

Abstracts for Presentations, GeoCon 2019

Presented by VAMLIS

March 26-27, 2019

Harrisonburg, Virginia

3D GIS in web applications

Andrew Chapman, JMT

3D GIS presents several unique situations when creating web applications; how to build your applications; how to store your data, and how to present your data. Through a demonstration of a JMT project for the Ohio Department of Natural Resources I will demonstrate how we solved these questions using ArcGIS API for JavaScript, Portal, and web hosting in Microsoft Azure.

A Python & WebGIS Subdivision Build-Out Study Approach

Doug Sexton, Warren County, VA

Daily operations in the Planning Department of Warren County, Virginia, commonly include requests for information about the development potential of vacant lots in the county. To fulfill these requests, staff utilize desktop GIS to identify the lot in question, toggle multiple data layers, and utilize measuring tools to make determinations on a lot's build potential. This process can be inconclusive at times, prone to human error, and unavailable as a service outside of regular weekday business hours. A solution is proposed where the public, businesses, planners, and administrative officials have equal access to a web GIS application that distributes pre-processed, python automated data that identifies a vacant lots potential to be developed. A site suitability tool enables a user to visualize developable area within a parcel and determine if construction is possible without infringing upon floodway and zoning setback regulations. Methodologies and workflows for the classification of this analysis are presented. ArcGIS web technology components such as ArcGIS Online, Web AppBuilder, and ArcGIS for Javascript API are explored during the development of an interactive map viewer that dynamically reflects subdivision build out statuses, and displays vacant, developed, and undevelopable lots within each subdivision. Tables containing a subdivision's build out, GIS data, and real estate assessment statistics are embedded at the bottom of the viewer. Multi-parameter querying capabilities facilitate a user's approach to accessing areas of interest under specified conditions. The "Warren County Virginia (WCVA) Build-Out App" provides great value to the County of Warren, and exercises many capabilities of ArcGIS, Python, and WebGIS integration within local government business practices.

Applications of Drone Imagery for Post-Construction Mitigation Site Monitoring

Jeremy Bradley, EEE Consulting, Inc

With the increased use of drone imagery for all things GIS, including more efficient monitoring and 3-D modeling, it is a logical transition to incorporate it into a decadal mitigation monitoring project. This presentation will look at the early stages of the post-construction mitigation project and examine the applications of drone imagery in the initial monitoring phase. Using photogrammetry, a 3-D model will be derived of the site, as well as object extraction to compare the as-built conditions to the plans and to future imagery as the monitoring project moves forward. A discussion of the pros and cons of using drone technology will guide the extent of drone imagery use in future projects. A comparison of photogrammetry results between commercial and open-source software will also be explored.

ArcGIS Enterprise in the Cloud: Hosted and Managed Strategies

Wendy Peloquin, GISinc

Over 10 years ago the term "Cloud Computing" was coined; some say it was Google, others say Amazon. We know, however, that virtual machines were being created decades ago. Either way the term Cloud Computing entered mainstream discussions around sharing resources over a network. It is safe to say today that "Cloud Computing" is here to stay. This presentation will discuss how organizations can utilize the Cloud to deploy ArcGIS Enterprise, as well as covering topics such as security, investment/cost, maintenance, and client examples.

ArcGIS Enterprise Portal: a true DXP

Pravin Mathur, Clark Nexsen

ArcGIS Portal enables enterprises to create, share geographic content as maps and apps within the organizations and outside. A Digital Experience Platform (DXP) is a combination of a traditional Portal, Content Management system, analytics, identity management and customer experience. ArcGIS Portal has all the key tenets of a DXP, from providing a personalized user experience to creating engaging channels of user engagement. This presentation aims to show how ArcGIS Portal truly represents a digital experience platform that allows for a seamless flow of business process for all users.

ArcGIS Open Data and ArcGIS Hub

Robert Rike, Daniel Peters, Matthew Viverito, ESRI

ArcGIS Hub helps communities meet the goals of their initiatives faster and more effectively. Built on the ArcGIS platform, Hub maximizes data sharing, communication, analysis, and collaboration. This session describes how state governments leverage ArcGIS Hub to support a variety of programs, manage projects, measure performance goals, and share results with constituents. During the session, a public engagement tool will be created that supports an adopt-a-highway program. In addition, you will see how agencies can manage construction projects across a state.

ArcGIS Platform Update

Robert Rike, Daniel Peters, ESRI

Update on changes to the ArcGIS Location Platform including new capabilities and future enhancements.

