

2018 Virginia GeoCon Presentations

Thursday, April 5, 2018

Note to all presenters: You must register for the conference

Title: 5 Things to know before starting a GeoloT Program

Presenter: Danielle Brooks

Abstract: The Internet of Things (IoT) is the network of physical objects embedded with electronics, software, sensors and network connectivity that enables these objects to collect and exchange data. Geospatial IoT (GeoloT™) is the result of pairing the ArcGIS platform is coupled with infinite IoT capabilities. Join us to identify the key questions you should ask yourself before beginning a GeoloT™ program including “What am I trying to monitor” and “what level of positional accuracy do I need?”. Also, learn more about what other organizations are doing for their smart city initiatives.

Title: Aerial Topo-bathymetric LiDAR or TopoBathy

Presenter: Drew Meren

Abstract: Airborne Topo-bathy LiDAR has become more widely used in recent years to assist in the management of water (coastal and river) projects either for maintenance, like floodplain mapping, or incident response, like in the wake of Hurricane Sandy. We will discuss what Topo-Bathy is, how it is acquired, and what datasets can be generated to assist your municipality.

Title: ArcGIS Online: Creating an Open Data Page

Presenter: Matt Viverito

Abstract: ArcGIS Open Data provides you with the ability to share your live authoritative open data to your constituents. ArcGIS Open Data features public-facing websites where the public can search and download the data they need in a variety of open formats. ArcGIS Open Data is Esri-hosted and included with ArcGIS Online. Come see innovative Open Data sites that government agencies have already deployed and learn best practices for managing, configuring, and designing an Open Data site.

Title: Best Practices for Integrating sUAS data into an Organization’s Imagery Strategy

Presenter: Tim Hutzley

Abstract: High quality ortho-photos are excellent tools for the geospatial staff in an organization to provide data, products, and service that are timely and accurate. For organization decision makers, up-to- date, authoritative geospatial data is a must-have commodity. Unfortunately, currently accepted practices, manned flight operations, for ortho-photo development are expensive and consequently only performed every 3 to 5 or even 7 years apart. Conversely, satellite imagery can be cheaper and easier to acquire, however the resolution rarely meets the requirements of most organizations. sUAS flights for ortho-photo development are cheap and highly accurate. Operations are flexible and can be setup and flown in hours. sUAS provide the perfect complement for an organization’s imagery strategy by capturing change anywhere at a moment’s notice. Furthermore, with an informed collection strategy and tools to target high-resolution acquisition, organizations can integrate new products with their existing imagery catalog for a comprehensive “best available” product.

Title: Boundary Creation for NG9-1-1 – A Case Study

Presenter: Jonathan Soulen

Abstract: With the transition to NG9-1-1, localities will need to create PSAP boundaries that define the extent of their emergency request responsibility. In addition, it is highly recommended that localities create Address Authority boundaries that define the extent of their GIS data editing responsibility. There’s a catch: you can’t do this alone - you must talk with your neighbors. This Case Study details how this is being performed for a multi-county region – and all the “lessons learned” to date in the project.

Title: Building Community Resiliency to Flooding and Sea Level Rise Using Crowdsourced Data Collected through a Web Mapping Application

Presenter: Nicole Knudson

Abstract: The Action-oriented Stakeholder Engagement for a Resilient Tomorrow (ASERT) framework, developed by researchers at Old Dominion University and designed to facilitate community resilience building to flooding and sea level rise, is a participatory approach that helps policymakers, planners, community leaders, and others ensure broad stakeholder engagement. One tool to accomplish the framework's objectives is an Esri-based web mapping application developed through ODU which includes federal flood and sea level rise data layers along with locally crowdsourced data points. The ASERT project and web mapping application were components of a recent City of Virginia Beach public workshop series on flooding and sea level rise. Data points entered by workshop participants represent either tangible or intangible features perceived by Hampton Roads citizens as assets or challenges in the context of resiliency and adaptation strategies. This presentation will provide an overview of the web mapping app's objective, building a user-friendly multi-tabbed web mapping application, using geofoms to collect crowdsourced data, adding interactive flood and sea level rise layers to the web map, editing points in the feature layers, performing analyses of the data points in relation to flooding and sea level rise, and the limitations and challenges of collecting and using crowdsourced data.

