Transparency and Accountability

"Using GIS for decision support through analysis and visualization".

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Wednesday October 12, 2016

8:00 AM - 8:00 PM	Premier Sponsor Setup			
2:00 PM - 8:00 PM	All Vendors			
Pre-Conference Workshops	*ATLANTIC-A*	*ATLANTIC-B*	*ATLANTIC-C*	*ATLANTIC-D*
8:30 AM - 12:00 PM *Morning Break 10:00-10:30am*	John Reiser: Spatial SQL (Part 1/2)	Daniel Martin: Journey to the Moving Center of the Earth	Mark Scott: ArcGIS Mobile Data Collection	Sandi Stroud: NG9-1-1 for the GIS Professional
12:00 PM - 1:00 PM	*Lunch in Exhibit Hall*			
	ATLANTIC-A	*ATLANTIC-B*	*ATLANTIC-C*	*ATLANTIC-D*
1:00 PM - 5:00 PM *Afternoon Break 2:30-3:00pm*	John Reiser: Spatial SQL (Part 2/2)	Patrick Hammons: Deploying Your Own Open Data Site with ArcGIS	Rachel Weeden: ArcGIS Pro: An Introduction	Richard Augenti: Stepping out of the Box with Open Source Solutions

Thursday October 13, 2016

7:00 AM - 10:30 AM	Registration					
8:00 AM - 9:00 AM	Breakfast in Exhibit Hall					
8:00 AM - 10:00 PM	Exhibit Hall Hours					
9:00 AM - 10:00 AM	Welcome & Keynote Speaker - Exhibit Hall					
10:00 AM - 10:30 AM	Break in Exhibit Hall					
10:30 AM - 12:00 PM	GIS TECHSPO	FLOOD-MAPPING/ SHORELINE	PICTOMETRY/ IMAGEBASE GIS	TRANSPORTATION	BOUNDARY, SURVEY AND GIS	ESRI HANDS-ON LEARNING LAB *ATLANTIC-8* Hands-On Learning Lab offers self-paced training sessions. The Lab is open from 10:30AM to 5:00PM
	HORIZON	*ATLANTIC-A*	*ATLANTIC-B*	*ATLANTIC-C*	*ATLANTIC-D*	
12:00PM – 1:30PM	Lunch in Exhibit Hall					
1:30 PM - 3:00 PM	GIS TECHSPO	UTILITY MAPPING/ ASSET MANAGEMENT	PLANNING	COUNTY GIS	BOUNDARY, SURVEY AND GIS	
	HORIZON	*ATLANTIC-A*	*ATLANTIC-B*	*ATLANTIC-C*	*ATLANTIC-D*	
3:00PM – 3:30PM	Afternoon Break in Exhibit Hall					
3:30 PM - 5:00 PM	GIS TECHSPO	CADASTRAL MANAGEMENT	EMERGING TECHNOLOGY/ TRENDS		BOUNDARY, SURVEY AND GIS	
	HORIZON	*ATLANTIC-A*	*ATLANTIC-B*		*ATLANTIC-D*	
5:00 PM - 6:00 PM	Lighting Talks (Horizon Room)					
6:00 PM - 10:00 PM	Networking Banquet in Exhibit Hall					

Friday October 14, 2016

8:00 AM - 11:00 AM	Registration				
8:00 AM - 9:00 AM	Breakfast in Exhibit Hall				
8:00 AM - 2:00 PM	Exhibit Hall Hours				
9:00 AM - 10:30 AM	DATA COLLECTION & INTEGRATION	BOUNDARY, SURVEY AND GIS	ENVIRONMENT	GIS & SURVEYING (LiDAR/ RASTER MAPPING)	ESRI HANDS-ON LEARNING LAB *ATLANTIC-8* Hands-On Learning Lab offers self-paced training sessions. The Lab is open from 9:00AM to 12:30PM
	ATLANTIC-A	*ATLANTIC-B*	*ATLANTIC-C*	*ATLANTIC-D*	
10:30 AM - 11:00 AM	Break				
11:00 AM - 12:30 PM	TRANSPORTATION & GIS	BOUNDARY, SURVEY AND GIS	PUBLIC SAFETY/ EMERGENCY MANAGEMENT	PLANNING / CENSUS	
	ATLANTIC-A	*ATLANTIC-B*	*ATLANTIC-C*	*ATLANTIC-D*	
12:30 PM- 1:30 PM	Lunch in Exhibit Hall				
	HORIZON ROOM				
2:00 PM - 4:00 PM	New Jersey GeoSpatial Forum Fall Quarterly Meeting (Open to Public)				

Welcome to MAC URISA's 18th Regional Conference!

Greetings Everyone!

On behalf of the Mid-Atlantic Chapter of URISA and the 2016 Conference Planning Committee, it is our pleasure to welcome you to the MAC URISA 2016 Conference at Resorts in Atlantic City, New Jersey. The theme for this year's conference is Transparency and Accountability "Using GIS for decision support through analysis and visualization".

We encourage you to visit our Exhibit Hall that features some of the premier geospatial technology and services available today. Our event would not be possible without our exhibitors and sponsors. We would like to recognize and thank all our sponsors, especially our Premier Sponsors: Esri, Civil Solutions, Michael Baker International, and Temple University. We appreciate the support of all of our exhibitors.

We thank you for choosing to attend our conference and aim to provide you with a comprehensive learning experience. Our invitation to submit abstracts, posters, and participation in Techspo was an open opportunity for you to engage with our regional GIS community to promote your technically challenging projects and provide the audience with methods and tools for attendees to leverage to be successful in their own pursuits. Providing this type of learning experience is rewarded by gaining peer recognition, as well as earning points toward a GISP certification/recertification. Our program committee has assembled these educational presentations to create an exciting multi-day conference format that includes workshops, technical sessions, technology exposition, and a learning laboratory.

Building on the success of the 2016 conference, we are happy again to host the public quarterly meeting of the New Jersey Geospatial Forum at the end of our conference.

To start this conference, we have selected William "Bill" Burgess as our Keynote Speaker. His presentation on Using, Making and Promoting Maps & GIS – A Forty-Year Perspective will provide a compelling historic review and look into the future that will provide valuable content to all.

As you look over the details of the program we think you will recognize that our conference offers a rewarding opportunity for professional growth. This could not be achieved without the hard work and dedication of our conference committee and supporters whose commitment to upholding our mission is unmatched. Enjoy the Conference!

Thomas W. Tiner, CP, GISP

President and Conference Chair

Table of Contents

MAC URISA Leadership

PRESIDENT
Tom Tiner, GISP
Michael Baker International, Inc.

VICE PRESIDENT
Dawn McCall, GISP
Princeton University

SECRETARY
Deirdre Garrity-Benjamin
Community College of Philadelphia

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Dave Kunz
Civil Solutions, a division of ARH

Trish Long
USDA NRCS

Dr. John Miima
New Jersey Institute of Technology

Maya Thomas
Remington & Vernick Engineers

Merrilee Torres, GISP
Burlington County Department
of Information Technology

Board Elections

Following this conference, MAC URISA will hold its annual election of half of the Chapter's board members. The following MAC URISA members will be up for election at the close of this conference. Please be sure to look for an email detailing the election procedure and vote in our online voting system. Candidate biographies will be posted on our website for your review. We welcome and look forward to our new Board!

President
Dawn McCall, GISP
Princeton University

Secretary
Maya Thomas
Remington & Vernick Engineers

Trustees
- Dom Elefante, Passaic Valley Sewerage Authority, Team Leader
- David Kunz, Civil Solutions, a division of ARH
- Matt Soslow, Camden County DPW
- Jason Bottcher, Hudson County
- Matt Duffy, Atlantic County

At the conclusion of the election, the term of service for Deirdre Garrity-Benjamin and Dr. John Miima will conclude, and Tom Tiner will remain as Past-President. We thank them for their dedication and service to MAC URISA and anticipate many more years of continued involvement.

What is MAC URISA?

MAC URISA is a volunteer organization with a longstanding reputation for providing quality educational programs to the GIS community. The mission of the Mid-Atlantic Chapter of the Urban & Regional Information Systems Association (MAC URISA) is to:

- Provide a community to facilitate communication & education among the various GIS constituency groups within the Mid-Atlantic region;
- Promote the business of GIS by providing access to networking, new information and technology;
- Foster relationships with organizations with similar missions to further the profession of GIS.

For more information, visit www.macurisa.org

Keynote Speaker

William "Bill" Burgess

Retired Washington Liaison for NSGIC

Using, Making and Promoting Maps & GIS - A Forty-Year Perspective

Keynote address is Thursday, 9AM in the Exhibit Hall.

Geospatial technologies have clearly changed the way maps have been created and used over the past 40 years. They have also created an interdependence between government, the private sector and the public that requires increased coordination. The speaker will provide his perspective on those changes using examples from his career in water resources management and his involvement with national geospatial programs.

William "Bill" Burgess's Biography

Bill Burgess served as the Washington Liaison for the National States Geographic Information Council (NSGIC) from 2003 to 2016. He became an active member of NSGIC in 1993, and served three terms on the Board of Directors. Bill represented NSGIC's members when working with other national organizations, the private sector, and Federal agencies on national geospatial policy and programs including the Digital Coast Partnership managed by NOAA, E911, the National Address Database, Imagery for the Nation, Transportation for the Nation, and the Homeland Security Infrastructure Program (HSIP). He also performed project management for NSGIC's grants and contracts, and managed their IT efforts including the GIS Inventory System.

In 2003, Bill retired as Director of the Watershed Services Unit at the Maryland Department of Natural Resources where he served for over 28 years. While there, he directed nearly every aspect of the state's water resources management, spill response, permitting, enforcement, and community assistance programs. These programs each required the application and management of remote sensing, geospatial technologies, and IT support. Before leaving Maryland government, he was responsible for managing ~150 positions and a $28 million budget. He worked on many mapping issues and fostered the development of geographic information technologies during his entire career at DNR. He also worked with a team of people to create and sustain the Maryland State Geographic Information Committee (MSGIC).

He has a Bachelor of Science Degree from the University of Maryland's College of Agriculture in Conservation and Resource Development. He also attended the 1991 residential program of the Maryland Government Executive Institute which was sponsored by the Aspen Institute and the University of Maryland's School of Business.