ArcGIS Pro Tasks: Creating and Managing Address Data for Lunenburg Co.

Kinsey Browning, Timmons Group

When editing or creating data, it's paramount to make sure that the data edits are being done in a consistent and efficient workflow. Tasks in ArcGIS Pro are preconfigured steps that can be semi-automated, and help improve the efficiency and minimize errors. They're especially useful for newer GIS users, as was the case in Lunenburg Co.

Best Practices and Governance for ArcGIS Portal/Online

Robert Rike, Matthew Viverito, ESRI

Portal for ArcGIS is a Web GIS platform upon which organizations can create interactive maps and web mapping applications and share them within their agency, among organizations, or to the public. This session will review Best Practices and Governance issues related to implementing Portal for an organization.

Birds Eye View – Evaluating UAS Technology for Conservation in Virginia

Zak Poulton, Chris Bruce, The Nature Conservancy, Virginia

The Nature Conservancy manages over 150,000 acres of preserves and conservation easements in Virginia, over a quarter of which are on the Virginia Eastern Shore. This includes over 40 miles of barrier island coastline managed as part of our Virginia Coast Reserve (VCR) program. In 2018 we proposed several proofs of concept to evaluate the potential for using drone technology to advance and increase the efficiency of conservation programs at VCR and throughout Virginia. We addressed the question of how drone technology can be applied in our work and assessed the opportunities and limitations for three projects: 1) measuring shoreline change after marine restoration efforts, implemented as an adaptation strategy to climate change; 2) landscape-scale monitoring and managing of wildlife populations living and breeding on the Conservancy-protected barrier islands; and 3) increasing the efficiency of monitoring our protected lands (easements and fee lands). We have also begun an exploration of using drone technology to assess forest conditions on conservation forestry easements in Southwest Virginia. Some of this work is being done in partnership with the GeoTEd/UAS program, whereby community college faculty and students learn through real-world projects.

Capturing Infrastructure Assets in the Field: Transitioning from Analog to Digital Data Collection using GIS

Jacqueline Stephan, Newport News GIS

The City of Newport News' Department of Public Works has used a GIS-centric asset management system for 15 years. The Asset Management Division is responsible for maintaining the enterprise infrastructure asset GIS layers integral to this program. Historically, Asset Management Division's GIS staff was made aware of infrastructure assets missing from the GIS via a paper form accompanied by a hand-drawn map. This workflow was cumbersome for both frontline professionals and the GIS staff. By taking advantage of ArcGIS Enterprise, the process was streamlined and quality control was improved; thus instituting paperless workflow.

Challenges in GIS Project Management

Helmut Kraenzle, James Madison University

Project Management in Geographic Information Science (GIS) relies on various skills. A GIS Project Manager is often expected to have a very broad skill set in areas like Geographic Information Systems, Remote Sensing, Global Positioning Systems, Computer Cartography, Computer Science, Statistics, and Geography. It can be challenging to learn all of these skills and stay current with them while technology is changing fast. In addition, these managers need to know how to manage projects. Project management requires skills in leadership, team building, motivation, communication, decision making, conflict management, and coaching. This presentation is targeted to people who wish to learn how to overcome these challenges and learn some basic methods how to manage GIS projects.

Colorizing Historical Panchromatic Aerial Images and Creating 3D Models from Them

Zachary Bortolot, James Madison University

Historical aerial imagery is now available as a layer on many online GIS sites. These images can provide important information to help citizens understand and appreciate local history and to help planners and regulators understand past land uses that can impact current projects and decisions. Unfortunately, most of the historical imagery is panchromatic rather than in color, and it is presented in 2D rather than as a 3D model. This presentation details a new method for using computer processing to colorize historical panchromatic imagery using modern color imagery of the same area, and for creating interactive 3D models based on colorized imagery. The method works by classifying the historical imagery into areas that have stayed the same relative to a modern image and areas that have changed. For the areas that have stayed the same, color information is obtained from the same location in the modern color image. For areas that have changed, the computer obtains the color information from a similar unchanged area. Segment-based filtering is then performed to remove color artifacts, and elevation data obtained photogrammetrically from the historical imagery can be used to create 3D models. An example of a colorized 3D model based on panchromatic imagery collected in 1951 can be found at this address: <https://tinyurl.com/DC-3D-Demo> . To assess the public's perception of the colorized imagery 150 people we randomly surveyed. Large majorities of the respondents thought the colorized images were easier to understand (91%) and could be more quickly interpreted (87%) than the panchromatic originals, and 93% thought the colors were fairly or very accurate. Overall 95% of the respondents would prefer to see the colorized images on an online mapping platform rather than the original panchromatic images.

