



AGIC

GEOSPATIAL EDUCATION & TRAINING
SYMPOSIUM

September 3-5, 2014 • Prescott Resort and Conference Center • Prescott, Arizona

AGIC would like to thank Ashley Footer for the content and design updates to the 2014 program.

AGIC would also like to thank A&E Reprographics for printing and binding the programs.



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WELCOME

Welcome to the AGIC 2014 Geospatial Education and Training Symposium.

On behalf of the Arizona Geographic Information Council (AGIC), welcome to the 2014 AGIC Education and Training Symposium. With sessions and tracks focused on topics affecting Arizona governments, businesses, and communities, the AGIC Education and Training Symposium offers a unique opportunity for Arizona's GIS professionals to educate, learn, collaborate, and network with other GIS professionals from around our great state.

If anything can define AGIC's mission for the coordination of the development and management of geographic information, it can be summed up as AZGEO. The Arizona Geospatial Clearinghouse (AZGEO) has been highly successful in the first year of production. With 1159 screened and approved users, 272 different agencies and organizations, 161 contributed services and datasets, and 20 organized and secure user-groups, AZGEO is assisting Arizona's GIS communities with a one-stop shop to share data and locate resources while still providing a secure environment. Is there a map, you ask? Of course! The map viewer allows the user to view available datasets and to extract features and data.

In addition to AZGEO, there is continued coordination of federal, state, tribal, and local resources for the development of the All Public Roads Network and the development of the statewide model for road and address point networks. Work on these two major projects has been provided through the support of the volunteers of the AGIC Data Committee and 9-1-1 Working Group, the State Cartographer's Office, the Arizona 9-1-1 Program, and local 9-1-1 authorities. Financial support for these projects was provided by the Arizona Broadband Mapping Project and the Arizona Department of Transportation. These initiatives are just a few samples of collaborative efforts in Arizona. To learn more about these projects, a session is being presented within the E9-1-1 track.

In my short time with AGIC, I have been impressed by the many dedicated people I have been lucky enough to encounter through the organization. The willingness to extend assistance, to share, and to come together to address the needs of others has been humbling. This is especially true of the many committee and working group members who dedicate their time in support of AGIC and the geospatial community. Thank you for all the hard work that you do.

Thank You for attending this year's event.

Sincerely,



Sandra Gilstad
AGIC Chairperson, 2014



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Data Committee Co-Chair



HANDS-ON WORKSHOPS

Back by popular demand, hands-on workshops are once again available for Symposium attendees! With a wide range of topics, the workshops offer a rich learning experience in a computer lab setting. Workshop instructors are subject matter experts and offer unique insight from their professional work experience. The list of this year's workshops can be found on the right, with further details about each workshop located on subsequent pages as indicated.

The hands-on workshops provide a hands-on learning environment in a computer lab. Because space is limited to the number of available computers in the lab, attendees need to be registered for the specific workshop they wish to attend.

If you did not pre-register for a workshop but would like to attend one, please check with the AGIC volunteer in the workshop room (the Arizona Room) to see if there are any remaining spots. If no spots are available, you may be placed on a waiting list. Any spaces left unfilled 5 minutes after the start of the session will be given to those on the waiting list on a first-come-first-served basis.

AGIC 2014 WORKSHOPS

The following hands-on workshops are being offered at the 2014 AGIC Symposium:

A Review of the 2-day ArcGIS 10 Class

Arizona Room: Thursday 8:30 - 12:00

See page 15 for details

Doing GIS with PostGres SQL

Arizona Room: Thursday 1:30 - 3:00

See page 18 for details

Story Maps: Configuring the Map Tour App

Arizona Room: Thursday 3:30 - 5:00

See page 20 for details

Introduction to the Geodatabase

Arizona Room: Friday 8:30 - 12:00

See page 23 for details

Esri Hands-On Learning Labs

Copper Basin Room: Multiple Sessions Daily

See page 7 for details



ESRI HANDS-ON LEARNING LAB

Explore Esri software offerings and get free training at the Hands-on Learning Lab. The Learning Lab offers self-paced training sessions (approximately 45 minutes each) featuring a recorded demo and an interactive exercise.

Esri instructors are available to answer your questions. Labs are 90 minutes long and space is limited to 20 attendees. Any spaces unfilled 5 minutes after the start of the session will be given to those on the waiting list on a first-come-first-served basis.

If you did not register online for one of the 90 minute time slots prior to arriving at the conference, check with the Esri staff in the Copper Basin Room for available time slots. A full list of available lessons is located on the right side of the page.

ESRI 10.2 LESSONS

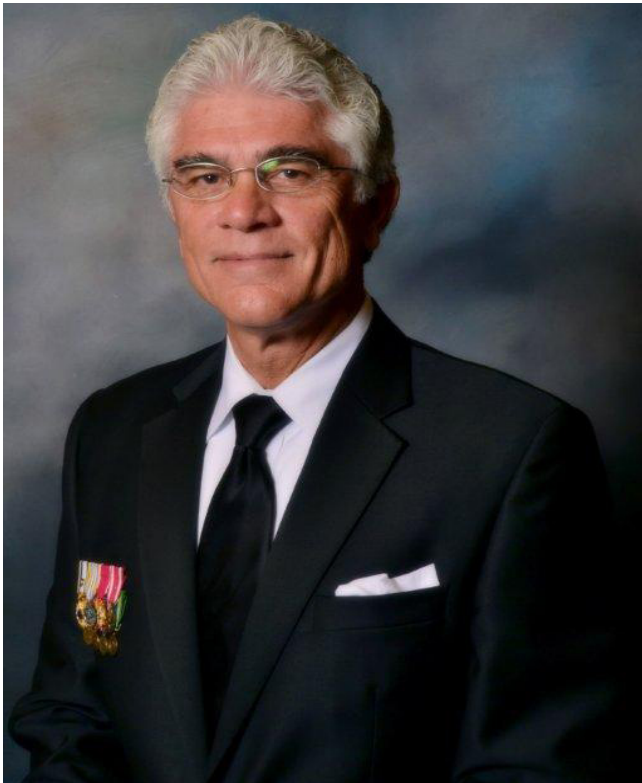
1. Introduction to ArcGIS for Desktop
2. Creating a map in ArcGIS for Desktop
3. Basics of the geodatabase model
4. Editing with ArcGIS for Desktop
5. Introduction to ArcGIS Pro
6. Introduction to versioned editing
7. Editing and maintaining parcel data in a Parcel Fabric
8. Geocoding with ArcGIS for Desktop
9. Introduction to ArcGIS Network Analyst
10. Introduction to linear referencing
11. Using geometric networks for utilities applications
12. Introduction to ArcGIS Spatial Analyst
13. Introduction to ArcGIS for Server
14. Designing web applications using ArcGIS for Server
15. Sharing maps and tools using ArcGIS Online
16. Sharing data with the Community Maps Program
17. Spatial statistics for public health
18. Working with CAD in ArcGIS for Desktop
19. Introduction to geoprocessing using Python
20. What's new in ArcGIS for Desktop 10 and 10.1