Conference Highlights

Poster and Map Hall

Ballroom Pre-Function Area

Posters are a great way to share your projects and experience with others and a wonderful opportunity to get ideas for improving your own maps. Make sure to set aside some time to spend in the Poster and Map Hall. All attendees are invited to bring and register a map or poster for the contest. Prizes will be awarded for the best maps/posters at the conclusion of the conference. Please stop by the registration booth for details on how to register your map.

Exhibit Hall

Ballroom
Thursday, 8:00 AM – 3:30 PM
Friday, 8:00 AM – 1:30 PM

Our Exhibit Hall will afford you the opportunity to explore current services and products that can enhance your GIS. Come see what's new and collect information that will answer your questions so that you can make better purchasing decisions. For more exhibitor information, go to Page 26.

Exhibit Hall Networking Banquet

Thursday, 6:00 – 9:00 PM

Relax and enjoy a social hour and dinner with the company of your colleagues as you visit the Exhibit Hall after a day of learning. Catch up with old friends and network with exhibitors in this stress-free environment. Don't miss this opportunity to share your experiences and unwind with colleagues and the region's top GIS technology vendors!

Techspo Showcase

Horizon Room
Thursday, 10:30 AM - 5:00 PM

The Techspo is composed of two components: informal, interactive, scheduled demonstrations and presentations and ongoing table displays that are available for attendees to peruse throughout the conference days.

Techspo presentations are informal and much less structured than a paper presentation. At scheduled times, each presenter will give a 15 minute demonstration, summary of their project, or give a brief introduction and then field questions. The focus of Techspo is on providing attendees an opportunity to interact with the presenters and their displays. This format is especially conducive to demonstrating a process, technique or website.

2016 Esri Education Hands-on Learning Lab

Location - Atlantic-8

The HOLL consists of a group of laptops with headphones where students can work through lessons at their own pace. A lesson consists of a recorded presentation followed by a hands-on exercise. Each lesson typically takes about 45 to one hour to complete and students can generally come and go as they please. Ed Services instructors are on hand to assist with questions and to discuss Esri products, other training opportunities and Esri Technical Certification.

Lessons Offerings for 2016

1. Getting Started with GIS 1: Understanding the ArcGIS Platform
2. Getting Started with GIS 2: Using ArcMAP to Explore GIS Data
3. Getting to Know ArcGIS Pro
4. Advantages to Storing Your GIS Data in the Geodatabase
5. Creating Presentation Quality Maps in ArcMap
6. Editing GIS Data in ArcMap
7. Multi-user Editing Using Versioning
8. Editing and Maintaining Parcels Stored in a Parcel Fabric
9. Geocoding Street Addresses to Create Map Points
10. Importing and Preparing CAD Data for Use in ArcGIS
11. The Importance of Spatial Reference in Tactical Applications
12. Exploring Health and Epidemic Patterns Using Spatial Statistics Tools
13. Optimizing Transportation Routing Using ArcGIS Network Analyst
14. Modeling Time and Distance Along Networks Using Linear Referencing
15. Working with Geometric Networks to Manage Utilities and Water Runoff
16. Interpolating Sample Points to Create Rasters Using Spatial Analyst Tools
17. Geoprocessing GIS Data Using Python
18. Sharing Maps and GIS Content Using ArcGIS Online
19. Understanding Web Services Using ArcGIS for Server
20. Generating Web Applications for the GIS Novice
21. Getting Started with the Community Maps Data Preparation Tools
22. Mapping Excel Data Using Esri Maps for Office

Conference Committee

Conference Chair
Tom Tiner, GISP, Michael Baker International, Inc.

Program
Dom Elefante, Passaic Valley Sewerage Authority, *Team Leader*
Roger Barlow, US Geological Society

Workshops
Trish Long, US Natural Resources Conservation Service, *Team Leader*

Techspo
Merrilee Torres, GISP, Burlington County GIS, *Team Leader*
Matt Duffy, Atlantic County
Sarah Taylor-Deak, Atlantic County

Posters
Deirdre Benjamin, Community College of Philadelphia, *Coordinator*

Exhibitors
Maya Thomas, Remington & Vernick Engineers, *Team Leader*
Dawn McCall, GISP, Princeton University
Matt Duffy, Atlantic County

Registration
Deirdre Benjamin, Community College of Philadelphia, *Coordinator*

Publicity
John Reiser, Rowan University, *Team Leader*

Venue
Dawn McCall, GISP, Princeton University
Tom Tiner, GISP, Michael Baker International, Inc.

Volunteers
Dr. John Miima, New Jersey Institute of Technology, *Team Leader*

Finance
John Reiser, Rowan University, *Treasurer*

The Association For GIS Professionals
www.URISA.org

URISA 2016 National Event

GIS-Pro 2016

URISA's 54th Annual Conference

October 31-November 3, 2016

Toronto, Ontario

Premier Sponsors

MAC URISA would like to thank the following premier sponsors for their support and contributions.

Esri® helps organizations map and model our world. Esri's GIS technology enables them to effectively analyze and manage their geographic information and make better decisions. They are supported by an experienced and knowledgeable staff and an extensive network of business partners and international distributors.

Every year, Esri reinvests more than 20 percent of its revenues in research and development to ensure users have the best tools possible to accomplish their missions. A comprehensive suite of training options helps them fully leverage their GIS. Esri actively supports organizations involved in education, conservation, sustainable development, and humanitarian affairs by donating hundreds of millions of dollars in software, training, consulting, and project support.

As an ENR Top 40 engineering firm, Michael Baker International is well experienced and established in the transportation services community. Michael Baker has over 6,000 professionals on staff throughout the company, including a strong presence in the Northeast Region. Michael Baker's local presence in NJ is well established and boasts well-respected professional engineers, pavement experts, planners and geospatial information technology (GIT) practitioners in our local Hamilton and Newark office locations.

Michael Baker recently celebrated its 75th anniversary as a premier provider of engineering and geospatial technology services to transportation clients. Our local offices have access to the vast experience and substantial resources throughout the Michael Baker organization; with more than 300 geospatial personnel consisting of application developers, GIS analysts, survey, mapping and IT professionals, our depth of knowledge allows us to deliver a quality product in a timely manner. Our clients span a wide variety of small and large public sector agencies, ranging from municipal, county and state governments to DHS, FEMA, U.S. Army Corp of Engineers, state departments of transportation (DOTs), USGS and others.

PROFESSIONAL SCIENCE MASTER'S IN GEOGRAPHIC INFORMATION SYSTEMS

The Department of Geography and Urban Studies at Temple University offers a one-year Professional Science Master's in Geographic Information Systems (PSM in GIS). Our curriculum integrates advanced technical training with business ethics and professional development. Core courses for the program include spatial database design, application development, technical cartography, advanced statistics, ethics and professional practice, and a hands-on capstone experience. Students take four electives in the area of their choosing, including remote sensing, geovisualization, web mapping, health, urban, or environmental applications, and more. The PSM in GIS isopen to applicants with a Bachelor's degree in any field and any level of technical skill. The program prepares students to sit for the GISP certification exam and become competitive GIS technicians in the job market.

Civil Solutions is the geospatial technologies division of ARH, which offers GIS Data Development, Consulting, and Application Development to assist in the strategic planning, development, implementation and maintenance of a GIS based on the needs of our clients.

We have been an Esri Business Partner for the last 25 years and recognized by Esri as an Esri ArcGIS for Local Government and Online Specialty Business Partner. Civil Solutions consistently delivers value to its clients by leveraging our experience, personnel expertise, reputation, unwavering attention to technical detail and integrated quality control.

Earlier this year, Civil Solutions and the rest of ARH moved into a new 27,000 square foot Corporate Headquarters on Bellevue Avenue in Downtown Hammonton. Our new headquarters consolidates ARH's strength centers around multiple departments focused on their specific core competencies but intertwined to provide synergistic benefit.

Wednesday Overview

7:00 AM – 10:30 AM	Registration
8:00 AM – 9:00 AM	Breakfast
8:00 AM – 8:00 PM	Premier Sponsors Setup
2:00 PM – 8:00 PM	All Vendor Setup
8:30 AM – 12:00 PM	Morning Workshops
10:00 AM – 10:30 AM	Morning Break
12:00 PM – 1:00 PM	Lunch
1:00 PM – 5:00 PM	Afternoon Workshops
2:30 PM – 3:00 PM	Afternoon Break

Pre-Conference Workshops

One Full Day and Six (6) Half Day Workshops
8:30 AM – 5:00 PM

Full Day

Title: ***Spatial SQL***
Room: ***Atlantic-A***
Instructor: ***John Reiser, Rowan University***

Abstract: This full-day workshop will provide you with an introduction to SQL and relational database management systems (RDBMS) with a special focus on using databases to maintain, query, and modify spatial data. Using the open-source DBMS PostgreSQL and its spatial extension PostGIS, we will explore using SQL to perform tasks you may have previously performed using a desktop GIS. ETL processes, data analytics, and modeling can all be extended and enhanced through the use of SQL in a spatially-enabled databases.

Workshop Outline:

- Introduction to SQL and the database
- Bringing GIS into the database using PostGIS and open source tools
- Querying your data

Did you know?
You can earn GISCI Education Certification points for attending a pre-conference workshop and the conference!

- Spatial relationships
- Creating new data using SQL
- Intended Audience: Beginner to Advanced

Attendees must be familiar with desktop GIS software. Experience with QGIS is a plus.

Attendees must bring their own laptop with wifi/wireless capabilities. Prior to the workshop, attendees must install the PostgreSQL software and workshop data on their laptop. Attendees are also encouraged to install the open source QGIS desktop GIS software if the laptop does not have an existing desktop GIS installed.

Half Day (AM)

Title: ***Journey to the Moving Center of the Earth***
Room: ***Atlantic-B***
Instructor: ***Daniel Martin, National Geodetic Survey***

Abstract: In 2022, NGS will be replacing the US horizontal and vertical datums (NAD 83 and NAVD 88). This workshop is designed to discuss the need and process for these changes, as well as how these changes may affect users and what users can do to help prepare for these changes. Our journey will begin with a brief discussion of the history of the North American Datum of 1983 and the North American Vertical Datum of 1988, their relationships to other reference frames, and the reasons for their ongoing evolution. As LiDAR is becoming much more prevalent within GIS products, we will also discuss the relationships of geoid models to various versions of NAD 83, and what can happen should these relationships be ignored.