Creating a Stream Centerline Database with a Combination of LiDAR and Field Surveys at MTC Fort Pickett

Perron Singleton, Stantec

Stantec is using a GIS-based approach to create a stream centerline database for MTC Fort Pickett. Because Fort Pickett is approximately 44,000 acres in size and has ongoing training activities that limit access to some areas, a full delineation of the stream system is not feasible. Stantec is utilizing a combination of high-resolution Lidar topographic data with spot-checked field surveys, performed both before and after the desktop analysis, to create a high accuracy stream centerline dataset that the installation can use for planning future projects and training missions while remaining environmentally compliant.

Data Collection Strategies: Picking the right tool for the job

Kate Chaney, Clark Nexsen

This presentation will reference recent projects for engineering and architecture. When it comes to data collection methods, we are initially asked for fast, cheap, and good data. Often enough, only two of these three requests are achievable at a single time. A breakdown of collection methods will be discussed, as well as, lessons learned from each perspective that range from the geodatabase originator to the end user. So, let's consider the business needs, processes, and outcomes that play in picking the right solution.

Data Inventory of Virginia airborne LiDAR

Haitao Wang & Peter Sforza, The Center for Geospatial Information Technology at Virginia Tech

Virginia Tech Center for Geospatial Information Technology (VT-CGIT) has been working closely with Virginia Geographic Information Network (VGIN) on data inventory for statewide airborne LiDAR dataset. This inventory aims at identification of data coverage gaps from previous data acquisition campaigns from 2010 till now. The process includes to extract data information, compute point cloud coverage and statistics, generate raster products, create visual representations, and so on at both tile and campaign levels. A new and improved web portal is developed to provide public access to the current available Virginia lidar dataset. It features enhanced functionalities such as data tile and metadata query, batch and bulk data download, data overview and visualization, and data attribute statistics.

Data-Driven Decision Making: Lifecycle of a Physical Asset in GIS

Yeoanny A. Venetsanos, Fairfax County Department of Public Works and Environmental Services

How do organizations make informed, confident decisions about what physical assets need to be added, maintained, or replaced? To a large extent, the answers start with a quality, well-maintained GIS asset registry. So what does a quality, well-maintained GIS asset registry look like? This discussion will focus on the lifecycle of a physical asset (e.g., pipe, manhole, valve, etc.) in GIS and how it informs data-driven decision making processes. We will cover when an asset is planned, reviewed, constructed, inspected, as-built surveyed, maintained, repaired, rehabilitated, and finally replaced or abandoned. Topics will include: records management, data governance and data quality, change management, coordinate systems and vertical datums, metadata, as-built surveying, and data submission strategies.

Design and Implementation of a Decision Support System (DSS) to Enable Standardized Environmental Compliance Procedures For Virginia's Nutrient Credit Exchange

Michelle Fults, Virginia Department of Transportation; Linnea Saby, University of Virginia

The Virginia Nutrient Credit Exchange (The Exchange) is a policy initiative designed to help achieve the water quality standards outlined in the Clean Water Act by establishing a market for nutrient offset credits. The Exchange includes provisions that permit nutrient offset trading between agricultural entities and organizations responsible for construction projects. Resulting credits may only be sold to construction projects located within scientifically-guided spatial restrictions, so achieving compliance for transactions requires spatial analysis to identify the restrictions for a given project site. We will present a DSS that has been developed to enable standardized and programmatic transaction compliance for The Exchange. The DSS comprises a web form linked to feature services that provide spatial information about a construction project based on the coordinates and a web application that facilitates the identification of banks within spatial restrictions. The DSS is developed using ESRI's ArcGIS Online, WebApp Builder, and Survey 123 (a data collection and analysis software toolbox). Our proposed system will simplify implementation of The Exchange, enable improved compliance verification, and optimize use of regulatory resources.

Drone Revolution

Alexander Davis, Ubibird Inc

Revolutionary technology occurs only a few times in our lives. Let's look at the 80s, with the home computer, then the Internet in the 90s, and cell phones in the 00s. While there have been many advances in medicine and science, we're upon the next big technology to impact society as a whole: drones.