Sample questions for Esri Certification:

1. Sample Questions for ArcGIS Desktop Associate
2. Sample Questions for ArcGIS Desktop Professional



KEYNOTE SPEAKER



John F. Regni, Lt General, USAF (retired)

General Regni resides in Litchfield Park, Arizona and is involved in a variety of state and local civic non-profit, public-private organizations and companies. He formed The JFR Group, LLC, and is a strategic planning consultant. He is the Technical Advisor for Defense and National Security, Arizona Commerce Authority. He serves on the Board overseeing the Arizona Laboratories for Defense and Security Research. He is also Director, Aerospace and Defense Initiative, Science Foundation Arizona, and in that capacity published for the Governor and the Arizona Commerce Authority the strategic plan for sustaining and elevating Arizona's already robust economy in defense and national security matters. Additionally, the Governor of Arizona appointed




him to the Southwest Defense Alliance, a six-state regional board involved with and supporting the military bases/posts and their vast test and training ranges in the region; General Regni serves as Chairman.



General Regni also serves on the Marstel-Day Board of Advisors (a conservation, energy and environmental policy company). He also serves on the Board of Directors for Vantage Mobility International, an automobile company that converts certified Toyota, Honda and Chrysler vans into wheelchair accessible vans with specialized equipment, offering mobility for disabled veterans and people with spinal cord injuries. He also serves on the Board of Directors for the DigitalGlobe Foundation. He also is a member of the Colorado State University-Global Advisory Council.

General Regni served 40 years active duty Air Force—four as a cadet at the Air Force Academy and 36 years of commissioned service. His military assignments spanned Personnel, Training, Education and Command positions. His key headquarter staff assignments included Director, Manpower, Personnel and Support, US Pacific Command from 1991-94; Director of Personnel for the Air Mobility Command from 1994-96; Director of Personnel Plans 1996-98 and Director, Personnel Resources 1998-2000 at Headquarters, United States Air Force, the Pentagon. He served as Base Commander, Kunsan Air Base, Republic of Korea from 1990-91, commanded the Second Air Force from 2000-04, commanded the Air University from 2004-05, and culminated his distinguished career as Commander and Superintendent of his alma mater, the United States Air Force Academy from 2005 through 2009. He entered the U. S. Air Force Academy in 1969 days after graduation from Nashua High School, Nashua, N. H. He graduated from the Academy in June 1973 with a Bachelor of Science degree in Biology, and was commissioned a 2nd Lt. He also earned his Master of Science in Systems Management from Saint Mary's University.



WEDNESDAY - AT A GLANCE

	Foyer/Ballroom	Arizona	Copper Basin	Granite Mountain	Chino/Prescott
8:00AM - 4:00PM	Registration				
10:00AM - 12:00PM	AGIC Chairperson's Welcome followed by the Keynote Address				
12:00PM - 1:30PM	Lunch and Presentation				
Track		GIS in Action	Hands on Lab	Web Svcs and Apps	Spatial Accuracy and GIS
1:30PM - 3:00PM		Developing and Using a Good GIS to More Accurately Distribute Tax Revenue <hr/> Using Floating Catchments to Identify Gaps in Health Care Provider Network	 Esri Hands-On Learning Lab	Migrating Esri Flex Viewer Web Applications to Javascript and HTML <hr/> Harnessing Configuration for Web GIS Application Development	An Illustrated Guide to Geodesy for GIS Professionals <hr/> The Four Corners Monument: a Brief History and Why it is Exactly Right
3:00PM - 3:30PM	Break - Exhibits Now Open in the Ballroom				
3:30PM - 5:00PM	Exhibits Open	Configuring Esri State and Local Government Solutions <hr/> Asset and Infrastructure Mapping: New Applications of an Old Science	 Esri Hands-On Learning Lab	Online GIS Mapping without GIS Servers <hr/> Google Polymer: A Totally New Way to Build Web Apps and Maps	Geodesigning in the Cloud: Online Design of Low Distortion Projections <hr/> Setting Up a Network of Climate Monitoring Stations and Analyzing the Data
6:00PM - 8:00PM	No-Host Networking Social 214 South Montezuma Street, Prescott (<i>cost not included in registration fee</i>)				
9:00PM - 12:00AM	Post-Networking Social sponsored by Plotter Doctors Join us back at the Prescott Resort in the Hospitality Suite (room 502)				
					

 hands-on workshop
 computer provided



WEDNESDAY - DETAILS

8:00AM - 4:00PM

Registration

Foyer

10:00AM - 12:00PM

AGIC Chairperson's Address

Ballroom

Sandra Gilstad, State of Arizona, 9-1-1 Program Office

Keynote Address:

John F. Regni, Lt General USAF (retired)

Ballroom

General Regni served 40 years active duty in the United States Air Force—four as a cadet at the Air Force academy and 36 years of commissioned. His military assignments spanned Personnel, Training, Education and command positions.

In his keynote presentation General Regni will address a number of topics beginning with airplane history followed by the evolution of Remotely Piloted Vehicles (RPVs) in the military and the evolution of commercial unmanned systems. He will also give an update on happenings at the Federal Aviation Administration (FAA) and talk about commercial applications of unmanned aircraft, including some of the limiting factors such as safety, frequency spectrum, privacy and security. As an expert in the field, General Regni has identified opportunities for the use of unmanned systems and will provide details on three commercial applications that are ripe for Arizona.

For more on General Regni see page 8.

12:00PM - 1:30PM

Plated Lunch and Presentations

Ballroom

A few of our Gold Sponsors will give a brief discussion of their products/services. Afterwards

join our State Cartographer, Curtis Pulford, for a presentation on significant GIS happenings at the State and Federal levels.

1:30PM - 3:00PM

GIS in Action

Developing and Using a Good GIS to More Accurately Distribute Tax Revenue

Arizona Room: 3:30 - 4:15

Boyd Larkin and Janice Swim, Arizona Department of Revenue

GIS is used at the AZDOR to help distribute tax revenue more accurately and efficiently. Some taxpayers are required to report their property and sales by location. It's important that the AZDOR be ready to assist these taxpayers to accurately report.

Using Floating Catchments to Identify Gaps in Health Care Provider Network

Arizona Room: 4:15 - 5:00

Lucas Murray, Arizona Department of Economic Security

The Arizona Comprehensive Medical and Dental Program (CMDP) is the health plan responsible for ensuring, in partnership with foster care providers, the provision of appropriate and quality health care services for the well-being of Arizona's children in foster care. One of the responsibilities of the program is to assure the children have appropriate access to health care providers.

The floating catchment method provides a way to identify the number of providers within a specified distance of all children in foster care. Using the floating catchment method, CMDP was able to determine gaps in their health care provider network by identifying specific children who did not have appropriate access to providers.