Title: ***ArcGIS Mobile Data Collection***
Room: ***Atlantic-C***
Instructor: ***Mark Scott, Esri***

Abstract: The ArcGIS Platform provides powerful tools for defining, publishing, sharing, and using data to support a mobile workforce, within the structure of a

modern WebGIS. In this workshop, you will use ArcGIS Desktop to create an ArcGIS Online feature service, and publish it on ArcGIS Online. You will then learn how to use Collector for ArcGIS to capture locations, information, and photos of assets inside and around the conference facility. An ArcGIS Online Organization has been provisioned for use with the workshop, and your instructor will give you an identity to use for the workshop. This account will remain active for 5 days after the conference, then will be deleted.

IMPORTANT NOTE: While computers will be provided with ArcGIS Desktop installed, and a browser with internet access, the mobile aspect of the workshop is BYOD (Bring Your Own Device), and will require the student to have a smartphone or tablet, with internet access. Please go to the App Store or Google Play Store, and load Collector for ArcGIS on your device.

Your instructor will provide a series of demonstrations as to how to accomplish the above tasks. A guide will be provided to help students with the exercises. Students can split into teams, share a device, or go solo.

The agenda for this exercise include the following (time permitting):

- **Lecture:** Demonstrate the staging and publishing of data to be used by a mobile workforce.
- **Student:** Publish a feature layer from ArcMap or ArcGIS Pro.
- **Student:** Create a web map for use in Collector.
- **Instructor:** Tutorial on using Collector in Online mode.
- **Instructor:** Tutorial on configuring and using Collector in Offline mode
- **Student:** Collect assets in and around the conference facility, or from your desk, using Collector.
- **Lecture:** Configure an Operations Dashboard that can be used from any device to review the results.
- **Lecture:** Use an Operations Dashboard to review the results of the day's work.
- **Wrap:** Questions & Answers.

Title: ***NG9-1-1 for the GIS Professional (URISA Certified workshop)***
Room: ***Atlantic-D***
Instructor: ***Sandi Stroud, Michael Baker International, Inc.***

Abstract: This workshop is aimed at the GIS professional who is currently supporting or may support their emergency communications division in the future. In a fully operational next generation 911 system, GIS is the core component in determining how a 911 call is routed to the correct public safety answering point (PSAP). This will have profound impacts on local maintenance workflows, local data access, and data fidelity. We recognize there is a sincere lack of education available aimed at the GIS professional who may not be as versed with the 911 terminology or needs. This workshop is intended to provide an overview of next generation 911, GIS' role in such a system, the implications on local workflows, and illustrate common pain points and sources of errors in local GIS datasets.

Learning Objectives:

- Become familiar with basic next generation 911 terminology and concepts
- Recognize GIS' role in a fully operational next generation 911 system
- Understand the implications on local GIS workflows to meet the demands of a next generation 911 system
- Begin to understand immediate steps that can be taken in preparing GIS assets for Next Generation 911
- Intended Audience: GIS Managers, Emergency Management and Public Safety professionals

Half Day (PM)

Title: ***Deploying Your Own Open Data Site with ArcGIS***
Room: ***Atlantic-B***
Instructor: ***Patrick Hammons, Esri***

Poster and Map Contest

Don't forget to stop by the Poster and Map Gallery and vote for your favorite submission!

Abstract: Are you interested in ways to streamline and improve the way your organization provides geographic information via an open data site? Would you like to create and design a unique destination that lets a broad community easily discover, explore and download your GIS data? This workshop will provide hands-on instruction that will make you familiar with the capabilities of Esri's template application for open data, and guide you through the process of preparing your data and launching a site of your own.

Title: ***ArcGIS Pro: An Introduction***
Room: ***Atlantic-C***
Instructor: ***Rachel Weeden, Esri***

Abstract: Whether you have many years' experience working with desktop GIS or you are just starting out, chances are ArcGIS Pro is new to you. ArcGIS Pro is an essential application for creating and working with spatial data. With a completely redesigned interface and project-centric approach, ArcGIS Pro provides the capabilities you need from a desktop GIS but in a more modern application. In this workshop, you'll gain hands-on experience working with ArcGIS Pro by exploring a project that will guide you through authoring a map, symbolizing data, working in both 2D and 3D, common editing workflows, and analysis tasks.

Title: ***Stepping out of the box with open source solutions***
Room: ***Atlantic-D***
Instructor: ***Richard Augenti, Rich Tech Pro***

Abstract: During this session we will explore a range of web mapping solutions with a quick review of the available proprietary solutions along with delving deeper into the Opensource GIS world with a look at various server and desktop technologies which are freely available. This will include a live session on actually setting up and installing some of these Opensource Server technologies. We will also go over some of the alternative online solutions which have stepped up to the plate to fill the void after Google closed up shop with their Google Maps Engine. This is a technical workshop which focuses on the technology aspect of Geospatial Web and Desktop Technologies. Though this workshop is geared towards all you techies, developers, and data geeks, I would like to extend an invitation to business owners, management, and those who are just looking to get more exposure to technology to attend this session to broaden your horizon.

Thursday Overview

7:00 AM – 10:30 AM	*Registration*
8:00 AM – 9:00 AM	*Breakfast*
9:00 AM – 10:00 AM	*Welcome & Keynote Speaker*
10:00 AM – 10:30 AM	*Break*
10:30 AM – 5:00 PM	*GIS Techspo Tech Sessions*
12:00 PM – 1:30PM	*Lunch*
3:00 PM – 3:30PM	*Afternoon Break*
5:00 PM – 6:00PM	*Lighting Talks - Horizon*
6:00 PM – 10:00PM	*Networking Banquet - Ballroom*

GIS Techspo

Location - Horizon
10:30AM - 12:00PM

The Techspo is composed of two components: informal, interactive, scheduled demonstrations and presentations and ongoing table displays that are available for attendees to peruse throughout the conference day on Thursday.

Techspo presentations are informal and much less structured than a paper presentation. At a scheduled time, each presenter will give a 15-minute demonstration, summary of their project, or give a brief introduction and then field questions. The focus of Techspo is on providing attendees an opportunity to interact with the presenters and their displays. This format is especially conducive to demonstrating a process, technique or website.

Title: ***Creating Data for Today and Tomorrow***

Presenter: ***Sean Lawrence and Gus Frederick, Delaware Valley Regional Planning Commission***

Abstract: At DVRPC, we're always looking for new innovations that could shape how we plan for the future. Open source GIS data is continuously evolving within local government agencies, and has allowed us to create and customize new web mapping applications, in hopes of making a positive impact at the regional and local scale.

Title: ***NJDEP's Illegal Dumping Crowd Source Application***

Presenter: ***Edward Apalinski, NJDEP Division of Information Technology, Bureau of***

Geographic Information Systems

Abstract: In March of 2014 NJ Department of Environmental Protection (NJDEP) launched an effort to combat illegal dumping in the state's publicly owned lands. This coordinated effort amongst a host of NJDEP agencies fight against illegal dumping through stewardship, education, and enforcement. To support the enforcement effort, NJDEP developed a mobile web application to crowd source potential illegal dumpsites. This application provides the general public a way to notify authorities of dumpsites via a mobile device. GIS supports the education component through an ArcGIS Online story map showing the locations and details of those charged by the task force's efforts. This presentation will discuss the use of ESRI's ArcGIS Online technology to develop the application. We will walk through how that technology is leveraged in the data flow from mobile device to geodatabase to final reporting.

Title: ***Collector Disconnected: Just Download, Edit and Sync - It's Easy! Or is it?***

Presenter: ***Christopher Nagy, Burlington County Department of Information Technology***

Abstract: As organizations make the move to using Esri's collector app to edit GIS data in the field, some may be hampered by budget restrictions which prevent them from having a data plan. Such is the case in Burlington County and the answer seemed obvious – disconnected editing. The concept seems straightforward – just download a snapshot of the data, edit in the field, and sync when you are back in the office. However, the devil is in the details of permissions, settings, where your data lives, caching, zoom scale, etc. Burlington County will talk about their experience in trying to figure it out."

GIS Techspo

Location - Horizon

1:30PM - 3:00PM

Title: ***A Case Study on a Side Project - NJParcels.com***

Presenter: ***John Reiser, Rowan University***

Abstract: NJ Parcels is an interactive website that provides information and reports on properties in New Jersey. NJ Parcels receives over 1 million page views per month and is used by 14,000 unique users per day. This session will give an overview of the site and technologies employed (such as Python, PostGIS and Amazon Web Services) to build and operate it. Time will be allotted for questions and discussion.

Title: ***Using Python and Arcpy Geometry Objects to Create Address Points: A Geoprocessing Workflow***

Presenter: ***Chris Klaube, NJ Office of Information Technology, Office of GIS***

Abstract: This talk will review the processing steps involved in cleaning up MODIV property location records and the geoprocessing steps that were involved in the development of statewide address points using parcels and road centerlines. The talk will outline the third party python modules that were used as well as describe the workflow for building a robust address point and road centerline data model.

Title: ***Getting Started with Web App Builder***

Presenter: ***Merrilee Torres, Burlington County Department of Information Technology***

Abstract: This presentation will include a walk-through of creating a mapping app using ArcGIS Online's Web App Builder to allow users to filter and query data.

GIS Techspo

Location - Horizon

3:30PM - 5:00PM

Title: ***Developing an ArcGIS API for JavaScript App Live***

Presenter: ***Richard Augenti***

Abstract: During this session, I will take you through the process of developing a Web Mapping Application from start to finish with the latest features of ArcGIS API for JavaScript 4.0, ArcGIS for Server 10.31, and incorporating ArcGIS Online content. We will expand this session by going beyond the code to actually set up your local development environment on your workstation with IIS Express Web server along with looking at some virtualization options to keep things clean and organized. I will also delve into explanations of the actual API and working with Dojo, which the ArcGIS API for JavaScript is built on. I will provide a link for attendees and any other conference attendees, which could not make the session to download the presentation content along with the step-by-step tutorials to walk you through recreating the application, setting up your own Dev. Environment, and

incorporate virtualization. This is a technical workshop, which focuses on the technology aspect of Geospatial Web and Server Technologies. Though this work is gear towards all you die-hard techies and developers, there is value for business owners, management, and those who are just looking to get more exposure to technology to attend this session.