Enhancing GIS with Cloud Technology and Serverless Computing

Yogesh Dhanapal & Chaz Mateer, Timmons Group

Cloud and serverless technologies have been growing rapidly in the computing and GIS space over the past several years. These advancements are allowing individuals and organizations to quickly and cost effectively spin up and down computing resources on an as needed, scalable basis. Gone are the days of needing to obtain, provision, and maintain physical server resources for every IT need. Cloud computing resources can instead be created or decommissioned in a matter of minutes and GIS SaaS providers such as ArcGIS Online (AGOL) allow for rapid deployment of GIS solutions with or without the need for enterprise GIS server technology. A hybrid GIS solution can be achieved whereby AGOL web maps and hosted layers allow for a rapid solution to business problems while AWS cloud resources can be leveraged to fill the missing pieces of web hosting and on demand compute power. This talk will cover use cases, and their associated cost effectiveness, for leveraging Amazon Web Service (AWS) cloud technologies to enhance the capabilities of the Esri GIS stack at three distinct levels of integration: 1) Using AWS Lambda functions as a computation engine for data ETL in AGOL hosted feature layers, 2) Amazon S3 buckets and CloudFront for hosting web applications customized using the Esri Web App Builder SDK, and 3) Full custom GIS application development using AWS EC2, API Gateway, and Relational Database Service. By combining the powerful spatial capabilities of ArcGIS Online with the ease, availability, and scalability of cloud-based hosting solutions you can build powerful and compelling spatial applications that are affordable and easily maintainable.

Enhancing Utility Editing Workflows with ESRI Tools

Ally Reynolds, Timmons Group & Erik Ray, Spotsylvania County

Timmons Group and the County of Spotsylvania are collaborating on modifying, streamlining, and documenting utility editing workflows. Timmons Group is configuring Task Assistant Manager, Attribute Assistant add-in, Water Geometric Network Editing and Analysis add-in, and Data Reviewer to enhance the editing process. By the project's end, Spotsylvania GIS editors will be empowered and confident in the new editing functionality and have many resources to reference for best practice editing.

Fairfax County's Training Program: Ideas for a Growing GIS Skills in a Large Organization

Matthew Miller, Fairfax County

Fairfax County is a large county with over 5000 employees. Having a wide-variety of business areas with staff of varying roles and backgrounds can make spreading GIS technology and capabilities a challenge. This presentation will provide an overview of the training and skill-building opportunities that have been established, including: 16 different regularly offered instructor-led classes, seminars, an extensive customized technical support document library, videos, 1-on-1 training, custom training for work groups, and third-party resources. Attendees will learn the benefits of investing resources to expand GIS use through an organization, as well the many challenges and lessons learned over the years.

Fairfax LIDAR Implementation, 3D, Image Services & Analysis

Gregory Bacon & Brendan Ford, Fairfax County GIS

The presentation will cover Fairfax County's use of LIDAR, 3D data, and image services. The presentation will cover the use of Raster analysis tools, sources of LIDAR data available for anyone, Raster function, and the suite of publicly available applications that present this type of data. We will also show how the use of LIDAR data is used to uncover historical features such as Civil War forts, railroad tracks from the 1860's, and other features. The presentation will also discuss the georeferencing of historical maps and overlaying them with current raster data to help bring history to life.

Field Data Mobility Workshop

Matthew Viverito, Kerri Rasmussen, ESRI

Extending GIS into the field is one of the fastest growing uses of GIS, driven largely by the advancements and availability of smartphones and tablet devices. Esri's focus on developing new solutions to help streamline field data collection and field workforce activities is evidenced by the growing number of ready-to-use applications. The development approach focuses on creating configurable tools that can be extended as needed to meet your field workflow needs. By employing this approach, organizations are able to rapidly deploy solutions at low cost and realize a return on investment quickly. Please join us as we provide an overview and demonstration of these mobile offerings: Collector for ArcGIS, Survey 123 for ArcGIS, Navigator for ArcGIS, Workforce for ArcGIS and Operations Dashboard.

From Big Data Analytics to Cost Estimation – A Modern Day Enterprise GIS Utility Program

Wendy Peloquin, GISinc

Opelika Utilities is using the ArcGIS platform to identify dead meters and aging infrastructure with Insights, as well as perform quick construction cost estimates for their grant-funded capital improvement projects. Opelika is using Esri's Insights to identify assets for their CIP program and Cost Map to validate construction cost estimates pre and post construction, perform "what-if" scenarios, and forecast future year's CIPs leveraging RSMMeans data's 3-year forecasted construction cost information.

