2016 Kentucky GIS Conference
Workshop Descriptions

BYOMD: Bring Your Own Mobile Device (i.e. smartphone/tablet)
BYOD: Bring Your Own Device (i.e. laptop)

Morning Workshops highlighted in green
Afternoon Workshops highlighted in brown
Full Day Workshops highlighted in blue

Workshop #00: Esri® Hands-On Learning Lab (HOLL)
The HOLL (Hands-On Learning Lab) is a FREE training resource provided and developed by Esri Training Services. The lab is an excellent way to introduce ArcGIS® software users to a variety of Esri® solutions and training opportunities while learning to use Esri® software.

Workshop #01-AM: Python Scripting in an ArcGIS® Environment
Morning Workshop – Instructor: Mike Callahan
This hands-on workshop will explore how to automate GIS tasks using the Python Language. We will look at how Python connects with ArcGIS for Desktop. It will include a short introduction to the language and how Python is supported in Esri®.

Workshop #02-PM: Using Python Toolboxes for Creating Interfaces to Scripts
Afternoon Workshop - Instructor: Mike Callahan
This hands-on workshop will show how to add interfaces to existing Esri® scripts using nothing but Python code. The workshop will also show how to collect these scripts into a Python Toolbox which can be easily shared. Some experience with Python is recommended.

Workshop #03-AM: Empowering 2D & 3D GIS from Drone Imagery Using Drone2Map
Morning Workshop - Instructor: Greg Brunner
This workshop will consist of a presentation on Drone2Map and hands-on exercises that will instruct users on how to generate mosaics, point clouds, oblique imagery, and other compelling data products from drones using Drone2Map from Esri®.

Workshop #03-PM: Empowering 2D & 3D GIS from Drone Imagery Using Drone2Map
Afternoon Workshop – Instructor: Greg Brunner
(This workshop is a repeat of the morning workshop. See description immediately above.)
Workshop #04: UAV Fly-Over Exploratorium
Full Day Workshop - Instructors: Philip Bernard, Greg Grabner, Eric Muncy and Chris Walls
(ByOD – Laptop Recommended)

This workshop will be conducted in an open space, and will demonstrate the utilization of UAV/UAS, including mission planning, platform selection, sensor data acquisition, data workflows and processing, and visualization techniques.

Workshop #05: IT Project Management with GIS Examples
Full Day Workshop - Instructor: Pete Croswell
(ByOD – Laptop Recommended)

This workshop covers critical concepts and approaches for effective IT and GIS project planning and management. About 2/3 of the workshop will describe project planning and management practices with references to the Project Management Institute (PMI) as part of the Project Management Body of Knowledge (PMBOK) and examples on how these practices are applied to GIS and IT projects.

Specific topics will include:

- Strategic planning as a basis for project planning and execution’
- PMI Project management Knowledge areas
- Project planning/implementation planning (dealing with creation of a task hierarchy, task relationships, etc.)
- Project budgeting and financial management
- Risk management (as an element of project planning and monitoring)
- Project communications and reporting and project team management

The remainder of the workshop will be a live demonstration on the use of Microsoft Project Software, explaining key concepts and terms and showing frequently used functions for setting up a project task hierarchy, task linkages and scheduling, how to use and modify views (Gantt, calendar), linking objects to tasks, and using various reporting and presentation tools.
Workshop #06: An Overview of Open Source GIS Software (a URISA-Certified Workshop)
Full Day Workshop - Instructor: Sara Yurman
(BYOD – Laptop Required)

Free and Open Source Software (FOSS) has been offering choices to computer users for a number of years. Over the past few years the Open Source choices in GIS have been broader and more capable than ever before. This URISA-certified workshop will focus on GIS Open Source Software and will give an overview of current developments from technical and management perspectives. Selected packages and their applications in various projects will be demonstrated and discussed.

Specific topics include:

- Open Source GIS background and development,
- Overview of Open Source GIS spatial functionalities
- Live demonstrations
- Interoperability
- Open Source GIS spectrum
- Planning and implementation issues

Workshop #07-AM: Geoprocessing in an Open Source Environment Using QGIS
Morning Workshop - Instructor: Boyd Shearer

QGIS is the leading Free and Open Source GIS software platform. This hands-on workshop will show how to use QGIS to accomplish common GIS workflows and integrate projects within an ArcGIS environment. After an introduction to the software’s user interface and the general philosophy of Open Source, we’ll work through a series of four modules.