Title: ***No License, No Money, No Problem - Open Source Geoprocessing Tools to Get the Job Done!***

Presenter: ***Janel McCoy, Mercer County Department of Transportation and Infrastructure***

Abstract: Open Source GIS software is publicly accessible to promote open exchange and collaboration, especially to support scientific research and widespread humanitarian efforts. It shines as a tool for more complex geoprocessing functions. Moreover, the software is free and easy to download and use. Several geoprocessing routines will be demonstrated to get you started in using these powerful tools to aid your own work. Solutions to common road bumps in workflows due to restrictions in commercial GIS software will be discussed.

Title: ***Taming the Data: Techniques and Processes on Managing Data for Map Production***

Presenter: ***Seth Docherty, NJDEP - Bureau of Tidelands***

Abstract: How often are you in a crunch with a map request and you realize the data given to you is in multiple datasets? What about the requests which require you to update an existing GIS layer with datasets that has never been reviewed for errors or data consistency? Managing these data, "Gotcha's" can be quite a headache, especially when a short turnaround is needed and there is no room for error. Using Excel and Python I will demo some approaches to help manage and organize datasets for obstacles you may face on a day-to-day basis. Techniques will include some tips using Excel for checking your data, ETL (Extract->Transform->Load) processes for routine data uploads, and tricks for quick and easy map updates using ArcMap.

Flood-Mapping/Shoreline

Atlantic-A

10:30 AM – 12:00 PM

Title: ***Using GIS, Aerials & Ground Truthing to Uncover Superstorm Sandy Erosion***

Presenter: ***Bianca Charbonneau, UPenn***

Abstract: Vegetation and biogeomorphology are highly coupled in beach-dune systems, but the role of plants and within that, species effects, on abating storm erosion are largely unexplored. We quantified coastal dune erosion from Superstorm Sandy (October 2012) as a function of pre-storm system characteristics - dune height, beach width, and dominant vegetation-stabilizing dunes (native Ammophila breviligulata or invasive Carex kobomugi)- at Island Beach State Park, New Jersey, USA. Dune erosion was assessed using a combination of pre- and post-Sandy aerial image analyses, GPS mapping, and GIS spatial analyses. We analyzed erosion as a function of two new metrics: macroscale 2D surface area changes, and Dune Crest Transgression (DCT), measured at the microscale (1 m-1) and analyzed using a mixed model accounting for spatial autocorrelation. This is the first study to show a species-effect on erosion - although C. kobomugi reduces native diversity and abundance, it may be beneficial for coastal protection, as dunes fronted by C. kobomugi suffered less erosion than those dominated by A. breviligulata.

Title: ***Mapping Flood Risk Using FEMA Regulatory & Non-regulatory Products***

Presenter: ***Daniel Barone, Michael Baker International***

Abstract: Many of the mid-Atlantic Region's coastal communities are vulnerable to coastal and riverine flooding. Over the last several decades, the population and associated development proximal to waterfront areas has increased dramatically. Through the National Flood Insurance Rate Program (NFIP) FEMA assists communities

by providing maps and mapping products that establish baseline floodplain management standards. Since setting baseline standards for structures within Special Flood Hazard Areas (SFHAs) do not inherently convey the level of risk a flooding event poses within a given area, FEMA Risk Map program provides additional GIS-based mapping products for communities in order assist with effective risk communication, hazard mitigation, and setting local floodplain management standards. The purpose of this presentation is to provide an overview of FEMA's regulatory and non-regulatory GIS products and to demonstrate how datasets such as depth & analysis grids, areas of mitigation interest (AOMI), and changes since last firm (CSLF) can be used to educate the public to "Know Your Risk, Know Your Role, and Take Action."

Title: ***Assessing Shorelines to Inform Coastal Restoration***

Presenter: ***Evan Sherer, NJDEP***

Abstract: Natural marsh systems are highly effective at providing resiliency by reducing storm surge and nuisance flooding. In addition they provide a number of other ecosystem services, such as fish and wildlife habitat and improving water quality. These ecosystems are being lost due to human development and natural erosional forces (winds, waves, storms, etc.). Living shorelines are a coastal restoration technique that prevents marsh erosion while maintaining ecosystem services. The goal of this project was to identify highly eroding shorelines in an effort to systematically target where living shorelines are needed. This project also identified what types of shorelines are most sensitive to erosion. Good Luck Point, within New Jersey's Barnegat Bay was chosen as the study area. NOAA's Environmental Sensitivity Index (ESI) was used to identify and map shoreline types. "Developed" shorelines were added to the ESI descriptions to describe natural shorelines adjacent to hardened shorelines. These shorelines Historic shorelines (1932, 1940, 1951, 1961, 1977, 2002 and 2012) were digitized from a georeferenced aerial photography and existing GIS imagery. USGS's Digital Shoreline Analysis System (DSAS) was used to calculate the Linear Regression Rate (LRR) for each shoreline type (excluding hardened shorelines). The data was analyzed in R statistical software. A Kruskal-Wallis test followed by a Dunn's test was performed to examine differences in LRR between shoreline types. The results suggest that most Developed Vegetated Beaches and Vegetated Beaches have eroding shorelines. Vegetated shorelines account for the highest erosion rates (this may be due to Vegetated shorelines accounting for more than two-thirds of the shoreline types). Higher erosion also appears to occur along exposed shorelines. Future studies will incorporate an analysis of wave energy along the shore to determine how much exposure accounts for shoreline loss.

Pictometry/Imagebase GIS

Atlantic-B

10:30 AM – 12:00 PM

Title: ***Empowering Wider GIS use with Oblique Imagery***

Presenter: ***Joe Kochendarfer, Pictometry***

Abstract: Pictometry is a leading provider of geo-referenced aerial oblique and orthogonal image libraries and related software. Pictometry technologies are widely used by GIS, assessing, emergency services, and planning professionals around the country.

Title: ***Derivation of Hydrography from Multi-Resolution LiDAR Data in 3 Physiographic Provinces of the Raritan River Basin, NJ***

Presenter: ***Stephen Cauller/ Kara Watson/ Roger Barlow, USGS***

Abstract: The U.S. Geological Survey, with support from the New Jersey Department of Environmental Protection (NJDEP), has undertaken a study to develop an approach to improve the locational accuracy and precision of the New Jersey stream network using lidar-derived Digital Elevation Models (DEMs). Regional terrestrial lidar collections in northern New Jersey during 2006-08 at quality level 3 and 2014 at quality level 2 yielded bare earth DEMs with cell sizes of 3 meters and 1 meter, respectively. The DEMs were hydro-enforced to remove surface features at stream crossings such as road culverts and bridges, permitting unobstructed flow of water

across the landscape. A bottom hat morphologic filter was applied to the enforced DEM datasets to derive local-scale hydrography in three 12-digit Watershed Boundary Dataset basins in different physiographic provinces in the Raritan River Basin. The approach applies raster processing filters to a DEM following a series of steps described in Cho and others (2011) and Rodriguez (2002). A low pass filter is created from the DEM, followed by a focal maximum, and a minimum of the maximum or closing. The closing is subtracted from the low pass filter creating a bottom hat filter. The process steps include filling sinks and computing flow direction, flow accumulation, and a weighted flow accumulation. The resulting raster is converted to vector, delineating the stream lines. Stream lines derived in watersheds in the Highlands, Piedmont, and Coastal Plain Physiographic Provinces in the Raritan River basin were compared to 1:2,400 scale National Hydrography Dataset (NHD) stream lines. The local-resolution NHD in New Jersey was digitized by the NJDEP from visual inspection of 1:2,400 scale color orthoimagery acquired in 2002. These datasets provided a unique opportunity to compare stream lines derived from lidar data to local-resolution hydrography. Visual inspection of, and spatial comparison statistics for, the derived stream lines and the NHD were used to assess the utility of the processing methods in each physiographic province. Comparison of the stream network derived from the 3-meter DEM indicates that 74 percent of the NHD stream lines are within 10 meters and 67 percent are within 5 meters of the derived streams in the Highlands Physiographic Province. In the Piedmont Physiographic Province, 57 percent of the NHD stream lines are within 10 meters, and 44 percent are within 5 meters. Forty-two percent of the NHD stream lines fall within 10 meters of the derived stream network in the Coastal Plain Physiographic Province, and 30 percent are within 5 meters. Field inspection at 75 verification sites provided ancillary information, such as channel type, width, flow characteristics, and type of control structures, further documenting the accuracy of the approach.

Title: ***3D Modeling Using Oblique Camera Systems and Satellite Imagery***

Presenter: ***Ricardo Passini, BAE Systems***

Abstract: The combination of vertical with oblique image cameras in only one mechanical set is not a new invention. As early as 1900 Scheimflug invented a camera with 8 oblique lenses and one nadirlens. Since then, different setups have appeared in the industry with some success in their application. Lately, the advent of new POS technology as well as the new digital CCD chips being used in the commerciallyavailable mid-size digital cameras has revived this sort of image data acquisition that allows the 3D-reconstruction of the object space from aerial images. Satellite imagery is also used with the same purpose. Applications are countless, nearly all being related to 3D-modeling of engineering objects and the 3D mapping is that objects can be classified and joined in layers that, along with the incorporation of their attributes, will form the basis of a multitude of 3D GIS applications. The present paper is a summary review of the latest acquisition systems, their advantages and disadvantages, complex geo-spatial tasks to be followed for a better review of cases studies and projects that are presented and analyzed from both visual and statistical viewpoints.

Transportation

Atlantic-C

10:30 AM – 12:00 PM

Title: ***Model Inventory of Roadway Elements (MIRE) - RIDOT's Case Study***

Presenter: ***Jillena Yeager, Michael Baker International***

Abstract: The Federal Highway Administration's (FHWA) Model Inventory of Roadways Elements (MIRE) provides a recommended listing and data dictionary of 202 roadway and traffic data elements critical to improving states' safety management programs. The Rhode Island Department of Transportation (RIDOT) adopted MIRE to strengthen the state's current inventory and improve public safety through support of the Highway Safety Improvement Program (HSIP). The MIRE inventory also enables data-driven maintenance, operations, and financial decisions. A comprehensive MIRE dataset was developed that consisted of spatial and tabular data for approximately 6,500 roadway miles, 16,200 intersections, and 445 ramps.