GIS across the Curriculum: Pedagogical Applications in an Undergraduate Liberal Arts Institution

Katherine O'Neill, Andreea Mihalache-O'Keef, Roanoke College

This presentation introduces several pedagogical applications of GIS, across multiple disciplines (e.g., Environmental Studies, Political Science), course types, and course levels, all implemented at Roanoke College, a small Liberal Arts institution with a student body of 2000. Our discussion unpacks both pedagogical issues and practical aspects of teaching with GIS at the undergraduate level, in a Liberal Arts setting. From the pedagogical perspective, the advances in computer technology that led to the rise of virtual mapping, transforming researchers and students from map consumers to content and knowledge producers, present multiple opportunities across disciplines. The ability to decide "what, how, when, and where" (Sinton and Lund, 2007) information is displayed fosters skills in spatial reasoning and visualization, recognized by Gardner (1991) as one of the eight forms of multiple intelligence alongside linguistic and logical-mathematical reasoning. Furthermore, understanding place can also help with building cross-cultural understanding, a goal at the heart of many of our classes and the global general education requirement at Roanoke College (Sinton and Lund, 2007). Adding to the potential value for students is the widespread use of GIS in many professions, economic sectors, and public policy (e.g., Tao, 2013). The range of projects and uses of GIS in the classroom and in independent projects, together with the discussion of practical issues encountered and solutions developed by the faculty teaching these classes at Roanoke College, begins to make up for the fact that the resource needs of integrating GIS in undergraduate curricula remain largely unexplored (exception is Manson et al., 2014), as does the role and value of GIS in Liberal Arts education.

GIS for NG9-1-1

Judy Doldorf, Fairfax County GIS; Helen Walla, Prince William County; Shannon Ennis, Fauquier County

GIS data is at the core of Next Generation 9-1-1 (NG9-1-1). Legacy 9-1-1 systems rely on tabular service provider datasets to route emergency calls to the proper Public Safety Answering Point (PSAP). The development and maintenance of accurate GIS data is critical to ensure that geospatial call routing produces the desired results. Fairfax County in coordination with neighboring jurisdictions in the National Capital Region (NCR) embarked on the task of validating, synchronizing, and developing additional datasets that are required to support NG9-1-1 services. This presentation will discuss those processes in addition to the lessons learned throughout the task.

How Local Governments Can Work Smarter

Wendy Peloquin, GISinc

As local governments charge into the future, they must find better ways to maximize their budgets while simultaneously increasing the health of their infrastructure. The most efficient way for organizations to accomplish this is by using real-time data. With GeoloT, ArcGIS, and Cityworks, better decisions come into the organizations at the onset. GISinc's Work Smarter solution empowers Cityworks with more timely, accurate information to improve outcomes

How Much Water? Modeling Runoff Curve Numbers by Watershed

Melissa Sanderson, Stantec

Urban development often comes with increased runoff and the need to manage stormwater to minimize impacts to the environment. We ask the question, "how much water?" in our approach to stream restoration design, LID/BMP sizing, and the design of better stormwater management infrastructure. This presentation focuses on one step of watershed evaluation: Curve Number estimation. The task utilized GIS Model Builder to create a custom tool that determines curve numbers based on NRCS methodology, which was driven by the need to improve efficiency and minimize subjectivity of curve number estimation harnessing newly developed land cover datasets.

How to Get the Most out of a VAMLIS Conference

Deborah Huber, Clark Nexsen

Attending conferences is one major component of building your career, but are you doing it effectively? In this presentation, I aim to tame the Information overload, networking fatigue, and resource collection into an easily consumable package. Step 1.) Attend the VAMLIS Conference. Step 2.) Follow these handy tips. Step 3.) Bring home the highlights of the conference to share what you gained by attending. There is a boat-load of helpful and interesting content delivered at a VAMLIS conference. It can be akin to drinking from a fire hose. I will show you suggestions on how to retain the most from a presentation, creative ways to share your colleague's presentation content, and how to get the most out of those contacts you've made.

HRGEO: Regional GIS in Hampton Roads

Sara Kidd, Jules Robichoud, Hampton Roads Planning District Commission & Sanitation District

The Hampton Roads Planning District Commission (HRPDC), in partnership with the Hampton Roads Sanitation District (HRSD), and the Hampton Roads Transportation Planning Organization (HRTPO), has recently launched an open GIS data site called HRGEO (Hampton Roads Geospatial Exchange Online). HRGEO currently houses dozens of regional GIS layers covering the 17 jurisdictions of southeastern Virginia regarding planning, environmental, recreation, transportation, water resources, and coastal resiliency topics. Additionally, we worked with local jurisdictions to develop a process for building regional collaborative layers. Collaborative layers are generated by standardizing and combining select locality datasets (such as parcels) using existing published map services.