Title: Chesterfield County, VA Crime Application – Chesterfield Calls for Service and Offenses

Presenter: Megan Molique

Abstract: The Chesterfield County, Virginia Crime Application provides public access to Police Incidents Calls for Service and Offenses over the last two years, and new incidents are updated daily. The application was created as part of a collaborative effort between the Chesterfield Police Department and IST, and utilizes data from the county's data warehouse.

The Crime Application can be used for:

1. Displaying and searching Calls for Service – a layer symbolized as triangles which represents when police were requested to respond to a scene, not necessarily that a crime has occurred.
2. Displaying and searching Offenses – a layer symbolized as circles which represents that an actual criminal event has taken place.
3. Filtering to search for incidents by Date, Incident Type, Community (Subdivision), and School District.
4. Viewing Informative popups on incidents.
5. Selecting a location on the map or enter an address and see incidents within, 1 mile thru 10 miles radius.

Title: Crunch Time: GIS; Usage of GIS for asset management before, during, and after emergencies

Presenters: Kyle Coolbaugh & Cynthia Cebrian

Abstract: Virginia Beach Public Works Operations is tasked with managing city assets in the right-of-way, including: storm drains, ditches, roadways, bridges, signs, traffic signals, streetlights, and others. All of these can be adversely affected by natural events both large and small. GIS is used in various ways to plan for, endure, and respond to these natural events. We will examine some of these concepts, including: hurricanes / tropical storms, snow events, tornados / severe thunderstorms, and wind driven tides / climate change; as well as specific events: Tropical Storm Julia / Hurricane Matthew, January 2017 Snow Storm, 2014 Oceanfront Tornado, 2017 Stumpy Lake/Landstown Tornado, and the May 2017 Southern Wind Event.

Title: Custom Applications on the Stafford County Open Data Portal

Presenter: David Gilbert & Dave Capaz

Abstract: Stafford County GIS is providing a number of publicly accessible custom web map applications for various departments including but not limited to Assessment, Planning and Economic Development. GeoDecisions has provided professional services including custom application development and maintenance of the applications for more than 15 years. The co-presenters will feature two applications that were built using JavaScript API; the parcel mapping application and the Landuse Economic Development application. Key features of the applications will be discussed that were considered for performance, maintenance and usability of the sites. Take-aways from the presentation should assist other local governments with similar needs. All applications are accessible to the public on the Stafford County Open Data Site Portal.

Title: Dasymetric Mapping in Pennsylvania's Tri-County region

Presenter: Joel Rogers

Abstract: One of the keys to proper planning is knowing where the population resides in a region and where they will be distributed in the future. This is the question that this study attempts to answer for one specific region in central Pennsylvania. The "Tri-County" region, which is comprised of Cumberland, Dauphin, and Perry counties, is the focal point for population centers in central Pennsylvania and the seat of the State's government. This study maps past and future population distributions with a method known as Dasymetric Mapping. This uses land cover rasters to conduct areal interpolation of population data that is aggregated in census polygons. Past population figures from the Census Bureau are used to interpolate past distributions. Population growth estimates for each municipality are used to interpolate future population distributions for each future decade up to 2040. These patterns are then compared and contrasted to analyze trends in population distribution.

Title: Data-driven decisions: how reliable is your GIS data?

Presenter: Irma Houck

Abstract: GIS data, acting as an asset register for the Service Authority (SA), is critical to the data-driven operation and planning of utility services. The effectiveness of GIS to support that data-driven decision making depends on the quality of the GIS data. The SA works to continuously improve the quality and accuracy of its organizational GIS data through development and compliance with data quality standards and processes including As-Built standards for land surveying consultants and customized tools to incorporate the survey-grade data into production GIS. The standards clearly define As-Built survey requirements related to spatial reference systems, survey accuracies, field procedures, and digital data submission details. The tools check the As-Built survey data quality and incorporate the data into the production database.