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Title: ***Mapzen Mobility - Open Source Routing***
Presenter: ***David Nesbitt, Mapzen***

Abstract: This talk focuses on Mapzen's Mobility services including multi-modal routing, time distance matrix, route optimization, and isochrones. It will describe the underlying open source software, known as Valhalla, that uses open source data (primarily OpenStreetMap and public sources of transit data) to support worldwide routing, navigation, and analysis applications. The talk will discuss the dynamic costing methods applied to Valhalla. Rather than assigning costs to the routing graph during data import or graph creation, Valhalla performs costing at run time using a wide range of attribution. This allows flexible route generation using the same data. Costing modules exist for automobile, bus, truck, bicycle, pedestrian, and public transit. Each costing method allows for options to differentiate routes - for example bicycle routes have options for bicycle type, willingness to use roads (vs. cycleways and bike lanes), and elevation options to avoid hilly roads. The talk will also address the way Valhalla "tiles" and creates a hierarchical routing graph using OpenStreetMap data. The tiling of routing data allows more efficient memory management and allows easy download of regional data for off-line, disconnected applications. The ability to perform off-line routing (or "get me back to my route" functionality) has important applications for places where there is limited or no internet connectivity. We hope to demonstrate and discuss a mobile SDK for off-line route functionality with Valhalla.

Title: ***Dallas Fort-Worth Airport Automated Pavement Inventory Data Collection***
Presenter: ***Kenneth Contrisciane, Michael Baker International***

Abstract: Dallas Fort-Worth Airport (DFW) contracted to perform a detailed pavement distress inventory of airside and landside areas, which included 7 active runways, 96 active taxiways and 120 centerline miles of DFW maintained roadways. Automated inventory was performed using Pavemetrics Laser Crack Measurement System (LCMS), which allows for the accurate collection of various pavement distresses at normal traffic speeds. A series of applications and scripts were developed to translate and geo-reference granular distress information stored in an XML format to an ESRI geodatabase format. This information was used to support the findings of a manual field inspection that was performed in conjunction with the LCMS inventory on airside pavement areas. Additionally, a new PAVER® pavement management system (PMS) was established for roadway areas. Pavement distress information collected from the LCMS was aggregated and complied into a PAVER® format and import into the PMS to produce DFW's first network-wide baseline pavement condition assessment. This presentation will provide an overview of the data collection methodology, processing steps (including spatially enabling pavement distress information), and data integration with the Paver PMS software.

Hands-On Learning Lab

Don't forget to stop in on the Hands-On Learning Lab in the Atlantic-8 Room. No need to make an appointment!

Boundary, Survey, and GIS

Atlantic-D

10:30 AM – 12:00 PM

Title: ***How to extract a ROW from NJDOT Plans***
Presenter: ***William DiBartolo, Jr. PLS, Hatch Mott McDonald***

Abstract: This session will discuss dot plans and maps have information learn how state and county row are created and how to extract accurate boundary information. Items discussed will include tie sheets, construction plans, general DOT records and survey baseline data.

Title: ***Using NJDOT plans for your GIS***
Presenter: ***William DiBartolo, Jr. PLS, Hatch Mott McDonald***

Abstract: This session will discuss dot plans and maps have information learn how state and county row are created and how to extract accurate boundary information.

Items discussed will include tie sheets, construction plans, general DOT records and survey baseline data.

Title: ***How DOT takings affect your GIS***
Presenter: ***William DiBartolo, Jr. PLS, Hatch Mott McDonald***

Abstract: This session will discuss dot plans and maps have information learn how state and county row are created and how to extract accurate boundary information. Items discussed will include tie sheets, construction plans, general DOT records and survey baseline data.

Utility Mapping/ Asset Management

Atlantic-A

1:30 PM – 3:00 PM

Title: ***Meadowlands Stormwater Utility Acquisition, Management, and MS4 Compliance***
Presenter: ***Dom Elefante, Passaic Valley Sewerage Authority / Michael Stepowyj, Meadowlands Environmental Research Institute***

Abstract: One of the cornerstones of MERI GIS' action plan is the collection and management of utility spatial datasets. Locations of stormwater outalls, catchbasins, manholes, and gravity main lines are acquired through physical asbuilt documents and digital AutoCAD drawings and site plan files. MERI digitizes these utilities and incorporates them into its Enterprise GIS. These datasets are pushed to MERI's Municipal Map and DPW Dashboard web mapping applications for municipal and public access. The public can use these web maps to view the location and attribute information for stormwater utility spatial data within MERI's database. The mapping of utility features is an important resource to in-District towns for stormwater pollution prevention and adherence to the main requirements of the Municipal Separate Storm Sewer System (MS4) program. MERI has presented its work in mapping these stormwater assets as part of NJDEP's roll-out to communities, specifically to the Meadowlands towns, in making them aware of the preliminary Draft Renewal of the Tier A MS4 NJDEP Permit. The Tier A MS4 NJDEP Permit allows for the discharge of stormwater from MS4s owned or operated by Tier A towns in the State. The conditions of this permit were last renewed in 2009, expired on February 28, 2014, and continue in force pending completion of the renewal process (NJDEP).

Title: ***Levels of Geospatial Data Accuracy and Resolution for Efficient Asset Management***
Presenter: ***Laramie Potts/ Joseph Romano, New Jersey Institute of Technology***

Abstract: Asset mapping is a one of the first steps in a strategic approach toward optimal allocation of resources for the management, operations, maintenance, and preservation of civil infrastructure assets. The concept of asset management combines geospatial mapping, engineering design, and economic principles with sound business practices to support decision making at the strategic, network, and project levels. Asset management activities include the analysis of assets over time, in particular for performance assessment and forecasting purposes and a need to communicate resource requirements within the framework of what agencies plan to do and what they have accomplished. As such, access to a spatially enabled historical information resource is needed. A Geographical Information System (GIS) provides the requisite capabilities for decision making support using geospatial data for asset modeling and visualization. Asset management-related data have spatio-temporal attributes as snapshots to depict asset status at a given time. Data needs for these types of decisions are project specific and require detailed inventory, condition, and performance data. However, the specification on the level of accuracy and spatial resolution of data collection are still largely undefined for the Architectural, Engineering, Construction and Owner (AECO) industry. Hence, unresolved mensuration modalities of existing conditions for buildings and other civil infrastructure assets has rendered as-built condition documentation unclear. What is meant by accuracy? Is accuracy relative or absolute? Is accuracy related to intent? What is data/model resolution? What resolution is relevant to the various levels of decision making? These concerns, when left undefined, can create problems in as-built deliverables. This presentation addresses these questions and describes effective pathways to analyze, model, and display information that are invaluable in complex asset management decision making.

Planning

Atlantic-B

1:30 PM – 3:00 PM

Title: ***NJ Industrial Facilities: How Location is only One Component Contributing to Potential Vulnerabilities of the Next Storm***

Presenter: ***Jennifer Whytlaw, Rutgers University***

Abstract: Superstorm Sandy has drawn greater attention to risks and vulnerabilities due to a changing climate in New Jersey. Much of this attention has focused on critical infrastructure (transportation, utilities), coastal communities, and natural resource impacts. Considerably less attention has been spent on impacts to industrial facilities that use and manufacture hazardous materials and the risks posed to these operations as a result of a changing climate as well as their proximity to populations that are especially vulnerable to climate change. In a project in partnership with the U.S. Environmental Protection Agency, a team of researchers at the Bloustein School of Planning and Public Policy at Rutgers University sought to enhance and expand the current geospatial and mapping tools that are under development at Rutgers to include identifying industrial facilities that are in areas of high vulnerability to climate change impacts (storm surge, current and projected sea level rise, flooding, etc.) as well as to overlay the locations of industrial facilities in proximity to socially vulnerable populations. The project incorporated data from federal and state databases to create a dynamic database that can be used by planning and emergency management professionals to examine questions such as 1) What is exposed? (based on a series of flood hazard layers) as well as 2) What is vulnerable? (based on industries, chemical types, and chemical concentrations stored onsite).

Title: ***Enhancing Architectural Survey: A Home-Brew / Street-View Mashup***

Presenter: ***Kinney Clark, NJDEP***

In the wake of Superstorm Sandy in 2012, the need for rapid architectural survey assessment and multi-agency coordination became vital to streamlining recovery efforts through the historic preservation review process. After a multi-year cooperative survey with FEMA, which was enhanced with GPS and geo-referenced digital photography, the NJ Historic Preservation Office (NJHPO) began looking for new survey techniques to build upon the FEMA experience. Having played with GoPro cameras for capturing architectural still images, staff wanted to evaluate how wide angle video could be leveraged for rapid architectural survey. Simultaneously, we determined that Cumberland County, among the most rural of New Jersey's 21 counties, was not well represented in the statewide architectural inventory. Due to the likely impacts of future sea level rise and storm events, HPO focused on the coastal region of the county along the Delaware Bay, which was targeted to an area within ½ mile of the Sandy storm surge, using a target property list based on statewide tax data.

Title: ***Geographic Decision Making***

Presenter: ***Ronen Rybowski, Behar Mapping, LLC***

Abstract: Decision making is a process in which a decision maker is choosing between alternatives based on preferences. The amount of alternatives can vary, however the decision making process requires, by definition, more than one alternative. Preferences can be objective or subjective, measurable or immeasurable, rational or irrational, or a combination of all of the above. Geographic decision making is a decision making process in which the alternatives and/or the preferences have a geographical dimension. In this case, the geographical dimensions of all elements involved in the process will be taken into consideration.