This presentation will include an overview of the floating catchment method and how it was applied to the CMDP project using ESRI's ArcGIS for Desktop



WEDNESDAY - DETAILS

software. In addition, the presentation will discuss how the floating catchment method can be applied using both Euclidean and driving distances.

Hands-On Learning Lab

Esri Hands-On Learning Lab

Copper Basin Room



See page 7 for details.

Web Services and Applications

Migrating Esri Flex Viewer Web Applications to Javascript and HTML5

Granite Mountain Room: 1:30 - 2:15

Ayan Mitra and Shea Lemar, Institute for Social Science Research at ASU

This presentation will look at lessons learned migrating an ESRI Flex Viewer built using the ESRI Flex API to an HTML5/javascript solution. We will look at the ESRI Flex Viewer architecture and widgeting system and also look at strategies for migrating the Actionscript code to Javascript. We will also look at javascript frameworks for web technologies that provide an easier migration workflow. We will do a deep dive into problems that we faced, and how to overcome these with the use of open source javascript libraries such as JQuery and Bootstrap. We will also look at best practices for development, project management and tools used.

Harnessing Configuration for Web GIS Application Development

Granite Mountain Room: 2:15 - 3:00

Scott Stafford-Veale, Latitude Geographics

Web GIS application development is fraught with many pitfalls that can leave GIS professionals struggling through technology shifts and custom development challenges. IT Managers also struggle with managing the high costs of custom projects and the inherent risks associated with maintaining the skills to build and manage complex applications. Building

meaningful and powerful web-based applications for end users can be expensive, challenging, and increasingly complex. Configurable software now provides the ability to build sophisticated, well-integrated and flexible applications, without the risk and expense of custom development. In this presentation, we'll explore how GIS professionals can leverage configuration to create powerful and elegant applications across the enterprise and the Esri ArcGIS platform. This will include a live demonstration of web-based GIS applications.

Spatial Accuracy and GIS

An Illustrated Guide to Geodesy for GIS Professionals

Chino/Prescott Room: 1:30 - 2:15

Michael Dennis, NOAA's National Geodetic Survey

Geodesy provides the framework to reliably combine, analyze, manage, and manipulate spatial data in GIS, especially high-accuracy data. But geodesy often seems overly technical and inaccessible to users. To counter that, geodetic principles are explained conceptually, with emphasis on visualization (maps!). Topics include geodetic and vertical datums, map projections, GPS, accuracy, metadata, and how NOAA's National Geodetic Survey (NGS) provides the foundation for geospatial data in the US.

The Four Corners Monument: a Brief History and Why it is Exactly Right

Chino/Prescott Room: 2:15 - 3:00

William "Bill" Stone, NOAA's National Geodetic Survey

The Four Corners Monument marks the intersection of Arizona, Colorado, New Mexico, and Utah and is the only place in the United States where four states meet. This presentation will provide a brief historical overview of the establishment of the monument. Also discussed will be the erroneous media reports of recent years claiming that the monument's location is greatly in error. The reasons that the monument is in fact in exactly the right place will be presented. The



WEDNESDAY - DETAILS

recent revamping of the monument and surrounding visitor plaza will also be described. A recent geodetic survey of the revamped monument – utilizing the National Geodetic Survey’s Online Positioning User Service (OPUS) - confirmed that the location of the monument was perpetuated, and these results will be presented.

3:00PM - 3:30PM

Break

Foyer – Beverages and light snacks available

Visit the Map Gallery and Vendor Exhibits in the Ballroom and Foyer.

3:30PM - 5:00PM

GIS in Action

Configuring Esri State and Local Government Solutions

Arizona Room: 1:30 - 2:15

Matt Bullock and Colleen Burke, Esri

ArcGIS for State and Local Government are a set of software components from Esri which include maps and applications built on a common information model to help support many of the responsibilities of government agencies. Included are tools to help aid decision making, transparency, accountability, and planning tasks. This session will provide an overview of these tools, and demonstrate how to configure and publish a public-facing web application.

Asset and Infrastructure Mapping: New Applications of an Old Science

Arizona Room: 2:15 - 3:00

Chris Aldridge, David Evans and Associates, Inc.

Making current infrastructure last longer is a challenge facing many agencies today and asset management has been steadily moving up on most priority lists.

Managing and extending the life cycle of physical assets for transportation, water, electric, and transit networks begins with knowing the location, composition, and condition of the assets. The Asset and Infrastructure Mobile Mapping service offered by David Evans and Associates, Inc. is a method to gather and confirm information about your assets efficiently and economically. Using the power of photogrammetry in a terrestrial environment, location and condition information can be captured in street level imagery and extracted at the desktop directly into GIS or CAD and linked to an asset management and maintenance system. This presentation will give an overview of the technology, process, and systems used to capture the imagery and highlight the numerous applications of the imagery and derived data.

Hands On Learning Lab

Esri Hands-On Learning Lab



Copper Basin Room

See page 7 for details.

Web Services and Applications

Online GIS Mapping Without GIS Servers

Granite Mountain Room: 3:30 - 5:00

James Fee, URS Corporation

Traditionally GIS web maps have been created two ways. Either using GIS server software designed for small workgroups or trying to shoehorn GIS data into Google Maps or other online mapping APIs. This of course results in solutions that are just one big compromise after another. If there was only a way to use the power of Google Maps, yet still use a spatial database to store and perform spatial analysis.... But of course there is. James will showcase serving up GIS data in Google Maps using some of the best spatial database tools out there. We'll be showcasing PostGIS, Node.js, GeoJSON, Angular.js and other cutting edge server technology to create a full blown "GIS Server" solution on the Google Compute



WEDNESDAY - DETAILS

Engine. Fully hosted, fully responsive (runs great on smartphones and tablets) and is completely open source. We'll be showcasing how to set up PostGIS in the Google Compute Engine cloud, load up data into it. Install Node.js and set up the node server. Then integrate it into Google Maps using the new Google Maps Data Layer. We'll make sure to keep it at a high enough level anyone can follow along and enjoy (bring your laptop, smartphone or tablet to try it out yourself as we go along) but we'll dive deep into Node.js and Google Maps Data Layer for those who like to see how the sausage is made.

Google Polymer: A Totally New Way to Build Web Apps and Maps

Granite Mountain Room: 3:30 - 4:15

Rudy Stricklan, Mapping Automation, LLC

Imagine a scenario where, in order to operate an automobile, you first had to learn about its mechanical parts: how to troubleshoot (many types of) fuel injection systems, how to replace transmission gearing, even how to re-paint the whole vehicle. That's pretty much the current state of webpage development, where designing content takes a back seat to having to be proficient in the details of HTML/CSS/JavaScript programming.

This presentation overviews a new way of approaching webpage structuring by walking through programming a simple web map app, using Web Components technology as provided by Google's new Polymer framework.