Innovative ADA Data Collection Techniques

Dylan Sheets & Brian Kingery, Timmons Group

Accessibility studies of all scales are becoming more and more necessary to gain an understanding of where our public places need to be improved. Timmons Group is supporting these studies through the collection of ADA-Centric GIS data. This presentation will focus on two separate ADA data collection processes. The first is a large scale sidewalk and curb ramp collection effort across the Commonwealth of Virginia which was performed remotely using existing roadway video footage and a custom ArcGIS Online-based collection widget. The second is an ongoing effort to digitize an existing ADA inspection checklist using Survey 123 for ArcGIS with robust data modelling solutions and complex survey logic. We will also discuss digital reporting methods for the captured data and how these collections could be expanded.

Introduction to ArcGIS Pro/ Image Analyst and Migration from ArcMAP

Matthew Viverito, Kerri Rasmussen, ESRI

Making the switch from ArcGIS Desktop to ArcGIS Pro can feel like a daunting task. In this presentation, the Esri team will be giving a high-level overview of transitioning to ArcGIS Pro, presenting some of the 1:1 features and terminology, highlights of the key functionality, including functionality native to ArcGIS Pro, as well as a brief demo showcasing the software.

Mapping Police Vehicle Traffic Patterns for Data-Driven Decision Making in Chesterfield County

Elliott Kurtz, Chesterfield County

Chesterfield County police vehicles are equipped with laptops and GPS units for high spatiotemporal resolution tracking of vehicle location and activity. The County's GIS and Data groups are helping the Police Department leverage this large dataset by processing raw location data into actionable heatmaps, choropleth maps, and other data visualizations. The project will empower data-driven decision making among police command to improve resource allocation, beat structure, and daily patrol procedures. This presentation reviews challenges, solutions, and lessons learned designing and implementing a cloud-based GIS solution.

Next Generation 9-1-1: Geospatial Call Routing and PSAP Boundary Development

Joe Sewash, VITA

Public Safety Answering Points (PSAPs) across the Commonwealth process almost 4 million calls annually. Next Generation 9-1-1 is a deployment that will transition the underlying telecommunication infrastructure and will rely on GIS datasets to determine which PSAP the 911 caller needs to be connected for service. This session will review the mandatory GIS datasets, and the process for developing PSAP boundary segments between neighboring PSAPs to build the statewide PSAP boundary map.

Open Source GIS Education at the University of Virginia

Erich Purpur, University of Virginia

This presentation has two major points. One, using open source GIS software (QGIS) in GIS education at the University of Virginia. Two, using a class from UVA's Frank Batten School of Leadership & Public Policy and how students applied their newly learned GIS skills to support an argument surrounding a public policy decision. Though UVA offers robust ESRI/ArcGIS support, we chose instead to use QGIS as our software of choice in this class and will talk about why we made this choice, hang-ups/issues with the software, and lessons learned. The point of this course was not to make the students GIS experts, but to build technical skills and let them imagine how to leverage GIS going forward while making future public policy decisions.

Roanoke Valley Regional Next Gen 911 PSAP Project

David Wray, Roanoke County GIS

Geographic Information Systems (GIS) is vital to the success of NG 9-1-1. A dynamic and spatially correct homogeneous NG 9-1-1 dataset is necessary for the entire Roanoke Valley area. During the initial phase of the effort, we developed the technical, logistical, procedural, and initial data framework for the NG 9-1-1 regional dataset. The framework established a foundational operability, but budget constraints limited the depths to which the resulting dataset was homogeneous. The second phase leveraged the structures implemented during phase I to expand both capability and quality. Central to Phase II was the injection of business logic that added intelligence to the consolidation and publication routines. The business logic focused on detecting and mitigating deviations between the source data from each locality, with an emphasis on boundary areas that require data stitching. With more seamless integration, the data was more operational and capable of supporting increased functionality such as the concept of cross jurisdictional routing. Additionally, as the Roanoke Valley NG 9-1-1 PSAP project advanced, additional logging, analytics, reporting and monitoring was established.