County GIS

Atlantic-C

1:30 PM – 3:00 PM

Title: ***Union County's Enterprise GIS for Asset Management & Crisis Mitigation***

Presenter: ***Matt Mathan, Union County Bureau of GIS***

Abstract: Presenting union county GIS, asset management system and crisis mitigation plan. Using few hundred GIS layers we revolutionized our operation while eliminating software license cost and drastically reducing operational cost. Automated, Megan's law notification system, initiated sex offender tracking, published board of election layers through our website and using android and iPhone app, copyrighted and published official county map, digitized and published our drug free zone maps through a secured website, that eliminated paper copy

and constant updates (first County in the State), digitized and inspected state mandated county "out falls", digitized over 200,000 asset and tracking the cost of every asset using Cartegraph. Implemented an online crisis mitigation plan to support disaster situations like an "active shooter." These mitigation plans are combined with 4 different tabs in our GIS website. 1. GIS Layers 2. Oblique Image from Pictometry 3. Google Street View with our layers on top (Modified Google's API). We are the first county prepared to deal with the unthinkable. Local police will activate the system and all agencies that will mitigate the situation can follow the plan using cell phones or tablets. Every miniscule detail of the plan is digitized and color coded with easy steps to follow. Having an online system/ plan will save time, which saves lives.

Title: ***Mercer County Uses of 2009 LiDAR***
Presenter: ***Matthew Lawson / Daniel Lorano, Mercer County***

Abstract: LiDAR collection at USGS Quality Level 2 is now complete across the state of New Jersey, and in the DVRPC region counties benefit from LiDAR flown alongside aerial orthophotos. Mercer County had the benefit of such contemporaneous flights in 2009. This presentation describes products from Mercer's 2009 flights, mostly derived and displayed in ESRI's ArcMap, as well as displays from sample analysis projects.

Title: ***GIS and Interoperability - A Case for RESTful Web APIs***
Presenter: ***Steve Rice, Morris County***

Abstract: Spatially enabled data often has utility across organizations and the public, but not all are interested in the data's spatial relationships. There are unreached potential consumers of GIS data, who's interests lies in the business end of the data, but who cannot leverage the information outside of GIS-centric applications. The internet, RESTful APIs, open data formats, and open source map services such as Open Layers, Google Maps and Bing Maps are some technologies that the GIS community must embrace to more effectively reach non-traditional audiences. GIS Specialists should not be the only ones building applications based on data that contain "SHAPE" columns. Embracing REST in GIS will open doors to the data and allow skilled developers in other organizations to design their own custom solutions, yet maintain centralized GIS data goals. This discussion presents some advantages of open data and RESTful web APIs and some technologies that can be leveraged to implement such strategies.

Boundary, Survey, and GIS

Atlantic-D

1:30 PM – 3:00 PM

Title: ***Why Railroads are so hard to map***
Presenter: ***Wendy Lathrop, PLS, Cadastral Consulting, LLC***

Abstract: Railroad corridors may show up on tax maps in places where there seems to be no physical railroad presence. In other places the corridors are depicted with information that is difficult to understand or is outdated. We will discuss how railroads acquired rights in land and how that affects what records we may or may not find. We will also see how railroad rights can be extinguished, what records may or may not exist relating to this state of affairs, and why current tax maps may not be so current. Items covered will include: How railroads have acquired rights in land to build corridors, and what those rights may be (fee, qualified fee with reversionary rights, easements, leasehold); How railroad corridors cease to be railroad corridors; The presence (and absence) of railroad records – for location, ownership, configuration of railroad interests; The corridor Class shown on NJ tax maps (and the difference between "Class" and "Classification").

Title: ***Regulated Wetlands as legal boundaries (40 minutes)***
Presenter: ***John Beattie, PLS, CFM, Borbas Surveying and Mapping, LLC***

Abstract: This session will discuss how wetland boundaries are created and their legal ramifications. The new NJDEP GIS Digital Wetlands Mapping submission requirements will be reviewed.

Cadastral Management

Atlantic-A

3:30 PM – 5:00 PM

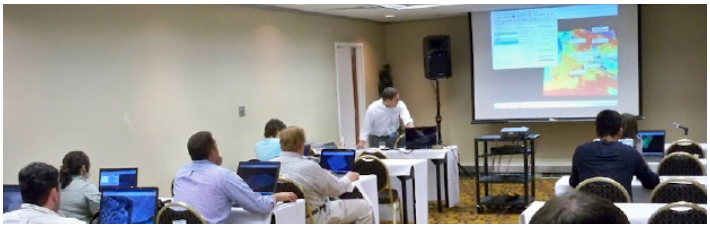
Title: ***Enterprise Search & Discovery Case Study: Mercer County Poperty Information Portal***
Presenter: ***David Kunz, Civil Solutions***

Like many organizations, Mercer County, NJ maintains property records in a variety of formats in a variety of enterprise databases. To enhance public access and interdepartmental coordination, the County has created

a Property Information Portal (PIP) that allows staff and the public securely to query, explore, access, and retrieve records from these disparate business systems. A single portal allows both text-based and map-based searches across departmental systems while data stewards within departments continue to use established work processes to enter and maintain records.

Title: ***Modernize your Land Administrative System***
Presenter: ***Jason Sealy, Esri***
Abstract: Take the pain out of land records data and dated workflows with Esri's location platform and Web GIS. Easily manage, maintain, and publish your data with a suite of standardized tools that preserve the integrity of your government's property information. Whether you need to reduce property tax appeals, defend commercial valuations, or simply update owner information, Esri's consumer off-the-shelf (COTS) tools, technology and resources provide a straightforward system for your land records data.

Title: ***CAD to GIS Parcels to CAD - A Glimpse into our Production Tools & Life Cycle***
Presenter: ***Richard Rehmann, Civil Solutions***
Abstract: Civil Solutions has a long history of cadastral data development and management. Through the years, competitive market pressures and enhancements to underlying technologies have led to significant strides in evolving from "creating a Picasso" to implementing a "production line". Benefits beyond simply adding volume such as standardization, broader quality control, automatic reporting and error tracking have emerged after the development of automated and semi-automated tools specific to the development of parcels from computer-aided drafting files. Further, pushing quality control information back to the original CAD source, provides immediate and important information to the person directly managing the data, decreasing response time and associated costs. This presentation presents the tools we use, providing insights on their development and underlying technology integration.



Emerging Technology/Trends

Atlantic-B
3:30 PM – 5:00 PM

Title: ***Maximizing the Value of your ESRI Story Map Shortlist: Workflow Approach, Deployment Tips, and Strategies for an Enhanced Implementation***
Presenter: ***Calen Daugherty, Civil Solutions***
Abstract: ESRI Story Maps are a versatile way to communicate, educate, and tell a story. This presentation examines techniques for planning and execution to better ensure a successful Story Map deployment, and highlights a particular case study of a custom deployment. Technical items and strategies pertaining to the general uses and requirements for Story Maps are reviewed, enabling users to better understand what powers and configures their Story Map. Helpful resources within GitHub and ESRI documentation are highlighted in order to allow users to avoid potential pitfalls in Story Map deployment. The presentation reviews the components of the Story Map Shortlist application in order to better understand important considerations when performing a customized deployment. Focused on is the implementation of the Sussex County Four Seasons of Agriculture Story Map. This Story Map Shortlist was customized and deployed to work with ESRI Maps for Office, which can remove hurdles, reduce maintenance time, and empower non-GIS personnel to maintain and augment Story Maps. This example should help users think about how they can integrate data, web maps, and Story Map applications in an efficient manner that maximizes value.

Title: ***ArcGIS - Beyond Open Data***
Presenter: ***Seth Van Aken, Esri***
Abstract: Open transparent government has been a top initiative for many government organizations in recent years. Many have made their data available fulfilling the mandate of openness and transparency. While access to data is useful many governments are beginning to look for ways to leverage this data to improve services and the quality of life for their constituents. To facilitate governments' ability to meet their mandates and provide a civic engagement platform, Esri developed the ArcGIS Open Data application which allows you to share your live authoritative data. Governments are using this technology to provide access not only to data but to

provide information products that provide insight in to this data, highlight administrative priorities and provide resources for the development community. This approach is helping increase transparency, foster collaboration and increase productivity. Please join us to learn how you can take leverage these capabilities for your community.

Title: ***The Budding GDB - A Data Model Design for Report Maps***
Presenter: ***Seth Docherty, NJDEP - Bureau of Tidelands***

Abstract: Developing a data structure for a program and efficiently creating figures for reports consist of two entirely different styles in managing GIS data. The complexity increases by a magnitude when a program branches off into multiple projects and additional users comes into the picture to edit GIS data. Each project will have different ways of symbolizing data or showing certain features which makes the figure creation a nightmare. The data model I will be presenting is an object oriented design set up for one-way replication of non-SDE geodatabases, to keep to keep a child geodatabase synced with a parent geodatabase. I will illustrate how to create a data structure around the creation of a map and using ETL processes developed in Python to keep parent/child geodatabases synced.

Cadastral Management

Atlantic-D

3:30 PM – 5:00 PM

Title: ***Anatomy of a Boundary: How a parcel and parcel lines differs from a property and boundaries***
Title: ***Anatomy of a Boundary: How to retrace a deed in your GIS***
Title: ***Anatomy of a Boundary: How easements get in deeds and how to tell if they run with the land***
Presenter: ***Peter Borbas, PLS, Borbas Surveying & Mapping / Dawn McCall, GISP, Princeton University***

Abstract: These sessions will discuss what is a deed, how to intersperse a deed, how to read a deed, elements of a deed. Senior and junior rights will be discussed; understanding the legality of the priority of calls. What to do with conflicting deeds?

Esri Hands-On Learning Lab

Atlantic-8

10:30 AM – 5:00 PM

Friday Overview

8:00 AM – 11:00 AM	*Registration*
8:00 AM – 9:00 AM	*Breakfast*
9:00 AM – 12:30 PM	*Technical Sessions*
10:30 AM – 11:00 AM	*Break*
12:30 PM – 1:30PM	*Lunch*
2:00 PM – 4:00PM	*NJ GeoSpatial Forum Quarterly Meeting (Open to Public)*
8:00 AM – 2:00PM	*Exhibit Hall Hours*

Data Collection/Integration

Atlantic-A

9:00 AM – 10:30 AM

Title: ***A Statewide DOT Mobile LiDAR Sign Inventory Program***
Presenter: ***Dave Wagner, Greenman-Pedersen, Inc.***

Abstract: Greenman-Pedersen, Inc. (GPI) is conducting a statewide sign inventory, retro reflectivity analysis, and management program for the Massachusetts DOT. The project will consist of approximately 220,000 traffic signs along approximately 14,000 lane miles of State Roadways. Field data is being collected by vehicles equipped with high-resolution cameras and high precision LiDAR units, and signs are being extracted by technicians utilizing a GPI-created software.