Spatial Accuracy and GIS

GeoDesigning in the Cloud: Online Design of Low Distortion Projections

Chino/Prescott Room: 4:15 - 5:00

Richard Nava, Geedop, LLC

Map projections are distorted (a Fact of Life). Linear distortion is the difference in distance between projected coordinates and true ground distance. Low Distortion Projections (LDPs) minimize distortion by covering the largest area with the least distortion

possible. But these goals are mutually exclusive, so it is an optimization problem. We show how it can be solved using LDP Design, an online application with an intuitive map-centric interface for interactively designing LDPs in the Cloud.

Setting Up a Network of Climate Monitoring Stations and Analyzing the Collected Data

Chino/Prescott Room: 4:15 - 5:00

Chris Black, USAF Barry M. Goldwater Range East

There are a large number of climate monitoring locations on the Barry M. Goldwater Range East and across the wider region of Southwest Arizona. Some of those locations are full weather stations that transmit their data in real time. Others are manual download data loggers and storage gauges. This talk will provide an overview of these networks and look at the analysis that was done to site 11 communication research grade weather stations on the BMGR East. This analysis included determining line of sight for the radio network using multiple viewsheds.

The talk will then delve into how data from stations across the region are combined, spatially interpolated and analyzed to inform land management. Spatial interpolation methods, including Inverse Distance Weighting (IDW) and (perhaps) Kriging will be explored in detail and we will step through comparing the resulting climate surfaces with long term normal datasets (including the 1981-2010 PRISM normal data). We will also do some bootstrapping to better understand the relative accuracies of the interpolated surfaces. Finally we will look briefly at cartographic considerations of displaying this data.

6:00PM - 8:00PM


Networking Social

Brick & Bones 214 South Montezuma Street, Prescott

Please refer to the flyer in your packet or check with the Registration Desk for directions and more information. Cost not included in registration; please pay at the event venue. Transportation not provided.



THURSDAY - AT A GLANCE

	Foyer/Ballroom	Arizona	Copper Basin	Granite Mountain	Chino/Prescott
7:30AM - 4:00PM	Registration				
7:30AM - 9:00AM	Breakfast				
Track		Hands On Workshops	Hands on Lab	Managing GIS Data	Tools and Applied GIS
8:30AM - 10:00AM	Exhibits Open	 Workshop: A Review of the 2-Day ArcGIS 10 Class <i>The instructor will provide a brief break at an appropriate time during this half-day workshop.</i>	 Esri Hands-On Learning Lab	Practical Address Management for GIS Projects What's Happen- ing with the Census Bureau's Geographic Support System Initiative (GSS-I)?	The Displactor: Custom Tools for Watershed Snow Data in Near Real Time See Your Plans Come to Life, Planning in 3D for Public Outreach
10:00AM - 10:30AM	Break				
10:30AM - 12:00PM	Exhibits Open		 Esri Hands-On Learning Lab	GIS Minimum Metadata Standards A Workflow Method- ology for Integrating Conflicting Boundary Data from Different Sources	ADOT's New Linear Referencing System (LRS) Determining the Safety of our Roads Utilizing GIS
12:00PM - 1:30PM	Lunch and Presentation: Jim Castagneri, U.S. Census Bureau: "The Social Impact of Boundaries; How Drawing Lines Creates Conflict"				
Track		Hands On Workshops	Hands on Lab	E9-1-1	Lightning Talks
1:30PM - 3:00PM	Exhibits Open	 Workshop: Doing GIS with PostGreSQL	 Esri Hands-On Learning Lab	Lights, Camera, NG9-1-1 Bring it in! Small Cells for Indoor Location Accuracy	Lightning Talks: Field Data Collection
3:00PM - 3:30PM	Break				
3:30PM - 5:00PM	Exhibits Open	 Workshop: Story Maps. Configuring the Map Tour App	 Esri Hands-On Learning Lab	Mapping 9-1-1 Calls 24x7 with a Web Based Map The State of the NG9-1-1 Nation	Lightning Round Smorgasbord
6:00PM - 8:00PM	Exhibitor Social And Dinner, Award Presentations, Door Prize Drawings Live Music Provide by the Manic Monkeys				



THURSDAY - DETAILS

7:30AM - 4:00PM

Registration

Foyer

7:30AM - 9:00AM

Breakfast

Ballroom – Full Breakfast Buffet

8:30AM - 12:00PM

Workshop: A Review of the 2-day ArcGIS 10 Class



Arizona Room

Randy Booze, Arizona Public Service Company

The workshop will involve a review of the 2-Day ArcGIS 10 class which is based on the “Getting to Know ArcGIS Desktop 10” book along with an introduction to GIS concepts and legal issues. The 2-Day class provides an introduction to GIS concepts and the ESRI ArcGIS 10 software with hands on experience with the software. Participants in the class will learn how to use the ESRI ArcMap and ArcCatalog applications as well as the geoprocessing tools within the ArcToolbox while applying the technology in various applications. The Instructor also discusses real world applications of the technology based on student interests and requested areas of focus as well as a review of some of the advanced features that are available in GIS technology. The topics covered in the 2-Day class include:

GIS Concepts and Data; Working with GIS Maps and Data; Displaying GIS Data; Getting Information about GIS Features; Analyzing GIS Feature Relationships; Creating and Editing GIS Data; Presenting GIS Data; Creating Geoprocessing Models; Legal Issues in GIS Use

Esri Hands-On Learning Lab



Copper Basin Room

See page 7 for details.

Managing GIS Data

Practical Address Management for GIS Projects

Granite Mountain Room: 8:30 - 9:15

Tom Elder, City of Phoenix

Better addresses = Better locations = Better results. Almost everyone uses street addresses as location points on maps. But addresses are frequently inaccurate, incomplete or invalid. How can you quickly check, correct and standardize hundreds or thousands of addresses? How do you make sure that the addresses really exist on the ground? This presentation will share practical address data management tips that you can use to improve the quality of your addresses. In general, address management includes steps to correct, standardize (to USPS standards), add additional details such as ZIP+4, and validate street address delivery points before locating them and using them in GIS applications. And it can be integrated seamlessly into your existing business and GIS workflows. Address management uses products and services certified by the US Postal Service Coding Accuracy Support System (CASS) to meet their accuracy standards for obtaining postage discounts for bulk mailings. There are many CASS-certified commercial products and services available on the market. Some are reasonably priced and a few are free for limited testing and development use. The City of Phoenix uses a variety of products and techniques to check and verify thousands of addresses. Please join us for practical tips, examples, demos that show how to solve many common address problems.

What's Happening with the Census Bureau's GSS-I?

Granite Mountain Room: 9:25-10:00

Jim Castigneri, U.S. Census Bureau

This discussion will include a brief introduction to the Geographic Support System Initiative (GSS-I). We will explore the process, benefits, and challenges of using locally derived GIS data for update of the MAF/TIGER system in preparation for the 2020 Census.