Title: Desktop Predictive Modeling for the Probability of Locating Archaeological Resources

Presenter: Perron Singleton

Abstract: Stantec uses a GIS-modeling approach to screen for the need to perform shovel tests across various sites to search for underground Archaeological Resources. Utilizing freely available data including soil surveys, DEMs, current and historic aerials, and wetlands and waters data, a methodology was developed to determine areas of a site where shovel testing should be performed and to determine the varied densities of those tests. The model incorporates a custom Python script to prepare the base data as well as several geoprocessing tasks and the incorporation of observations from preliminary field visits. This methodology reduces time spent in the field and aims to increase the accuracy of cultural surveys by concentrating field work in areas with a higher likelihood of containing artifacts.

Title: Engaging your GIS Community

Presenter: Kendell Ryan

Abstract: Over the last two years, the Henrico County GIS Office has put significant effort into increasing our visibility in the County. This meant stepping away from some of the traditional tasks and focusing on some initiatives that fall more in a marketing realm. This presentation will discuss things we have implemented in order to engage our existing and potential GIS users as well as upper management. Some of the projects include creating a quarterly GIS newsletter, hosting a GIS day event, creating a Sharepoint site and hosting brown bag seminars.

Title: Enhancing a BIM-based Enterprise GIS for Facilities Management at Old Dominion University

Presenter: Maruf Sakib

Abstract: In modern GIS for facilities management, there is an increasing trend towards utilizing Building Information Modeling (BIM). As GIS industry increasingly pushes towards 3D, most stable workflows still leverage 2D data. BIM data often needs to go through a set of complicated conversion procedures to be usable in a GIS. Enhancing already complex sets, designing data conversion workflows, and developing enterprise GIS for facilities management can be a complicated endeavor. Business goals often demand increased functionality, yet call for reductions in system complexity and deployment time. This discussion will include, (i) functionalities built on an existing enterprise facilities

GIS, (ii) use of tools and techniques to reduce the procedural complexity, and (iii) steps needed to convert and include BIM data in an enterprise facilities GIS.

Title: Enterprise Solutions for Enterprise Data

Presenter: Shaun Conway and Erin Jones

Abstract: Enterprise data often require enterprise solutions which was exactly the case with road closures and projects in the City of Lynchburg. With no single department having all the information, but with every department having a need for the data, it was clear that something had to be done. During this presentation we will explore two enterprise solutions: a road closure solution that is GIS centric and a city-wide project solution where the power of GIS plays a powerful, yet subtle role behind the scenes. Join us while we discuss these unique solutions that leverage WebApp Builder, ArcGIS Online, ArcGIS Server, and geoprocessing services.

Title: Esri Opioid Epidemic Solutions

Presenter: Matt Viverito

Abstract: Across the nation, communities are facing a crisis of opioid addiction, and municipalities are struggling to adopt effective strategies to fight back. This presentation illustrates how Esri's Opioid Epidemic Solution helps your community fight back by applying the "Science of Where" to all four pillars of an opioid reduction strategy.

Title: Estimating Total Rainfall from Hurricane Harvey

Presenter: Jon Wergin

Abstract: From August 25-31, 2017, Hurricane Harvey flooded the Houston area with a record amount of rain. FEMA tasked Michael Baker with calculating total rainfall during the event, presenting it through maps and infographics, and comparing the figures to other storms that have hit the area. The GIS process involved obtaining data from radar and rain gauges, filtering outliers (perhaps gauges that broke during the storm), and kriging. The same process was used to examine Tropical Storm Allison, a similar storm from 2001, and the two were compared. The resulting data helped FEMA administer aid to victims and will help communities vulnerable to flood better prepare for future events.