Title: ***Geo-enhanced Field Collections & Inspections for an 80 Year-Old Firm***
Presenter: ***Richard Rehmann, Civil Solutions***

Abstract: Civil Solutions has a long history of cadastral data development and management. Through the years, competitive market pressures and enhancements to underlying technologies have led to significant strides in evolving from "creating a Picasso" to implementing a "production line". Benefits beyond simply adding volume such as standardization, broader quality control, automatic reporting and error tracking have emerged after the development of automated and semi-

automated tools specific to the development of parcels from computer-aided drafting files. Further, pushing quality control information back to the original CAD source, provides immediate and important information to the person directly managing the data, decreasing response time and associated costs. This presentation presents the tools we use, providing insights on their development and underlying technology integration.

Title: ***ArcGIS - Mobile Solution Offerings***
Presenter: ***Seth Van Aken, Esri***

Abstract: Extending GIS into the field is one of the fastest growing sectors in the industry driven largely by the advancements and availability of smart phones and tablet devices. Esri has been busy developing new mobile solutions to help streamline field data collection and the field workforce activities. Our approach has focused on creating configurable applications that can be extended as needed to meet your field workflow needs. By employing this approach organizations are able to rapidly deploy these solutions at low cost and realize a return on investment quickly. Please join use as we present and demonstrate the following mobile solution offerings; Collector, Survey 123, Navigator, Workforce Manager and AppStudio for ArcGIS.

Boundary, Survey, and GIS

Atlantic-B
9:00 AM – 10:30 AM

Title: ***Tidal or Title, what is the difference and how does it affect your GIS Part 1. Understanding Public Trust and how it relates to water boundaries (Part 1 - 75 minute session)***
Presenter: ***Lew Conley Jr., PLS, Van Note-Harvey Associates***

Abstract: Understanding Public Trust and how it relates to water boundaries. We will discuss history of Public Trust Doctrine. Does it matter if your tide is diurnal or semidiurnal, you might want to attend to find out. Have you ever wondered if your boundary is Mean High Water or Mean High High Water or High Tide Line; attend to find out why it matters?

Environment

Atlantic-C
9:00 AM – 10:30 AM

Title: ***Evaluating Urban Wetland Restoration & Selecting Candidates for Potential Restoration: Habitat Restoration & Function Perspective***
Presenter: ***Ildiko Pechmann, Meadowlands Environmental Research Institute***

Abstract: Restoration of urban intertidal wetlands typically involves the return of tidal flow to diked or gated land, the removal of dredge spoils to lower elevations, and/or the replacement of invasive plant species (e.g., Phragmites australis) with preferred marsh plants. Restoration or enhancement of preferred vegetation and hydrology is expected to net an overall improvement in habitat quality for native wetland habitat.

Title: ***New Jersey Habitat Change Analysis Project (HCAP) Restoration & Function Perspective***
Presenter: ***Patrick Woerner, NJDEP - Division of Fish and Wildlife / John Reiser, Rowan University***

Abstract: Wildlife habitat change trend information is a necessary and fundamental component for successful assessment and management of wildlife species. Habitat loss and fragmentation continue to be the two most serious threats to wildlife populations. To effectively protect endangered and threatened species populations and to evaluate protection and management efforts, it is important for wildlife agencies to actively identify and monitor habitat for each listed species. New Jersey's Division of Fish and Wildlife adopted a habitat change analysis approach to track wildlife habitat transition and fragmentation trends over time. The programmatic GIS analysis approach extracts potential habitat from available Land Use/Land Cover (LULC) data based on species habitat associations and range extents. The analysis spans four time periods between 1986 and 2012. Analysis outputs provide readily available, up-to-date, multi-level, species-specific habitat change information to

support agency initiatives. Resulting maps and data serve as a guide to help prioritize work for particular species and their habitats and provide baseline information for the development of species status assessments and recovery plans. Outputs also provide a basis for additional analyses such as evaluating habitat change in regulated vs. unregulated areas, evaluating habitat conservation planning efforts, and other land-use planning, land management and preservation efforts.

Title: ***Bathymetric Data Collection in a Tidal Wetland Restoration & Function Perspective***

Presenter: ***Ildiko Pechmann, Meadowlands Environmental Research Institute***

Abstract: Bathymetric data was needed in order to study tidal waters in the New Jersey Meadowlands. Consumer grade sonar equipment was combined with RTK GPS accuracy in order to survey shallow tidal creeks in several areas in the estuary. From the data rasters, cross sections and profiles were created to calculate volume, discharge and other hydrologic metrics. The methods used to collect and create the data proved to be valuable and provided reasonable accuracy and quality. The techniques and methods used are beneficial to any organization looking to collect bathymetric data in a tidal wetland or any organization looking for reasonable quality bathymetric data but with limited resources.

GIS/Surveying - LiDAR/Raster Mapping

Atlantic-D

9:00 AM – 10:30 AM

Title: ***Mobile Mapping Technologies for Civil Infrastructure Modeling and GIS Restoration & Function Perspective***

Presenter: ***Laramie Potts/ Jacob Elliot/ John Miima/Ronen Rybowski, New Jersey Institute of Technology***

Abstract: Mobile mapping is currently one of the rapidly emerging technologies used to access and deliver Big (geo) data in the geospatial industry. The collection of highly precise 3D point cloud data by laser scanning systems from moving platforms involves an integration of navigation, imaging, and positioning software solutions. This presentation introduces a discussion on the field operations and performances of state-of-the-art mobile terrestrial LiDAR scanning technologies that collect high quality data for modeling civil infrastructure assets. In this work, we present the capability, capacity, and sensitivities of the LiDAR scanner, the inertial measuring unit, and the positioning capabilities for various settings including urban canyons. We also discuss IT system architecture requirements to service mobile mapping system for Big(geo)data acquisitions. Our review suggests that mobile mapping systems can be divided into two categories – general mapping and high resolution surveying - depending on project requirements such as purpose, accuracy, range, and resolution. We also consider future trends in mobile mapping technologies for GIS applications.

Title: ***3D High Density Laser Scanning for Asset Information Management***

Presenter: ***Laramie Potts/ El Mehdi Benosmane/ James Schack, New Jersey Institute of Technology***

Abstract: High spatial resolution point-cloud data from a terrestrial laser scanner (TLS) can provide minute geospatial details about civil structures. Laser-based surveying and mapping technologies provide all types of geometric tolerances and spatial resolution that facilitates a much easier way of accessing all aspects of geospatial dimensions, location, and connectivity of civil infrastructure assets of an organization. We developed a 3D walk-through computer-aided drafting (CAD) model of a small building. We establish an asset information management system from maintenance records that were accumulated over several decades. Decision making is enhanced through analysis of key indices that describe asset component performances. Hence, we develop key performance indicators (KPIs) that quantify critical success factors for the building's maintenance program. We demonstrate the interlinkage between the CAD model and the asset database management system. We demonstrate the use of KPI's in the support decision system in regards to controlling management/maintenance issues. We also describe the field procedures for acquiring mapping data, the computational algorithms for conversion from point-cloud to CAD model, and the general framework for a CAD-DBMS decision support system.

Title: ***Integration of 3D Documentation into GIS Platforms***

Presenter: ***Robert Ashley/ Christopher Zmijewski, PLS, HAA Global***

Abstract: Advancements in 3D Documentation technology are allowing for the integration of data

captured in the field to seamlessly integrate into multiple software platforms like GIS. The recent relaxation of UAV "drone" flight requirements allow for more use of 3D Laser Scanning and Mobile Lidar technology. This sessions will discuss the integration of various 3D Documentation technologies and the integration into GIS platforms. Case studies will demonstrate how the integration of these technologies are invaluable tools for private and public entities such as: Universities, Medical Facilities, Large Property Owners and Transportation companies. With the continues advancements in 3D Documentation and the use of the technology becoming more of a norm in documenting and tracking assets, this is an interesting topic not to be missed.

Transportation/GIS

Atlantic-A

11:00 AM – 12:30 PM

Title: ***Analysis of Adaptive Traffic Control System in Urban Areas***

Presenter: ***Nadereh Mioni, New Jersey Sports & Exposition***

Abstract: Signal timing has a significant impact on an intersection operational performance. Conventional signal systems leverage pre-programmed/ pre-timed signal timing schedules. These systems are easy to implement and maintain; however, they do not consider irregular fluctuation and major interruptions in traffic flow as a result of accidents, special events, or construction works. Actuated traffic control systems were initiated to improve shortcomings of pre-timed signal systems and alleviate congestion and delay in roadway networks. Adaptive Traffic Control System (ATCS) which utilizes the actuated concept in the network level adjusts signal timings based on real time traffic conditions, demands, and system capacity.

Title: ***Morris County Automated Pavement Inventory***

Presenter: ***Justin Furch, Michael Baker International***

Abstract: The County of Morris, NJ contracted to perform detailed pavement distress inventory on all county roadways and implement the Paver Pavement Management System (PMS). A fully automated data collection process was implemented to quickly and consistently identify, quantify, and rate severity for five major pavement distress types. Automated inventory was performed using Pavemetrics Laser Crack Measurement System (LCMS), which allows for the accurate collection of various pavement distresses at normal traffic speeds. A series of applications and scripts were developed to translate the raw LCMS data into the Paver format, which now can be complete in a mostly automated process. Pavement distresses were extracted and loaded into the Paver PMS software and implemented on-site at Morris County to support their pavement management program and maintenance needs. This presentation will provide an overview of the data collection methodology, processing steps, and data integration with the Paver PMS software.

Boundary, Survey, and GIS

Atlantic-B

11:00 AM – 12:30 PM

Title: ***Tidal or Title: Water Boundaries and the limit of sovereign ownership (Part 2- 75 minute session)***

Presenter: ***Lew Conley Jr., PLS, Van Note-Harvey Associates***

Abstract: While the oldest and most visible boundaries are probably the most misunderstood and bitterly contested. Whether you are in the New York Harbor, Delaware bay, Delaware River, Atlantic Ocean or a navigable river you need to come to the session. You will finally find out if lady liberty is really a Jersey Girl?