Save Time, Effort, and Money with Mobile Imagery & LiDAR

Jason Sealy, CycloMedia

CycloMedia imagery and software is comprised of authoritative, high-resolution images embedded with geometrically true coordinate, date and time stamps. When coupled with our terrestrial LiDAR, the resulting solution provides a seamless, 360-degree street level view that allows users to remotely assess sites, assets, features, and conditions. This informational session will highlight several ways our valued customers are leveraging this technology to solve real business challenges.

Show Me the Lines!: How VDOT Modernized their Adopt a Highway Program

Robert Minford, Michelle Fults, Virginia Department of Transportation

New federal regulations pertaining to the Municipal Separate Storm Sewer System (MS4) Individual permit required The Virginia Department of Transportation (VDOT) to convert a non-geospatially compliant system to a geospatially compliant system for the Commonwealth's Adopt-a-Highway (AAH) program. This effort has demonstrated several difficulties associated with implementing significant enterprise-wide changes to an antiquated process that was heavily reliant upon pen and paper forms and business practices that varied slightly in each locality. The purpose of this talk is to show Phase I of this process of moving from pen and paper to a web map application utilizing emerging technologies as well as discussing the lessons learned to this point. This application will allow both internal AAH users access to the data as well as the public who can request the road adoption and report the road cleanup.

Stafford County VA Enterprise Applications for Public Engagement

Dave Capaz, Stafford County & Dave Gilbert, GeoDecisions

Stafford County is growing at a rapid pace. To better serve the vastly increasing demands of its citizens, the GIS department has begun engaging its citizens with Enterprise portal applications aimed at improving quality of life. This presentation will highlight several applications including but not limited to a Broadband Survey GeoForm, a Collector for ArcGIS application for Fire Alarm surveying and an Incident Reporting application deployed with App Studio. The presentation will feature the technical approach used in each to achieve the specific requirements and needs of the respective intended audiences.

Systems Integration at PWCSA

Irma Houck, Ani Guha, Prince William County Service Authority (PWCSA)

High quality data management, integrations, and analytics are essential to the Service Authority (SA). To implement and sustain best in-class enterprise-wide information management and analytics, the SA is changing its data structure from a siloed approach to one in which data is stored in a centralized location by utilizing Dell Boomi integration platform and Master Data Management (MDM). This will allow the SA to combine and manage data from multiple sources in alignment with MDM database architecture specifications and the SA Data Governance policies. Systems integration will be established by leveraging iPaaS cloud-based platform with a publisher – subscriber architecture.

Timber!! Using GIS to help make land use decisions

Walter E. Cole, Clark Nexsen

This presentation will highlight the use of GIS applications in assessing the development potential of a 7,000 acre tract of land on Tennessee's Cumberland Plateau. Land planners used a weighted matrix system in conjunction with GIS data to determine the "developability" of the tract, determine where site development was most feasible, and to generate outcomes based on a prioritization of conservation versus development.

Tracking Facility Maintenance – There's an App for That

Caleb Hurst, Clark Nexsen

This presentation will review a recent project with the Virginia Port Authority (VPA) that used a GIS application to map deficiencies in the infrastructure at Norfolk International Terminals (NIT). The app is more interactive and user-friendly than previous methods of reporting and addressing condition assessments. The presentation will discuss the benefits of this method, cost impact, and how to incorporate using an app with a facilities or public works department.

Transforming Image Data to Geospatial Information

Sean Chard, Trimble

Trimble Inho and Trimble eCognition software solutions utilize aerial imagery to enhance workflows and overall project productivity. These intuitive software solutions allow users at any skill level to quickly produce high-quality, GIS-ready deliverables from imagery. Photogrammetry grade processing for Unmanned Aircraft Systems (UAS) is bridging the gap between simple near-black-box workflows for non-photogrammetrists and photogrammetry expert workflows. This session will provide a general overview as well as a live software demonstration on the benefits of using imagery to produce GIS deliverables.

USNG and ELM: A country-wide grid for local response

Chip Brown, City of Harrisonburg

For over 10 years, the United States National Grid (USNG) has been a federal standard for georeferencing locations on large scale maps used for emergency and disaster response. In addition to acceptance at the federal level, a number of states, counties, and municipalities have adopted the USNG as the common coordinate system for emergencies and search and rescue operations. We'll review the basics of using the USNG and improve your skills and knowledge of this grid system. Also, learn about Emergency Location Markers (ELM), a system of using the USNG to identify the location of hard-to-address locations and locations without addresses such as hiking, biking and walking trails, by exploring the potential for using this system within the City of Harrisonburg.