Workshop #08-PM: Using Open Source for Mapping and SQL queries in CartoDB and QGIS
Afternoon Workshop - Instructor: Boyd Shearer

CartoDB transforms layers of geospatial information into data-driven maps that enable analysis and visual discovery of trends and patterns to make better, faster decisions. This hands-on workshop explores the application of QGIS to using structured data for creating customized queries for mapping applications in an open source environment.
Workshop #09-PM: Field Data Collection with Commercial Off-The-Shelf software (COTS) and Open Source Applications Exploratorium
Afternoon Workshop - Instructor: Vince DiNoto
(BYOMD – Mobile Device Required)

Mapping has become part of the mainstream fabric of our everyday lives. The citizen geographer and scientist is now collecting georeferenced data without even knowing it.

In this hands-on Exploratorium, field data will be collected, and how to build an Enterprise level field data collection application will be shown. This will include maintaining the dataset behind a secure firewall and creating a story map to share findings. There are numerous types of Story Maps and some of the differences will be discussed. Open Source solutions for Story Mapping and Field Data collection will be discussed but all laboratory exercises will be done with Esri products.

Workshop #10-AM: Field Data Collection with Collector for ArcGIS®
Morning Workshop - Instructor: Christy Powell
(BYOMD – Mobile Device Required)

Attendees at this hands-on workshop will learn how to publish feature services via ArcGIS Online, create maps from those services, and use the maps created in ArcGIS Collector. The workshop will cover creating datasets that are optimized for field collection, transitioning data into and out of ArcMap, and common pitfalls in creating an ArcGIS Collector project.

Students should create an ArcGIS online account before the workshop. A smartphone or tablet will be used for the field collection part of the workshop. If you don’t have a device, you will be paired with another student. Please download the ArcGIS Collector app from the Apple App Store or Google Play Store before the workshop.

Workshop #11-PM: Esri's Survey 123
Afternoon Workshop - Instructor: Christy Powell
(BYOMD – Mobile Device Required)

Crowdsourcing is becoming established as an authoritative ecosystem constantly generating “volunteered geographic information”. This hands-on workshop will demonstrate how COTS (Esri®) can help the citizen mapper gather, structure, display and share information with communities of interest.
**Workshop #12: Service GIS: Mapping Covington's Murals**  
Full Day Workshop - Instructors: Jessica Moss, Tom East and Louis Hill  
*(BYOMD – Mobile Device Required)*

Join representatives from the City of Covington and other urban revitalization organizations in a walking tour of public art throughout Covington’s downtown area, and assist with collecting information, location, and pictures to create an interactive map for public use. Workshop attendees will use their own mobile devices and ArcGIS Collector to collect information about the pieces included in the tour. Following the tour, attendees will be shown the basics of using ArcGIS Online to compile the collected information.

A smartphone or tablet will be used for the field collection part of the workshop. If you don’t have a device, you will be paired with another student. Please download the ArcGIS Collector app from the Apple App Store or Google Play Store **before** the workshop.

**Workshop #13-PM: Professional Land Surveyors in a GIS World**  
Afternoon Workshop - Instructors: Kentucky Association of Professional Surveyors (KAPS) Members

The goal of this workshop is to provide the GIS Professional with an overview and understanding of the duties and responsibilities of the Professional Land Surveyor. An additional benefit of the workshop is the opportunity to foster and maintain a relationship between the two types of professionals and to assist in the understanding of the synergies and dependencies that exist in these related geospatial and mapping sciences. Attendees will have the opportunity to expand their knowledge base in professional survey – related topical areas.

**Workshop #14-PM: Oblique Imagery Exploitation Exploratorium**  
Afternoon Workshop - Instructor: Eagle View-Pictometry Staff  
*(BYOD – Laptop Recommended)*

Pictometry Intelligent Images are captured by a fleet of planes outfitted with USGS-certified camera systems flying year-round. Image processing is completed using patented technologies that deliver amazing clarity and detail for a precise view of every feature. Because every pixel in the image is georeferenced the images become actionable, allowing for measurements and data extraction. Web-based access and tools make it easy to view and analyze the images and information. This exploratorium will allow the participants to learn, demonstrate and experience exploitation workflows for a variety of sensor data.
Workshop #15-AM: UAV-Fundamentals and Regulations
Morning Workshop - Instructors: Eric Muncy, Chip Bernard and Bruce Dawson

Unmanned Aerial Systems (UAS) are becoming a new, fast growing yet disruptive technology to professions such as GIS and Surveying. The applications of these platforms and sensors are limitless and pose a challenge from technical, commercial and legal perspectives. This workshop aims to provide a knowledge base regarding these topics:

- Nature of “drones” or more correctly, Unmanned Aerial Vehicles (UAVs) or Unmanned Aerial Systems (UASs)
- Impact of UAVs/UASs on the geospatial professions and GIS in particular
- Legality of flying UAVs/UASs
- Legality of data collection with them
- Current regulatory landscape
- Permitting for agencies and institutions
- Types of platforms and sensor payloads for specific uses
- Examples of emerging and established applications
- Processing workflows in a GIS environment

Workshop #15-PM: UAV-Fundamentals and Regulations
Afternoon Workshop - Instructors: Eric Muncy, Chip Bernard and Bruce Dawson

(This workshop is a repeat of the morning workshop. See description immediately above.)