Title: Fieldwork Efficiency - Workforce for ArcGIS

Presenters: Kinsey Browning and Dylan Sheets

Abstract: Workforce for ArcGIS is a relatively new mobile and web application aimed at better organizing, managing, and tracking field work. The Workforce application integrates with existing field work applications, such as Collector for ArcGIS, Survey123 for ArcGIS, Operations Dashboard for ArcGIS, and Navigator for ArcGIS; to help both dispatchers in the office and technicians in the field communicate and collect data more efficiently. In addition to increased efficiency, workforce for ArcGIS can also assist in editor tracking as well as productivity metrics. In this presentation we will demonstrate how we use Workforce for ArcGIS in one of our data collection workflows.

Title: Fire Districts Response Area

Presenter: Maha Thulasi

Abstract: This study evaluates fire departments and fire incidents datasets to explore the fire districts' response area based on a minimum bounding geometry calculated around fire departments and fire incidents' location. The bounding geometry encloses each fire incident that a fire department responded-to within 2015. Additionally, 'Burn Probability' (BP) data, generated for the conterminous US at a 270-meter grid spatial resolution using a geospatial Fire Simulation (FSim) system, developed by the US Forest Service Missoula Fire Sciences Laboratory to estimate probabilistic components of wildfire risk (Finney et al. [2011]), was used in conjunction with the fire districts response area geometry. BP data layer indicates conditional probabilities i.e. representing the likelihood of burning at a certain intensity level, given that a fire occurs. For each fire districts' response area geometry, its corresponding mean conditional burn probability was calculated. These mean values were then sorted in an ascending order for each state (Virginia, in this case) and were categorized into "High", "Medium", and "Low" risk levels. This state-level categorization was used to visualize response area geometry data layer. This implies each state would potentially have its own risk level scale values depending on the state-specific conditional burn probability values. This process (of categorizing each state based on state-level risk scale values instead of using a common nation-wide scale value) ensures that the end results or end-users are not biased by nation-wide data skewness or outliers. This helps visualize the highs and lows within each state

and helps federal user understand / prioritize states (or counties within states) that need immediate attention efficiently.

Title: Geospatial Risk Assessment and Uncertainty for Storm Surges and Sea Level Rise for a Port Terminal, Norfolk, VA

Presenter: George McLeod

Abstract: Planning for the resiliency and sustainability of ports requires risk assessment of storm surges and potential sea level rise. A screening-level assessment approach is developed to estimate the current and future exposure of port facilities to severe storm surges in Norfolk, Virginia. We model vertical elevation of local mean sea level fifty years into the future and estimate increases in potential storm surge heights. Tidal flooding also poses an emerging threat since sea level rise will also force tides to higher elevations. Potential tidal flooding levels are modeled for each sea level scenario. This approach allows the port planners and engineers to assess relative risk tolerance across the range from lesser to more severe flooding events. Maps and tabular information in scenarios summarize the extent, pattern, and depth of potential flooding. The methodology in this study may inform the timing and placement of assets and can be leveraged for long-term master planning at marine terminals. Implications are also drawn for fine resolution LiDAR and hydro-correction, street-level inundation modeling, and future subsidence mapping.

Title: GIS and the Sharing Economy

Presenter: Jamie Christensen

Abstract: Outdoor Access is a platform, much like Airbnb, that connects landowners with outdoor enthusiasts for short term rental of land for outdoor recreation activities like hunting, fishing and camping. WorldView Solutions built a set of analytical tools that help Outdoor Access identify landowners to participate in the program on the geospatial characteristics of ownership data in Virginia. These unique tools used statewide aerial photography, parcel, and land cover data.

Title: GIS in the NG9-1- 1 World

Presenter: Jon Greene

Abstract: Ensuring the quality and accuracy of today's Public Safety GIS data has never been more paramount. As NG9-1- 1 technology matures, GIS data has become the lifeblood of NG. The presentation begins with an overview of Next Generation 9-1- 1 (NG9-1- 1) by progression from legacy systems. We will discuss the This presentation will cover how GIS is used in both Legacy and NG systems. The presentation also includes information on how the three major data types play vastly different roles in NG9-1- 1. Attendees will learn about time tested procedures for preparing and maintaining NG9-1- 1 GIS data. The session will also include how cooperation and coordination between public Safety and GIS communities is required for proper and timely data and system maintenance.