THURSDAY - DETAILS

Custom Tools and Applied GIS

The Displactor: Custom Tools for Watershed Snow Data in Near Real Time

Chino/Prescott Room: 8:30 - 9:15

Brian Skerven and Tom Cox, Salt River Project

Salt River Project's Water Resource Operations group is tasked with monitoring and operating SRP's reservoirs and dams. 24/7 awareness of conditions on the Salt and Verde watersheds is critical to operating the reservoir system safely and efficiently.

SRP Cartographic & GIS Services developed software that analyzes watershed conditions to provide a better understanding to our Water Operations clients. The automation of retrieving and processing National Snow and Ice Data was combined with the Displactor software to provide easy access to the data and the analytics necessary to understand it and render it.

Our presentation will discuss the process of developing the Displactor from business case to final product; why it was built, the tools used to create it and how it functions. We will cover the challenges associated with creating the custom tools, working with multiple agencies, and on-going improvements.

See Your Plans Come to Life; Planning in 3D for Public Outreach

Chino/Prescott Room: 9:15 - 10:00

David Lawrence, URS Corporation

This presentation will cover the development of a 3D model from a wide variety of data sources. We will examine the various subjects including importing GIS data raster and vector, 3D models (OBJ, FBX), civil 3D surfaces and alignments, creating custom 3D models in 3Ds max and importing as styles, and use of storyboard and export to create compelling project videos. We will examine workflows of an actual project and will focus on the process used to develop an Infracore model for the modernization of a generating

facility in Tempe, Arizona. This model has been used in the public outreach process.

10:00AM - 10:30AM

Break

Ballroom – Coffee, Iced Tea and Juice available

Visit the Map Gallery and Vendor Exhibits in the Ballroom and Foyer.

10:30AM - 12:00PM

Esri Hands-On Learning Lab

Copper Basin Room



See page 7 for details.

Managing GIS Data

GIS Minimum Metadata Standards

Granite Mountain Room: 10:30-11:15

Steve Whitney, Pima County ITD GIS

The development of minimum metadata standards for GIS data and its derivatives is one of the primary recommendations from the ongoing collaboration between the geospatial and survey professions within Arizona. The use of GIS data and products continues to grow and will continue to do so as additional professions further integrate geospatial data and products into new applications. More and more government operations rely on GIS inputs and/or applications to support their customer services. The general public is continually exposed to location-based products through mainstream offerings such as Google Maps, GPS location and routing applications, and Open Data initiatives. This presentation will propose GIS metadata standards that achieve the following:

- 1) Provide "quality indicators" to the end-user that assist them in determining appropriate and inappropriate uses of the data or product



THURSDAY - DETAILS

- 2) Provide a clear delineation between survey and non-survey product
- 3) Include information on attribute data
- 4) Specifically include intended uses of the data or product along with use limitations

A Workflow Methodology for Integrating Conflicting Boundary Data from Different Agency Sources: A Case Study

Granite Mountain Room: 11:15-12:00

Mickey L. Reed, Advanced Resource Technologies, University of Arizona

The Advanced Resource Technologies group at the University of Arizona was approached by the Agricultural Research Service to provide a seamless polygon layer that would allow an internet-based rangeland decision support systems to distinguish between land management areas across a variety of agency jurisdictions. This layer would provide analysis boundaries for reporting summaries of temperature, precipitation, cover, land use, hydrography and other variables. The reports are to be used to establish best management practices for land management. These analysis masks were to be synthesized from existing GIS sources expressing State, Forest Service, BLM, and Tribal grazing allotments, city, National Park, and military installation boundaries. In combining so many data sources the challenge becomes one of integrating layers acquired at different spatial resolutions, by differing methods of acquisition, differing QAQC standards and containing attribution supporting varying goals. A simple geometric union of layers proliferates a multitude of topological errors as well as a confusion of conflicting attributes and too many polygons to realistically represent with an internet application. A workflow of geoprocessing operations and attribute management had to be established to assemble the layer to topological standards and insure the flow of appropriate attributes from the source data into the final product with the inclusion of metadata attributes. The workflow specifications must be closely documented and easily replicable. This presentation will detail the challenges and solutions of the design.

Custom Tools and Applied GIS

ADOT's New Linear Referencing System (LRS)

Chino/Prescott Room: 10:30-11:15

Mark Flahan, Arizona Department of Transportation

ADOT is currently replacing their LRS system with Esri Roads and Highways. The new GIS/LRS system will allow for real time spatial data interaction between multiple systems and data warehouses inside the agency. The new solution will be used to input and house the e911 data for the agency and will support the update and maintenance of local road data for e911 applications. This presentation will talk about the challenges the agency faced, why the agency pursued Roads and Highways, the solution we implemented, and benefits of the new system. The presentation will also discuss the future for ADOT's LRS system for integrating GIS into non-GIS business units at ADOT and the future this new product opens up. This presentation will discuss some technical architecture, but the majority of it will be talking about the major concepts. There will even be a guest practitioner to quickly share his experiences.

Determining the Safety of our Roads Utilizing GIS

Chino/Prescott Room: 11:15-12:00

Brian Colson

We all travel on our city streets every day, but when the question comes up as to how "safe" a street is we need a way to quantify that. Traffic engineers need this information to have a better understanding of which roads or intersections need improvement. Utilizing the Arizona Accident Location Identification Surveillance System (ALISS) data that is available for purchase from ADOT, Brian developed GIS tools utilizing model builder that allow the engineers the ability to see tables and figures that represented the frequency of crashes within a specified distance of an intersection, and arterial streets. Additionally utilizing the look up tables that are included in the ALISS data, the types of crash that occurred and the severity of those crashes could also be analyzed by



THURSDAY - DETAILS

intersection or arterial streets. This allowed the traffic engineers to make better decisions for intersection improvements in the future and gave a picture of which portions of roads were at a high frequency of crashes. Brian will discuss the data that is in ALISS, how it was processed into GIS, and the models that we developed to answer specific questions about our arterial streets and intersections.

12:00PM - 1:30PM

Plated Lunch and Speech

Ballroom

Jim Castigneri, U.S. Census Bureau: "The Social Impact of Boundaries; How Drawing Lines Creates Conflict"

This luncheon presentation will explore the ramifications associated with establishing boundaries for political and statistical purposes in the United States. Strip annexations, gerrymandered voter districts, and federal regulations affected by Census Designated Places are all examples of boundaries that can create problems or conflict. In this discussion, we'll see first-hand how some boundaries drawn with the best intentions can create problems for some and opportunities for others.

1:30PM - 3:00PM

Workshop: Doing GIS with PostGreSQL

Arizona Room: 1:30 - 3:00

Terry Li, Gistic Research, Inc

In the mid 1990s, several RDBMS vendors began offering spatial data types as object-relational technologies advanced. The release of the first stable PostGIS in 2005 meant that GIS professionals could do, for free, many important GIS tasks at the database level more efficiently through writing SQL! This workshop will cover:

1)Advantages of the database approach to GIS

2)Installing and exploring PostgreSQL

3)Building spatial layers (tables and indexes)

4)Spatial data loading

5)Spatial data QC

6)Spatial data analysis

7)Spatial data publishing

8)Consuming and presenting spatial data stored in PostgreSQL using ArcGIS

Prerequisites: Basic knowledge of GIS and RDBMS; Basic SQL skills are not required but would be helpful.

