Mineta Institute of transportation conducted a 2012 study that developed measures of low stress connectivity to evaluate bicycle networks. They concluded by proposing a set of criteria that may be used to classify networks into four stress categories; LTS 1 is the least stressful class which is suitable for children; LTS 2, represents the traffic stress that most adults will tolerate, while LTS 3 and 4 represent greater levels of stress. In accordance with the criteria proposed by the aforementioned institute, I have developed a localized rubric based on the available road and street network data of Jefferson County to classify the network into four similar classes.

This study uses data from the Louisville and Jefferson County Information Consortium (LOJIC) like bike route, speed limit and road type to come up with a raw classification of stress level connectivity for all the road segments. The primary limitation of this study due to data constraints is the application of only three variables for the classification. However, I propose that with the availability data such as road width, amount of road lanes, this study can be further refined to come up with a more accurate depiction of low stress connectivity within the Jefferson County. In conclusion, even with the limited data sets used for this study, it still gives a close to accurate depiction of low stress connectivity of Jefferson county networks.

Speaker Bio

Kelachukwu Ivonye is a graduate student at University of the Louisville's School of Urban Planning with a focus in spatial analysis for planning. He completed his undergraduate degree with a bachelor's degree in geographic information systems with a minor in geology. His interests include; database management, applications of GIS and spatial analysis in planning, urban forestry and transportation planning to be specific. He has three years of work/intern experience in GIS. He has worked on various GIS projects ranging from spatial database management for a political campaign, spatial database management and resource inventorying in forestry and mapmaking for research centers. He has a strong desire to practice geoprocessing and spatial analysis. He hopes to work within the field of data acquisition, geoprocessing and spatial analysis for planning upon graduation.

Presenter	Danielle Kelly
Agency / Sector / Company	KYTC – GIS Support Services Branch
Title	Top 10 Tips and Tricks in ArcGIS
Topic	GIS Desktop Application

Abstract

The presentation covers the current status of geodetic control in KY and the expected changes in control which are driven the National Geodetic Survey's 10 Year Plan.

Speaker Bio

Danielle Kelly is the Kentucky Height Modernization Coordinator for the Division of Highway Design. She manages all Height Mod related services & activities and assists in providing survey support for Transportation's survey staff.

Ms. Kelly is a UK graduate and has worked in academic, public and private sectors in the areas of scientific research, GIS, GPS and photogrammetry.

Presenter	Ahjung Kim
Agency / Sector / Company	KYTC – GIS Support Services Branch
	Automate Yourself Out of A Job (Using ArcGIS Automation to Simplify the Zoning Permit Process)
Topic	airport GIS, 3D analysis, application development

Abstract

GIS is often conceived as a "mapping tool" that creates pretty maps. ArcGIS is actually a robust software that can streamline and automate people's everyday work. This presentation will provide a brief overview on how KYTC GIS Branch is helping the Aviation Department to automate and simplify their airport zoning map production & permit process with template maps, LiDAR, 3D analysis, custom Python tools, and a Web application.

Speaker Bio

Ahjung Kim, the latest addition to the KYTC GIS Support team, is a budding GIS developer. She has a penchant for making tools that can make people's work simpler, easier, and more fun. She has worked on developing 3D cadastral map and Traveling Salesman routing solution. She won the Lou Seig award for her undergraduate GIS study, "Geographic Analysis of Violent Crime Rates in Louisville" in 2009. She also received a postbaccalaureate certificate in GIS from Penn State University in 2012.

Presenter	Ben Koostra
Agency / Sector / Company	Limestone & Cooper
Title	Using ArcGIS with SharePoint for Asset Management
Topic	server GIS; web mapping applications

Abstract

Microsoft SharePoint is widely-used as an information and content management platform. As an asset management tool, SharePoint's standard functionality can be used to create and maintain lists of physical assets that include attributes and related documents. Location information about the assets can be used to include the features in web mapping applications built using the ArcGIS for Server platform. This talk will focus on the practical implementation of SharePoint and ArcGIS by a railroad company to manage their track and real estate assets.