Title: How Geospatial Tools are Used in DCR's Nutrient Management Planning Module

Presenter: Stuart Blankenship

Abstract: It has almost been a decade since the Virginia Department of Conservation and Recreation (DCR) launched their Agricultural Best Management Practice Tracking System. Since the original launch, DCR has continued to add new capabilities to the system including the creation of new modules for resource management planning, conservation planning, and best management practice verifications. Most recently, DCR launched a new module for creating and maintaining Nutrient Management Plans as a replacement for an existing stand-alone desktop application. This new module includes online geospatial data creation and editing tools as well as behind the scenes geospatial querying capabilities. This presentation will highlight how GIS plays a crucial role in the Nutrient Management Planning process and will describe how geospatial tools are used throughout the application.

Title: Increase Revenue using Esri Insights for Dead Meter Solutions

Presenter: Danielle Brooks

Abstract: Poorly-operating service connections also known as dead meters are a primary concern for non-revenue water with a potential revenue loss of over \$1 million per year. This challenge has led to new automated processes using the power of ArcGIS for Insights to analyze billing history and to identify potential meters that are malfunctioning. The results from the analysis are brought into an Operations Dashboard to assist efforts of field crews addressing the issues. Join us to discover how to proactively inspect and replace non-operating meters and reduce operating revenue loss for your organization.

Title: Increased Confidence in Decision Support through Data Governance

Presenter: Annie Short

Abstract: The old saying goes *garbage in, garbage out*. At the Prince William County Service Authority, we are implementing programs to ensure that the information we *put in* supports our objective to develop best-in-class data-driven decision-making frameworks throughout all major functions of the organization. Success requires a cultural shift in treating data as a valuable business asset and documented data requirements for quality, reliability, protection, availability, understanding and effective use. Data Governance and Master Data Management frameworks play a critical role in achieving success by ensuring high quality, validated and strategically aligned information from throughout the organization is available as inputs to our Business and Spatial Analytics program.

Title: Location-Based Analysis for the Recruitment of U.S. Border Patrol Agents

Presenter: Jordan Douthitt

Abstract: The U.S. Border Patrol needs to hire 5,000 skilled Agents to less than ideal locations in the nation's southwest, but has had historic difficulty meeting previous hiring needs. This project uses location-based data from multiple sources to answer two questions. First, Agent workload and labor pool data are used to decide which Border Patrol areas are most in need. Second, Labor pool demographics are used to decide what locations could provide enough potential recruits to fill the need. These tasks are performed using freely available data sources such as Census and Labor Statistics to support strategic hiring efforts for the Department of Homeland Security, saving time and effort by localizing recruitment to areas that are more likely to provide better candidate pools. This also gives an example of bringing Geographic Information System (GIS) based methods to the Human Resources profession, which is not practiced extensively at present.

Title: Mass Transportation Accessibility in Atlanta, GA

Presenter: Michael Sewall

Abstract: The mass transportation system in Atlanta, GA, provides a crucial service to its residents and businesses. Although efforts have been made in the past to unify the Atlanta area's multiple disparate transit lines, little progress has been made. GIS provides the framework to analyze the mass transit system for inadequacies and identify specific problem areas so that they can be addressed by the local government. The objectives of this study are to map the availability of public transportation options, create a mass transit walkability map, and identify areas in need of greater public transportation options. To accomplish this, publicly available GIS data will be analyzed using a Need Index based on population density, socioeconomic characteristics, and a Walkability Accessibility Index. The results will focus on discussing areas, at the census block level, with inadequate public transportation access and their characteristics, as well as challenges faced in completing the analysis. The results from this study will be useful for planners in charge of Atlanta's public transportation system to prioritize areas to expand in. The methods used here will also be applicable for assessing transportation system needs in other cities.

Title: Mobile Data Collection – A Migration Success Story

Presenter: Tim Triplett

Abstract: Explain the success of using ArcGIS online with the Collector, Work force and Survey123 applications. In the past the data collection industry has been accustomed to employ expensive GPS hardware/software, clunky processing, and other tools that are just not intuitive. With modern, up-to-date technology, companies can use consumer-grade tablets/phones, cloud-based software, and cheaper GPS hardware to increase their ROI. This presentation will go over the basic setup for a project and the problems and successes that could be encountered during the timeline of the project.