Esri Hands-On Learning Lab

Copper Basin Room

See page 7 for details.

E9-1-1 Track

Lights, Camera NG9-1-1

Granite Mountain Room: 1:30 - 2:15

Diana Gijsselaers, Cassidian Communications

NG9-1-1 (Next Generation 9-1-1) and GIS (Geographic Information Systems) can be quite the Alphabet Soup! Learn how GIS data is used by 9-1-1 today and how it will be the basis for location validation and geospatial call routing in Next Generation 9-1-1. Join us for the NG9-1-1 Call Flow Pageant as we share a fun and easy way to understand the functions and roles GIS and the i3 elements play in Next Generation Call Flow. Think Thanksgiving Pageant featuring your favorite NG9-1-1 Acronyms: ESRP; LVF; LIS; BCF; ECRF; and of course the LoST Protocol. Prepare to learn and laugh as we provision GIS data to the NG9-1-1 network, validate a location, and get a call through the ESInet to the PSAP. You will see NG9-1-1 and GIS in a whole new way!



THURSDAY - DETAILS

Bring it In! Small Cells for Indoor Location Accuracy

Granite Mountain Room: 2:15 - 3:00

Anthony Haddad, Intrado Inc.

There is no greater mission for 9-1-1 response than to reliably and efficiently pinpoint a caller's location. A major metropolitan PSAP reports that 70% of their total calls originate from wireless phones; of those, 70% are generated indoors. Currently, 38% of households rely exclusively on wireless communications; citizens living or working in multi-story, densely-populated urban areas are often unaware that their location cannot be identified by responders if they are calling 9-1-1 from indoors. Standards must evolve to accommodate the current environment. As the FCC examines ways to establish a location requirement for wireless calls placed indoors, we can prepare by learning about the capabilities of advanced location systems. Is manual rebidding the only answer to the impacts created by faster IP and i3 networks? Does rebidding more often work? Is asking citizens to give up their privacy and tracking them the only way to pinpoint their locations? Small cell technology and smart data analysis may well provide the means for helping responders find people indoors. This session brings the outside in, focusing on technologies designed to better determine caller's indoor locations. In addition, Mr. Haddad will explain how existing and emerging systems can be optimized to make the display of this location information more usable and more understandable.

Lightning Round Smorgasbord

Chino/Prescott Room: 3:30 - 5:00
Six 7-10 minute presentations

1) American Community Survey: Determining Estimate Reliability

Chino/Prescott Room: 7-10 minutes

Lucas Murray, Arizona Department of Economic Security

The US Census American Community Survey includes a wealth of useful demographic and socioeconomic data. However, the data estimates are based on a very small sample of the US population (approximately 1 in 40 households nationwide). Different factors can affect how reliable an estimate is, including the size of the geographic unit you are working with (e.g. county vs. census tract). To help you determine how reliable an estimate is, and whether it's reliable enough to use, the US Census includes a margin of error (MOE) with each estimate. For this presentation, I will discuss how to use margins of error to determine how reliable an estimate may be. Also, I will show how to recalculate a margin of error when combining estimates, such as adding two estimates together.

2) The City of Prescott GIS Day Project: Geocaching with Maps

Chino/Prescott Room: 7-10 minutes

Cat Moody, City of Prescott

This presentation will review the City of Prescott's GIS Day project that evolved as a way to highlight the map products that come out of the City's GIS Department. You will get a virtual tour of the steps involved in solving the geocaches placed by our department. Two puzzle caches, both unique in the geocaching community, will be featured along with the maps that serve as the clues for the treasure hunt. This fun project has received rave reviews from both local and out-of-town cachers.

3) Transfer Map Points to Random Locations to Protect Address Confidentiality

Chino/Prescott Room: 7-10 minutes

Lucas Murray, Arizona Department of Economic Security

Address confidentiality, while important, can have an influence on a map's usefulness. While there are methods for mapping address information that keep the data confidential, such as summarizing the number of addresses by ZIP code or census tract, these methods may not be appropriate for all projects (e.g. if the address dataset contains very few records). This



THURSDAY - DETAILS

presentation will show how to use the tools available in ESRI's ArcGIS for Desktop software to move a point on a map to a random location within a specified distance. The technique can be used to protect confidential address locations while still providing customers a dot distribution map.

4) Right of Way Layer for Easier Access to Data

Chino/Prescott Room: 7-10 minutes

James Lambert, Mohave County Public Works

A presentation of how Mohave County currently accesses right of way documents and data, and how we are developing a polygon layer for our GIS which will make the search for data much less complicated and much more comprehensive.

5) Building Responsive GIS Web Applications using Bootstrap and Knockout

Chino/Prescott Room: 7-10 minutes

Ayan Mitra, Institute for Social Science Research

Responsive GIS Web applications on the cheap. This talk will focus on how to use Bootstrap, Knockout and other JavaScript APIs to create responsive GIS web applications. We will look at lessons learned, integrating these JavaScript libraries with Arcgis Server and tips on how to quickly create responsive GIS applications that look good on mobile and traditional devices.

6) Precision Panoramas in GIS

Chino/Prescott Room: 7-10 minutes

Paul Burrows

Property Assessment - Remote canvassing of real property to minimize field visits based on technology currently available. This lightning talk will demonstrate how Maricopa County Appraisers are using precision panoramas for their correction and verification efforts.

7) Resurrecting Pinal City, Arizona

Chino/Prescott Room: 7-10 minutes

Ben Hammer

Pinal is a vanished mill town located just west of present day Superior, AZ. The town was connected to mining operations in Silver King. A post office was established in 1878 and the town peaked at 2,000 by 1890. The mine played out and the post office closed in 1891. There is almost nothing left today. This project uses a number of tools in ArcGIS and resurrects previous mapping by Tonto National Forest in 2D and 3D.

3:00PM - 3:30PM

Break

Foyer - Beverages and light snacks available

Visit the Map Gallery and Vendor Exhibits in the Ballroom and Foyer.

3:30PM - 5:00PM

Workshop: Story Maps- Configuring the Map Tour App

Arizona Room: 3:30 - 5:00

Matt Bullock, Esri

Esri staff will show you how to build, edit, and publish stories using the popular Map Tour app. Learn how to grab photos and videos from Flickr, Picasa, Facebook, and YouTube. Tips and tricks will help you publish polished, professional-looking map tours.



Esri Hands-On Learning Lab

Copper Basin Room

See page 7 for details.



THURSDAY - DETAILS

E9-1-1 Track

Mapping 911 Calls 24x7 with a Web Based Map *Granite Mountain Room: 3:30 - 4:15*

Dave Eaton, Maricopa Region 9-1-1

Better, Faster, Cheaper seems to be the mantra regardless of where you work. Faced with the need to update mapping for 9-1-1 call centers, with little to no budget for a new map platform, Maricopa Region 9-1-1 has developed a web based map for displaying the location of 9-1-1 calls. This presentation will give a detailed view of how this was accomplished and how you could do the same for your local police and or Fire Department.