Workshop #16-AM: Applications of LiDAR
Morning Workshop - Instructors: Quantum Spatial Staff
(BYOD – Laptop Recommended)

Airborne LiDAR plays a vital role in determining many of the decisions made today. Often the data is consumed without knowledge of how it was created. This workshop showcases the steps involved in getting the data to a decision making product. Participants will have an opportunity to learn how the data is generated along with the derivative products that can be created from it. The following topics will be addressed:

- LiDAR: Basics, Data Model and Structure
- Hydrographic Data Collection and Classification
- Digital Elevation Models (DEMs) and derivative products
- Examples of applications
Workshop #17-PM: Geomentoring with ArcGIS® Online Exploratorium  
**Afternoon Workshop - Instructors: Scott Dobler, Amy Nemon, Laura Moore and Kim Ezell**  
*(BYOD *and* BYOMD – Laptop and Mobile Device Required)*

The Kentucky Geographic Alliance (KGA) is developing an online GIS training site for K-12 educators. This site will be used to introduce Geomentors to local schools for basic GIS integration into the curriculum. The KGA has received funding from Esri to provide multiple levels of training for interested K-12 teachers, with emphasis on ArcGIS Online (AGO) as the entry point for both teachers and students. This part of the workshop will illustrate the use of AGO in developing project-based exercises, and the integration of spatial data into shareable story maps for curriculum development and community feedback.

Workshop #18-PM: Working with LiDAR in a GIS Environment  
**Afternoon Workshop - Instructor: Jeremy Mullins**

Currently, most LiDAR projects result in deliverables of only bare ground data (DTM, contours, grid, etc.) This workshop will focus on the additional uses of LiDAR data using previously acquired point cloud data from the **Kentucky From Above** project currently in progress. We will work in the Esri environment extracting building heights, vegetation limits, limited planimetric features, and slope and drainage analysis.

Workshop #19-AM: High Definition, Merged Spatial Datasets  
**Morning Workshop - Instructor: Ben Shinabery**

With technology increasing the speed and volume of data collected, high definition reality capture datasets give the geospatial community complete existing 3D point clouds for greater spatial analysis. The entire spectrum of data collection, from traditional survey points, high altitude aerial LiDAR, Mobile and Terrestrial 3D Laser Scanning, plus Aerial Drone LiDAR and Photogrammetry, is evolving the way we view our world from the comfort of our digital environment.

Through our hands-on demonstration of high definition merged datasets, we will discuss the pros and cons of various methods of various data collection techniques, and the reliability of the post-processed point cloud. We will work through a fully rendered merged dataset collected with three different methods (GPS Survey, 3D Terrestrial Laser, and Aerial Drone Mapping) to analyze the accuracy and precision of each method. Hands-on workflows include:

- Loading and rendering high definition 3D point clouds
- Isolation techniques for analysis
- 3D measurement and surface creation
- 3D merged point cloud export

This High Definition class is for those who want to be on the forefront of geospatial technology and will have opportunity for discussions on integrating new technology into current workflows. Any experience in digital CAD or ARC environment will easily transfer to the hands-on applications for this demonstration.
**Workshop #20-AM: Next Generation LiDAR**
**Morning Workshop - Instructor: Harris Staff**
*(BYOD – Laptop Recommended)*

This workshop will compare data from Geiger Mode Avalanche Photodiode (GmAPD) LiDAR against “traditional” linear mode LiDAR data in the same geographic area, and discuss the potential impact of this technology on the user community. Topics to be covered include:

- Overview of the test data
- Visual comparisons of data in the same geographic area using both “traditional” and GmAPD LiDAR
- Data quality and accuracy test results
- Workflow modifications necessary to adapt to GmAPD technology

**Workshop #21-AM: Community TIGER - Preparing for the 2020 US Census**
**Morning Workshop - Instructor: Anne Jeffers**
*(BYOD – Laptop Recommended)*

Community TIGER is a US Census Bureau example of a collaborative project with Esri for a web (cloud) based data exchange and data management portal. This environment leverages COTS technology, existing systems and proven workflows, and utilizes and builds upon the next generation Esri Community Maps with sights to the 2020 US Census. The benefits of sharing spatial data in Community TIGER include:

- Adding new roads and geocoding new addresses
- Automated/interactive tools for authoritative partners to update TIGER anytime
- Faster feedback from the Census Bureau regarding acceptance of feature updates (in most cases immediate, via software; in more complex cases via review by Census Bureau.)

This hands-on workshop will demonstrate how to improve and share spatial data in Community Tiger, and discuss guidelines for sharing spatial data and data sharing options.
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