Public Safety/ Emergency Management

Atlantic-B

11:00 AM – 12:30 PM

Title: ***Addressing Resources for your Enterprise: An In-Depth Look at the NJ Address Points Inventory***

Presenter: ***Chris Klaube, NJ Office of Information Technology***

Abstract: In an effort to improve geocoding accuracy across the state and support the development of Next

Generation 9-1-1 systems, the NJ Office of Information Technology, in partnership with local data stewards, has developed a statewide address point data model that will integrate seamlessly and take advantage of existing data development in the NJ Road Centerlines data model.

Title: ***Using GIS in Public Health***
Presenter: ***David Torraca, Julie Kottamalla, Susan Carlson, Loudoun County, VA***

Abstract: Loudoun County's Geographic Information System is now in its 30th year of operation. The County's Office of Mapping and Geographic Information manages the GIS and supports multiple departments including the County's Health Department using GIS. Well locations and septic systems were one of the first GIS layers to be actively maintained in GIS, providing staff and the public with accurate data locations and allowing for data analysis. This presentation will describe many of these uses including, public access to these data, data maintenance, staff and operator use of data services in field work, analysis, and mobile applications that assist in disease abatement including Zika Virus.

Title: ***Remote Sensing Services to Support Incident Management & Homeland Security***
Presenter: ***Andy Pickford, BAE Systems***

Abstract: This presentation will provide a discussion about the Department of Homeland Security's (DHS) IDIQ contract and what BAE Systems has to offer under this contract. BAE Systems has developed a program to manage geospatial content for the Department of Homeland Security. Incident management will be discussed and what actions are put into place to both successfully acquire imagery and deliver data in a very timely and efficient manner to the DHS.

Planning/Census

Atlantic-D
11:00 AM – 12:30 PM

Title: ***2020 Census Geographic Partnership Programs***
Presenter: ***William Adams, US Census Bureau***

Abstract: The 2020 Census is fast approaching, and the Census Bureau is again offering state and local governments the opportunity to assist in updating and correcting the Master Address File to help ensure as accurate a count as possible. Local and state entities will also be able to provide input to the TIGER geographic database; ensuring that legal and statistical boundaries are correct and reflect the needs of demographers, urban and regional planners, and government officials. This is to enhance our mission of counting every person, one time, and in the correct location.

Title: ***Drive Innovation in State & Local Government***
Presenter: ***Jason Sealy, Esri***

Abstract: Around the world, state and local governments alike use GIS to improve decision making, service delivery, and citizen engagement. With the majority of government data being location-based, equipping your organization with the latest in GIS technology provides the tools needed to make your community smarter. Discover how to identify the consumer off-the-shelf (COTS) web map or application that fits your organization's ever-changing business needs.

Title: ***GeoDesign: A New Approach to Community Making and Mapping?***
Presenter: ***David Tolluch, Rutgers University***

Abstract: The continued evolution of geospatial tools is having a direct impact on the worlds of planning and design. New sources of data from volunteered geographic information and ubiquitous imagery and sensors are causing the design world to re-examine the ways that GIS be used as a design tool to shape our communities. Grappling with this multidisciplinary challenge is a new group of users exploring this area as the field of geodesign. Embracing major challenges from climate change and green infrastructure to healthy communities and walkable cities, designers and planners are working with geographers and computer scientists to integrate new information and tools into the design process and planning decisions.

Esri Hands-On Learning Lab

Atlantic-8
9:00 AM – 12:30 PM

New Jersey Geospatial Forum Meeting

Horizon
2:00 PM – 4:00 PM
Open to Public

Exhibitor Directory

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Thank You!

We would like to thank all those who contributed their time and energy to making MAC URISA 2016 a success. We invite you to take an active role in our organization by volunteering in our educational programs throughout the year.

Contact a board member to find out more!

Ballroom - Exhibitor Location Reference

Company	Booth Location
Civil Solutions, a division of ARH	**1 ***
Esri	**2 ***
BAE Systems	3
Waypoint Technology Group	4
Temple University	**5 ***
JMT Technology Group	6
NJIT	7
Remington & Vernick Engineers	8
NJSPLS	9
Latitude Geographics	10
Michael Baker International, Inc	**11 ***
Applied Imagery	12
GPI	13
Keystone Precision Instruments	14
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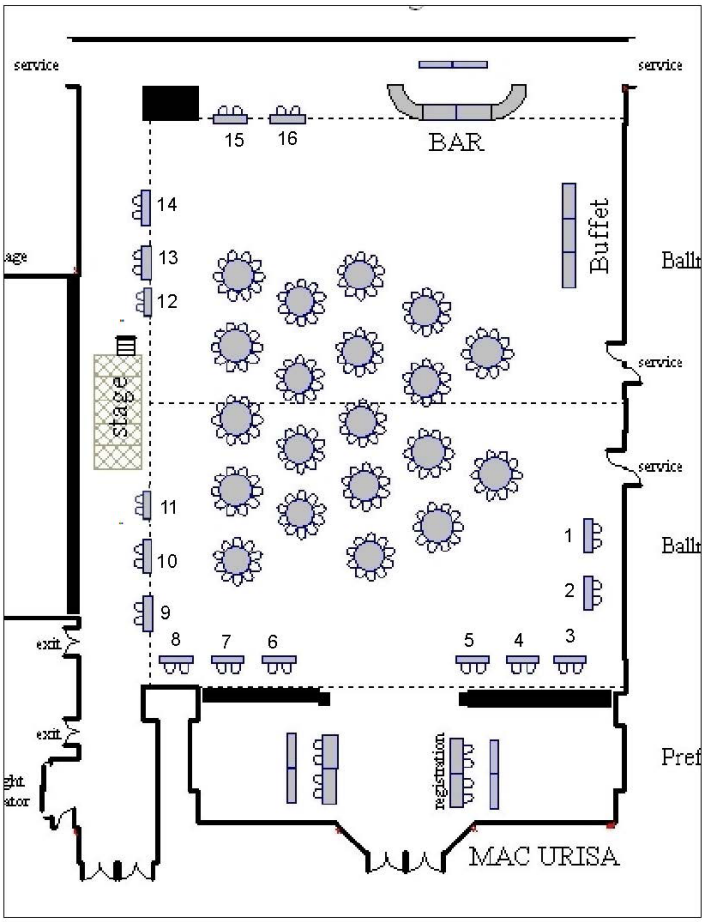
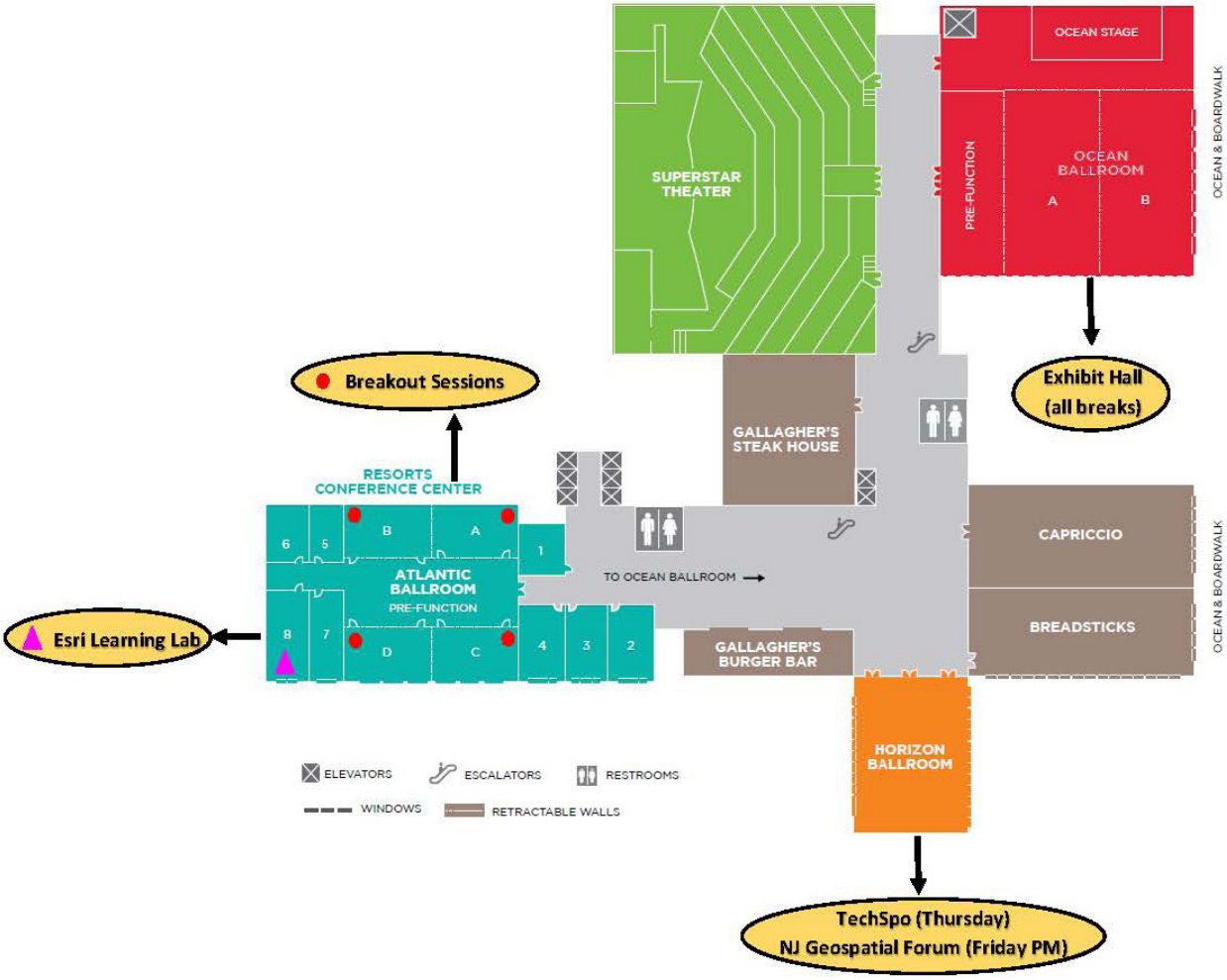
Department of Geography and Urban Studies

Ballroom Floor Setup



RESORTS CONFERENCE LEVEL



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Check www.macurisa.org for information on upcoming events