The State of the NG9-1-1 Nation *Granite Mountain Room: 3:30 - 4:15*

John Joseph, GeoComm

This is a National case study of active NG9-1-1 projects in different stages of completion. How are other States approaching the challenges of NG9-1-1 implementation, what's working, what's not, and who is developing the best path moving forward. We will look at GIS data development projects taking hold in the Mid-west, implementations in Texas, and an in-depth look at the State of Maine. We'll also discuss the keys to NG9-1-1 implementation and grapple with the issues of Governance, Cooperation, Decision Drivers, and Funding. Finally we will attempt to provide some general guidance around critical consideration for NG9-1-1 implementation that can help reduce risk and save time and money.

Lightning Talks: Field Data Collection

Chino/Prescott Room: 1:30 - 3:00

Field Data Collection

The need to gather field data is common to GIS professionals across industries. But the uses of the data as well as the hardware/software we use to gather it can vary drastically. This lightning round will bring professionals from a variety of industries

to talk about on how they gather GIS data (GPS units, tablets, PCs, ArcPad, ArcCollector, etc.), what they use the data for, and the pros and cons of their systems. This is a must see for people who want to learn how people are gathering data in a field with ever-changing hardware and software options.

Presenters

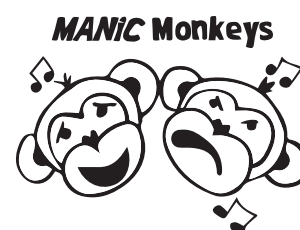
- 1) Glenn Emanuel, Central Arizona Project
- 2) Gerard Rodriguez, Arizona's G&T Cooperatives
- 3) David Olson, Telesto Solutions, Inc.
- 4) Jennifer Psillas, Pima County Natural Resources, Parks and Recreation
- 5) Cameron Perry, RDO Integrated Controls
- 6) Elisabeth Van Der Leeuw, Pima County
- 7) Greg Harmon, Central Arizona Governments
- 8) Chris Miller, Gila River Indian Community Utility Authority
- 9) John Janzen and Shauna-Rae Brown, Ak-Chin Indian Community
- 10) Michael J Conlin, City of Glendale

6:00PM - 8:00PM

Exhibitor Social and Dinner Buffet *Ballroom*



Join us in the Ballroom for dinner sponsored by our Exhibitors. Awards will be presented at the dinner and afterwards we will have the drawing for door prizes. You won't want to miss this as you must be present to win one of the fabulous door prizes that have been donated by our Exhibitors!

Live music will also be provided by the Arizona band, the Manic Monkeys.



FRIDAY - AT A GLANCE

	Foyer/Ballroom	Arizona	Copper Basin	Granite Mountain	Chino/Prescott
8:00AM - 10:30AM	Registration				
7:30AM - 9:00AM	Breakfast				
Track		Hands On Workshops	Hands on Lab	E9-1-1	Field Data Collection
8:30AM - 10:00AM		 Workshop: Introduction to the Geodatabase	 Esri Hands-On Learning Lab	Authoritative Bound- aries and E9-1-1/ NG9-1-1: No Brainer, Right? <hr/> An Overview of the Statewide Road Network and Address Point Databases	Collector for ArcGIS and Operations Dashboard <hr/> Android Tablets in the Field: Making Data Collection "Smart"
10:00AM - 10:30AM		<i>The instructor will provide a brief break at an appropriate time during this half-day workshop.</i>			Break
10:30AM - 12:00PM			 Esri Hands-On Learning Lab	Facilitated Discus- sion on Boundaries and Statewide Road Network and the Pertain to E9-1-1	Mobile Mapping vs. UAV Technology: Choosing the Right Tool for the Job <hr/> Optimizing GIS Field Data Collection Activities
12:00PM - 1:30PM	Wrap Up and Closing Remarks Box Lunch Provided in the Ballroom				

 hands-on workshop
 computer provided



FRIDAY - DETAILS

8:00AM - 10:30AM

Registration

Foyer

7:30AM - 9:00AM

Breakfast

Ballroom – Full breakfast buffet

8:30AM - 12:00PM

Workshop: Geodatabase Class



Arizona Room: 8:30 - 12:00

Cody Cohn, Pima County GIS

During this workshop, you will learn: Geodatabase concepts and structure by exploring and creating a geospatial database; converting data to the Geodatabase format utilizing the Extract Transform Load (ETL) process; validating attributes with Domains; validating features with Topology; and editing with the Geodatabase. Participants should have basic knowledge of ArcGIS Desktop, geoprocessing and GIS data formats before attending this course. Workshop format: approximately 50% lecture/demonstration, 50% hands on training via guided exercises completed individually on computers.

8:30AM - 10:00PM

Esri Hands-On Learning Lab



Copper Basin Room

See page 7 for details.

E9-1-1

Authoritative Boundaries and E9-1-1/NG9-1-1: No Brainer, Right?

Granite Mountain Room: 8:30 - 9:15

Sandra Gilstad and Cheryl Thurman, State of Arizona, 9-1-1 Program Office

As Next Generation 9-1-1 (NG9-1-1) is implemented, the importance of accurate GIS datasets will be critical. Accurate, timely boundary information for fire districts, EMS and town/city limit boundaries are required for GIS-based dispatch of emergency response resources. Rural communities face many challenges related to E9-1-1 and NG9-1-1 implementation including technological and funding limitations. This presentation will describe the issues encountered and research conducted related to the determination of authoritative fire district, EMS and town/city limit boundaries for the State of Arizona 9-1-1 Program Office Map Development and Enhancement Project for Navajo and Apache Counties, Arizona. Conflicting data sources, limited GIS resources in rural communities and fire/EMS boundaries created “in a box” will be explored, as well as the need for workflows ensuring more timely and accurate boundary information available from one authoritative source will be discussed.

An Overview of the Statewide Road Network and Address Point Databases

Granite Mountain Room: 9:15 - 10:00

Howard Ward

This presentation will describe the evolution of the Arizona statewide road network and address databases over the past two years. These datasets have come about through the generous cooperation of local GIS and E911 agencies in each County with funding and support from the Arizona Broadband Mapping Program, the Arizona State E 9-1-1 Program Office and the Arizona Department of Transportation. A description of the datasets, the processes used to create and quality check them and some of their potential uses will be covered.



FRIDAY - DETAILS

Field Data Collection

Collector for ArcGIS and Operations Dashboard

Chino/Prescott Room: 8:30 - 9:15

Matt Bullock, Esri

These new applications help users improve data collection in the field and support common operation picture workflows. Designed with field crews in mind, Collector is used to capture and update both tabular and spatial information via smartphones/tablets using the built-in GPS capabilities of the device, or by tapping on the map. Offline (disconnected) editing will also be discussed. Operations Dashboard provides a common operating picture for monitoring events. Operations Dashboard integrates maps and a variety of data sources to create comprehensive operational views that can include charts, lists, gauges, and indicators which update automatically as underlying data changes.