Problem(s):

1. Direct connection to computers and laptops
2. Expensive Software/Hardware
3. Sometimes not intuitive
4. No centralized location for data coming in

Major Components of Mobile Data Collection

1. GPS (R1, R2, Catalyst)
2. Tablet (Basic Consumer vs Ruggedized)
3. Mobile Data Collection Software- Collector for ArcGIS (also Survey 123, Workforce, Etc.)

Identify Goals and Deploy

1. Goals > Database > Cloud > Collection > Output

Review Steps to configure a web application for collection, and Using Collector

1. Database
2. Publishing feature services
3. Develop and configure web application
4. Configure Mobile Device and Web Application to consume Bluetooth Receiver (GPS) positioning
5. Collecting in both offline and in a connected environment and leveraging the Cloud
6. Data Extraction (Geometric Features, Data, and attachments)

Success Story

Lessons Learned

How Collector was used to solve the issue

ROI

Title: Pavement Management and GIS

Presenter: Scott Howell

Abstract: JMT is working with several Counties in Virginia and Maryland to implement countywide pavement assessment and management systems using PAVER™ and custom GIS tools. JMT has been working for approximately 10 years on these efforts, which include developing a pavement network inventory, collecting historical work data, performing an automated condition survey to develop a custom pavement condition index (PCI) rating, calculating funding scenarios for maintenance, and creating GIS tools to assist in this effort. We will describe the process used to implement a pavement management program and explain how the planning and programming process can be streamlined using PAVER™ and GIS.

Title: Small Unmanned Aircraft Systems (sUAS) Workforce Development Through Training and Student Service Learning

Presenters: Chris Carter, David Webb, Cherie Aukland, John McGee, Fred Coeburn

Abstract: With funding from the National Science Foundation (NSF), the Geospatial Technician Education-Unmanned Aircraft Systems (GeoTEd-UAS) project team is preparing the small UAS (sUAS) operation technician workforce of the future. The use of small UAS to collect a variety of geospatial data on demand is increasing rapidly, and has the potential to support data acquisition needs for an array of applications. The duties of a small UAS operator technician typically include planning and flying missions, maintaining vehicles and systems, and processing geospatial data to analyze and solve problems. Driven by industry needs and led by experienced professional faculty and consultants, the team has developed new UAS courses and curriculum, established model academic pathways, conducted student outreach events, and trained community college faculty throughout the Commonwealth. The GeoTEd-UAS team has also conducted several Service Learning sUAS missions where students and faculty lead operations to support the data-collection needs of partners such as NASA and The Nature Conservancy of Virginia. This presentation will highlight the work of the GeoTEd-UAS project and the team will share data, products, and outcomes from the project and missions. GeoTEd-UAS partners include: Thomas Nelson Community College, Mountain Empire Community College, Virginia Tech, Virginia Space Grant Consortium (VSGC), and the Virginia Community College System (VCCS).

Title: Ten Reasons Why Your Organization Should Move to ArcGIS Enterprise

Presenter: Anthony Myers

Abstract: Web GIS provides a simplified and inclusive user interface to the rich data that is collected and maintained within the GeoSpatial Information System and Organizational Business Systems. ArcGIS Enterprise delivers a complete Web GIS that delivers information through a common visual language and delivers a deeper understanding of how everything is connected. In this presentation, we will discuss ten reasons why now is the time to move to ArcGIS Enterprise.