VEDP Sites & Buildings - Development Considerations

Beth Manghi, Virginia Economic Development Partnership

GIS has long been a good fit for economic development and provides the perfect platform for creating a robust, dynamic system behind the scenes while presenting vital data through engaging visual displays. Today, the Virginia Economic Development Partnership's (VEDP) statewide commercial property database is over 20 years old, and as GIS technology has advanced, so have we. Using a combination of Esri and Microsoft SQL Server resources, paired with user interfaces built with Leaflet and ArcGIS API for JavaScript, VEDP launched a new Sites & Buildings Search as the public face of our system in the summer of 2018. We will discuss the considerations taken in the development of the Sites & Building Search, technical successes and pitfalls, as well as covering upgrades to our internal database and tools offered to our external partners.

Vehicle Crash Data in Virginia

Joseph Newman, The Center for Geospatial Information Technology at Virginia Tech

The Center for Geospatial Information Technology (CGIT) at Virginia Tech has been working with the Department of Motor Vehicles Highway Safety Office to standardize the spatial attributes of all police reported crash records in the Commonwealth of Virginia. Over the past seven years, CGIT has developed tools and methods for efficient crash data processing, visualization, and descriptive analytics for the highway safety community.

Virginia Base Mapping Program - Updates & Successes

Mike Wernau, Fugro & Wendy Stout, VITA

The Virginia Information Technologies Agency (VITA) selected Fugro to provide mapping services for the 2017-2020 Virginia Base Mapping Program. The program, which provides regular orthoimage updates, was established to promote effective and economically efficient development and sharing of spatial resources across the Commonwealth. Come join us to learn about the successes and achievements of the current program as well as the benefits and services available, including higher resolution orthoimagery upgrades, contours, planimetrics, true orthoimagery, lidar, impervious surface calculation, and oblique imagery.

Virginia Lidar Forum: The Complete Map (A Panel Discussion)

Hosted by Wendy Stout, VITA; Panelists: Greg Bacon, Fairfax County; Andrew Peters, Dewberry; Lorrie Coiner, DMME

When 3DEP began in 2014, Statewide Virginia lidar coverage seemed an impossible dream due to the high cost. However, rapidly growing data demand, cost improvements, and documented program benefits, convinced the USGS to undertake the audacious goal of nationwide data coverage in 8 years. Today, Virginia has 100% coverage of elevation data that meets 3DEP specifications for high accuracy and resolution (data available or in progress). This milestone is truly a great achievement. As we celebrate this success, we must also continue to look forward to the challenges of education, data management, and meeting growing needs for higher quality data, and new products and services. Join Lidar users from around the Commonwealth for a guided discussion of Lidar data use cases and best practices.

Why NG9-1-1 Requires Addressing Data Accuracy Beyond 98 Percent

Drew Fioranelli & Ashley Buzzeo, Michael Baker DATAMARK

In a fully operational Next Generation 9-1-1 system, GIS is the core component in determining how a 9-1-1 call is routed to the correct public safety answering point (PSAP). In order to route calls correctly, NG9-1-1 includes multiple standards around minimum data quality requirements for GIS data being provisioned into the Emergency Services IP Network (ESInet). For the purposes of current generations of 9-1-1 systems a 98 percent accuracy rate is far better than good, but for the NG911, 98 percent isn't quite good enough. Public safety systems that do not synchronize their data beyond 98 percent accuracy will face boundary gaps and other issues that have potential to negatively affect call routing — perhaps even misdirecting a call. Additionally, the 98 percent figure does not address requirements for the other PSAP systems used. Therefore, exceeding the 98 percent accuracy levels that are adequate today will allow public safety organizations to support all PSAP systems moving forward. But, how do you determine if your GIS address data – centerlines and address points – is ready to support the critical path of emergency response?

Your GIS Technician is Not Just a Map Maker: Making Next-Generation 9-1-1 Happen

Molly Conaboy, Rapid Deploy

To make Next-Generation 9-1-1 a reality, GIS staff will do more than make maps. They will be responsible for creating and maintaining data to support emergency call routing. While those efforts are paramount, it's a common misconception that call routing is the only thing powered by GIS in Next-Generation 9-1-1 and the next evolution of emergency response systems. This presentation will focus on GIS staff's key role in supporting supplemental location, additional data, real-time situational awareness, collaborative response, and more.