Speaker Bio

Ben Koostra is a consultant with Limestone & Cooper, a geospatial information and technology company. His expertise includes Geographic Information Systems (GIS) implementation, GIS web application design and development, and Global Navigation Satellite Systems (GNSS) technologies. He has a BS from the University of Kentucky and is a registered Professional Engineer in Kentucky.

Presenter	Martin Mudd
Agency / Sector / Company	KYTC – GIS Support Services Branch
Title	Top 10 Tips and Tricks in ArcGIS
Topic	GIS Desktop Application

Abstract

A compilation of the GIS Support Team's Top 10 shortcuts, tips and tricks every ArcGIS user can implement to make their job easier.

Speaker Bio

Presenter	Carl Shields, Archaeologist
Agency / Sector / Company	KYTC – Division of Environmental Analysis
Title	LiDAR and Kentucky Archaeology
Topic	LiDAR - GIS - Modeling - Terrain - Visualization

Abstract

The Kentucky Aerial Photography & Elevation Data Program is an initiative to build and maintain a current basemap for the Commonwealth that meets the needs of its users at the state, federal, local, and regional level. Data includes current color leaf-off aerial photography and elevation data (LiDAR). A surprising benefit to the investment has been archaeologists' use of LiDAR and other remote sensing data. LiDAR can provide archaeologists a powerful tool to quickly detect prehistoric earthworks and mounds; however, it is not a panacea. Multiple sites and a few test cases are highlighted to examine the methods, the strengths and weaknesses, and the implications for broader research. Additionally, there will be a lot of cool new (potential) sites shown to highlight the capabilities.

Speaker Bio

Carl Shields has been an archaeologist with Kentucky Transportation Cabinet almost 14 years. He's participated in excavations throughout the United States and Mexico. Besides archaeology, he helps staff with their GIS needs and assists FHWA with their Native American Consultation process. He has over 24 years of experience in archaeology and 19 years with GIS. Turn-ons include LiDAR and Archaeology. Turn-offs include Metadata and more metadata.

Presenter	John Schmidt
Agency / Sector / Company	NCAD Corporation
Title	tranShed Bridge Service
Topic	Bridge Augmentation Planning

Abstract

Geologists, especially hydrologists regularly use the concept of waterShed and Kentucky is preeminent in use of GIS to model generally state-bounded watersheds. Perhaps it is appropriate to generalize use of this concept to transportation, especially planning, especially focused on the role of a bridge in serving the tranShed. We will explore concepts and GIS strategies, albeit less-defined for transportation engineering than for hydrologists.

Speaker Bio

Mr. Schmidt is the founder and owner of NCAD Corporation in Cincinnati, OH. He holds a Bachelor's degree from Williams College and a Master's degree from the University of Cincinnati College of Engineering. He has been involved in GIS for over 20 years as contractor, planner, and developer.

Presenter	Jun Yan
Agency / Sector / Company	Western Kentucky University
Title	Spatial Analysis of Fatal Automobile Crashes in Kentucky
Topic	Traffic accident analysis

Abstract

Fatal automobile crashes have claimed the lives of over 40,000 people on average every year in the United States since 1995. Like any other spatial point event, fatal crash events don't occur randomly in time or across space. The purpose of this study is to identify spatio-temporal patterns and hot spots of fatal crashes in the state of Kentucky. Using fatal crashes data reported in the Fatal Analysis Reporting System (FARS), three studies were conducted: 1) rates of fatal crashes were calculated along main roads statewide over average daily traffic flow at both road segment and route levels; 2) various density surfaces of fatal crashes were estimated via planar kernel density estimation (planar KDE) based on time (e.g. season, day of week, time of day), driver's demographic characteristics (e.g. age) and if driver was under DUI influence; and 3) finally two case studies were carried out to locate the hot spots of fatal crashes in Jefferson County and Warren County using network kernel density estimation (Network KDE).