Title: The Coastal Virginia Ecological Value Assessment Update: a collaborative integration of conservation datasets and priorities in Virginia

Presenter: Jennifer Ciminelli

Abstract: The Virginia Coastal Zone Management Program contracted with Virginia Commonwealth University Center for Environmental Studies, Virginia Department of Game and Inland Fisheries and Virginia Department of Conservation and Recreation Division of Natural Heritage to update the Coastal Virginia Ecological Value Assessment. Originally created in 2013, the Coastal VEVA was a collaborative integration of conservation datasets and priorities in the Coastal Zone of Virginia. The GIS model used expert data from the VA Department of Game and Inland Fisheries, VA DCR Division of Natural Heritage, VIMS Center for Coastal Resources Management and VCU Center for Environmental Studies to highlight individual agency specific conservation priorities (both terrestrial and aquatic), then combined the data to create one model showing highest priority conservation areas in the Coastal Zone. This dataset is intended to guide conservation planning and other natural resource and land use management, as well as provide awareness about these important areas. This presentation will cover the update process, including the use of end user surveys to assess overall effectiveness of data dissemination and application, discussion of the model update, use of new outreach tools (ESRI StoryMaps), and next steps.

Title: UAS Integration in Rockingham County

Presenter: Mark Rathke

Abstract: Have you ever been interested in how unmanned aerial vehicles can help enhance mapping and GIS in your locality or organization? This presentation covers the basics of UAS and dispels the myth of the “drone”. And yes, the vehicle has been christened with a pet name. We will discuss implementation in a variety of areas and leveraging this technology in the area of Unmanned Aerial Systems. Do you want to fly?

Title: Unmanned Aerial Systems (UAS) The Autonomous Flying Toolbox

Presenter: Kevin Kimmel

Abstract: Unmanned aerial systems are being applied throughout the design/construction industry, expanding the information available to the industry. UAS platforms are providing time sensitive information through a flexible low cost platform. National Air Space regulations within the US are adapting as new UAS applications evolve. Payload or package delivery is being developed by Amazon and others in Europe, Canada and the US. Our discussion will review the status of current US regulations, their future development and how they will impact UAS platform applications in the design/construction industry.

A snapshot of the tasks aided by UAS application include:

Payload Delivery

aerial photography and videography

a visual aid for clients

photometric land survey

GIS mapping integration

3D stockpile analysis

visual, thermal, and multispectral inspection

point cloud 3D mapping

remote real time inspection

Title: Unmanned Aerial Vehicles (UAVs) for Coastal Hazards and Resources: A Testbed for Coastal Resilience and STEM Education

Presenter: Thomas Allen

Abstract: Unmanned aerial vehicles (UAVs) are a rapidly advancing technology using remotely operated or autonomous “drone” platforms to capture imagery and other measurements. Concurrent with this technology’s emergence, beach erosion and recurrent coastal flooding are recognized as chronic and growing threats to coastal communities. Flood forecasts and inundation models are difficult to test and improve without robust validation datasets. In addition to coastal hazards, coastal ecosystem resources are threatened by storm impacts and climate change. UAVs provide a

game-changing platform for collecting data on flooding extent, conducting damage assessments, and monitoring coastal change. They also can provide researchers and communities alike with high-resolution baseline information and serve as platforms for other sensors and mapping techniques. Funding from the Virginia Space Grant Consortium and ODU Resilience Collaborative allowed ODU researchers to acquire and test commercial-off-the-shelf UAV technology to produce accurate and reliable beach and coastal resource data. This geospatial “testbed” approach provided the opportunity to evaluate the accuracy and reliability of UAV-derived geospatial data and resulted in the development of mission planning parameters and workflows, time-aware GIS databases, and faculty and staff expertise in UAV mapping applications.

Title: Upgrading to Oracle 12c, Portal for ArcGIS, and JavaScript API Web Maps

Presenter: Yeoanny Venetsanos

Abstract: The Prince William County Service Authority (SA) is a best-in-class water / wastewater provider in Northern Virginia with a robust, mature GIS program. The SA completed an ambitious internal project upgrading its Enterprise Geodatabase from Oracle 11g to Oracle 12c, implementing Portal for ArcGIS 10.3.1, and migrating from a Silverlight API-based app to multiple JavaScript API-based web maps and apps. This presentation will discuss some of the challenges and successes as well as provide insights to other organizations attempting to solve similar problems.