Android Tablets in the Field: Making Data Collection "Smart"

Chino/Prescott Room: 9:15 - 10:00

David Olson, Telesto Solutions Inc.

An overview of data collection methods, with a focus on the benefits of using tablets for field surveys. Comparing and contrasting the use of dedicated gps units such as Garmin and the nexus tablet. An in depth look at the process of designing a custom android GIS application. From early concepts to potential pitfalls and eventual success: a step by step walk through guide to building an application for beginners.

10:00AM - 10:30AM

Break

Ballroom – Coffee, Iced Tea and Juice available

10:30AM - 12:00PM

Esri Hands-On Learning Lab

Copper Basin Room

See page 7 for details.

E9-1-1

Facilitated Discussion on Boundaries and State-wide Road Network as They Pertain to E9-1-1

Granite Mountain Room: 10:30 -11:15

This final session for the E9-1-1 track will be a facilitated discussion on lessons learned, current projects, and future direction with regard to boundaries and the statewide road network as they pertain to E9-1-1. Attendees will be encouraged to share their experiences and/or simply learn from others in the room.

Field Data Collection

Mobile Mapping vs. UAV Technology: Choosing the Right Tool for the Job

Chino/Prescott Room: 10:30-11:15

Cameron Perry and Nikolas Smilovsky, RDO Integrated Controls

Mobile mapping and UAV technology have become increasingly popular methods for large scale data collection, and each method has advantages and disadvantages. This presentation will explore application of each technology on the same job site. Canyon Del Oro in Tucson, AZ was used as a test location for both technologies, and provided multiple challenges for each system. Access, legal requirements, range, and weather conditions all played a part in the selection of the proper technology for this project. The end goal for each system was the creation of a bare earth surface model of a wash.



FRIDAY - DETAILS

Optimizing GIS Field Data Collection Activities

Chino/Prescott Room: 11:15-12:00

Brett Black, Leica Geosystems

To successfully implement GIS related field collection an entity must first outline the goals of the project, consider what hardware and software is already available internally or what is available in the market place, as well as determine how they can optimize and streamline the workflow with the tools available. This presentation will overview a few case studies of entities that were able to effectively deploy and manage field data collection projects based prior mentioned considerations and give an inside look at the tools and workflow that allowed them to achieve their goals.

12:00PM - 1:30PM

Boxed Lunch / Wrap up and Closing Remarks

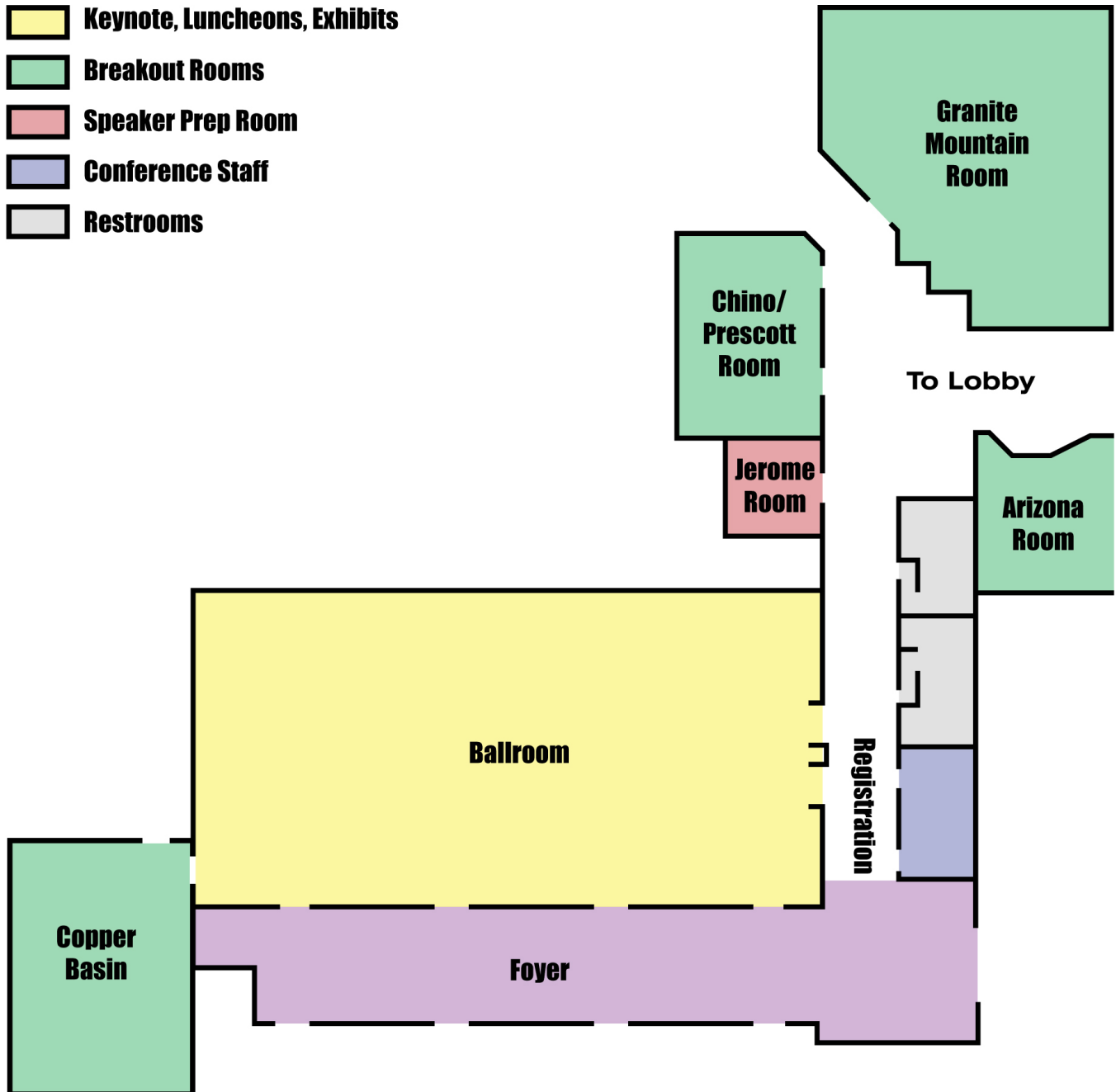
Ballroom

This informal lunch is a great opportunity for a final catch-up with friends - old and new alike! So grab a boxed lunch and slip into the Ballroom for one last chance to network with your colleagues. If you need to head out quickly, though, be sure to grab a boxed lunch before you leave.



AGIC 2014 MAP

-  **Keynote, Luncheons, Exhibits**
-  **Breakout Rooms**
-  **Speaker Prep Room**
-  **Conference Staff**
-  **Restrooms**



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