The analysis of fatal crash rates shows that the roads with high speeds and winding configuration, particularly in rural areas, are the ones along which the highest rate of fatal crashes occurred. Fatal crash density surfaces created by planar KDE show that the hot spots were temporally the most visible during the period of 2pm to 6pm of a day, summer season and at Saturday, particularly in the urban areas of Kentucky. It is also found that hotspots can observed most visibly in the fatal crashes involved with drivers age 16 to 25 and fatal crashes with alcohol involvement often occurred close to meeting places such as clubs, bars and restaurants. Lastly two case studies using network KDE show that the hotspots of fatal crashes are mostly located in the areas with high traffic and close to the intersections along major roads with converging secondary roads.

Speaker Bio

Dr. Jun Yan received his Ph.D. in GIScience from the State University of New York at Buffalo, his M.S. in GIS and Remote Sensing from Chinese Academy of Sciences, and his B.S. in Urban & Regional Planning from the Peking University, China. He is currently an associate professor of the Department of Geography and Geology at the Western Kentucky University. His research interests are mainly in the fields of applying GIS technologies and spatial quantitative methods in the areas related to urban and regional analysis, transportation, public health & safety, and environmental studies.

Presenter	Justin Young
Agency / Sector / Company	KYTC – District 3
Title	Using GIS for Asset Management: Drainage Inventory
Topic	Asset Management - Mobile GIS

Abstract

One of the challenges of the KYTC maintenance division is asset management. Maintenance has the responsibility to take care of the roads forever. But there are some questions we face: How do we know what to do? Where do we start? In order to know what to do or where to start you, we need to know our current conditions. That is called asset management. This drainage inventory database identifies what drainage structure is there, the details of its current state, what kind of maintenance activities need to be performed, and how soon that needs to happen. Gone are the days of endless paper work with this GIS mobile project.

Speaker Bio

Justin Young, a former KYTC scholarship student, graduated Western Kentucky University with a degree in Civil Engineering in May 2007. Justin has been working with the KYTC for about 6 years now. He currently lives in Bowling Green and has been working in the KYTC District 3 office. He passed the PE exam in December 2011. He recently accepted the position as Transportation Engineer Supervisor for the Russellville section, which includes Butler, Logan, and Todd counties.

Speaker 2	Andrew McKinney

Speaker 2 Bio

Andrew McKinney is a Geographic Information Systems Consultant with the Kentucky Transportation Cabinet's Office of Information Technology. He has 6 years of professional GIS experience in both the Public and Non-profit sectors. Andrew is a graduate of the University of Louisville Geography and Geo-sciences department with an emphasis in Transportation GIS.

Presenter	Demetrio Zourarakis
Agency / Sector / Company	Kentucky Division of Geographic Information
Title	Which Line to Follow? A Comparison of Terrain Contours Extracted from Processed KYAPED LiDAR Data and Online Services
Topic	LiDAR - GIS - Modeling - Terrain - Visualization

Abstract

Terrain elevation data are continuously augmented thanks to the ongoing Kentucky Aerial Photography and Elevation Data Program (KYAPED) (http://kygeonet.ky.gov/kyfromabove/). The use of contour lines is essential in terrain visualization and numerical calculations. While Model Key data are considered to be “true” bare earth, provided as part of the deliverables of the program, 5-foot digital elevation models (DEMs) are accessible from the Kentucky Division of Geographic Information’s online/cloud services (http://kyraster.ky.gov/rest/). Esri®’s ArcGIS® 10.1 allows for both manipulation of .las files containing Model Key and Ground class point clouds for the creation of DEMs, and for the extraction of contour lines at the vertical accuracy warranted by the data. This presentation will provide examples of calculation of contour lines based on online/cloud service data and an estimate of their differences when compared with the Model Key DEMs at varying spatial resolutions.

Speaker Bio

Demetrio is a GIS and remote sensing analyst with the Kentucky Division of Geographic Information. Data processing and analysis, outreach and agency consultation and coordination, and administration of the ESRI statewide site license program for post-secondary education, are among his duties. His is a GISP and a Certified Mapping Scientist, Remote Sensing and GIS/LIS.