Title: Use of Mobile Applications in the MS4 Program

Presenter: Michelle Fults

Abstract: VDOT, as required by its MS4 NPDES Permit, is responsible for tracking and reporting its inspection and maintenance (I&M) efforts on post-construction stormwater management facilities. For years, VDOT maintained its I&M information in separate non-spatial databases divided across 11 different functional groups. This resulted in substantial resources being expended to amalgamate the data into a single report that could be reported to State NPDES regulatory authority (Virginia DEQ). Recently, VDOT has initiated a project to consolidate these databases into a singular and spatial geodatabase using ESRI's ArcGIS Online, Collector, and Survey123. Survey123 will significantly improve VDOT's field I&M capabilities leading to cost savings in the field and during annual reporting.

Title: Using GIS to Develop a Regional Plan for Public Access

Presenters: Sara Kidd & Ashley Gordon

Abstract: The HRPDC recently developed a Regional Strategic Plan for Public Access to Waterways in Hampton Roads. GIS analysis was used to study the demand for public access as well as identify potential gaps in public access. Travel time analysis, stream distance analysis, and travel data (from Streetlight InSight) were used in this project. A regional inventory of public access sites was also collected and is now available in a geo app called FishSwimPlay.com.

Title: Using Models to Determine Land Cover Gains and Losses in Fort Pickett, Virginia

Presenter: Emily Wiggans

Abstract: Stantec created two GIS models to automate land use/land cover change detection from object-based imagery analysis created for Fort Pickett, a Virginia Department of Military Affairs property in Blackstone, Virginia. The basic classification image for this analysis was an 11-class image for each of the years 1994, 2002, and 2013. Accounting for change (or lack thereof) across 11 classes yields 121 different options. GIS models were developed to specify class changes that were of interest (forested areas to impervious areas, for example). One model determines area where a specific class was lost, and the other where a specific class was gained. The output includes a raster showing where loss/gain occurred, and a raster showing what the class was in the previous dataset, as well as a summary table. These models allowed for identification of trends in urbanization and forestry decline and will inform the client's plans for long term land use and sustainability. The methodology for the model is robust enough to be replicated on other land cover datasets, such as the National Land Cover Database (NLCD) or Virginia Statewide Land Cover Dataset (VSLCD).

Title: Utilizing GIS to Develop Statewide Water Quality Dataset

Presenters: Jennifer Ellsworth & Kristin Dillard

Abstract: The Commonwealth of Virginia is a wet place, home to over 100,000 miles of meandering rivers, salty tidal estuaries, and freshwater creeks. Ensuring the integrity of these waterways can be daunting, but this is increasingly necessary as the population of the Commonwealth expands. GIS has taken a critical role in efforts to better regulate and

share water data across various entities. In recent years, the Virginia Department of Environmental Quality (DEQ) developed a Water Quality Standards spatial dataset which links the quality standards of Virginia waterways from the State Water Control Board to their relevant geographic hydrology. This dataset is crucial in assessing local, economic and environmental impacts when changes to state standards are proposed. Over time, however, the underlying water features from the National Hydrography Dataset (NHD) have seen improved resolution and accuracy, necessitating congruent updates to the Water Quality spatial dataset. Over the last year, the old dataset was completely overhauled and revitalized to ensure that this data is up-to-date and readily available to a public that has interest in seeing the state of their waterways. Through clever use of geoprocessing tools (and a few setbacks along the way), we would like to share with you the process used to develop the most detailed and accurate Virginia DEQ water dataset to date.

Title: Web AppBuilder for ArcGIS: An Introduction

Presenter: Matt Viverito

Abstract: Web AppBuilder for ArcGIS is a fully integrated client application of the ArcGIS platform. It lets GIS managers, GIS analysts, and non-developers easily create and deploy web apps with online mapping, but it doesn't require programming. Web AppBuilder for ArcGIS is embedded in both ArcGIS Online and Portal for ArcGIS. It provides a simple and intuitive workflow for creating web apps by specifying the app's look and feel, data content, and functionality. Learn how you can configure Web AppBuilder for ArcGIS to run seamlessly across all devices.