

Preliminary Program

Updated March 13, 2017



THE GEOSPATIAL INFORMATION SYSTEMS FOR TRANSPORTATION SYMPOSIUM

To provide a forum for transportation officials from State, Province, Federal, and
Municipal Agencies to discuss GIS and transportation issues

April 10–13, 2017
Workshops: April 10, 2017
Phoenix, Arizona

Sponsored by:

AMERICAN ASSOCIATION
OF STATE HIGHWAY AND
TRANSPORTATION OFFICIALS

AASHTO

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The thirtieth annual GIS-T Symposium – *GIS-T 2017* – provides a forum for professionals interested in the design and use of Geospatial Information Systems for Transportation. This meeting brings together individuals from education, the private sector, and all levels of government for a full day of workshops on April 10, 2017 and three full days of conference activities on April 11 – 13, 2017.

WHO SHOULD ATTEND?

- ❖ Transportation professionals who need to know how to better utilize GIS and related systems.
- ❖ Executives and managers concerned with management and institutional issues.
- ❖ Information Technology and GIS professionals from both public and private organizations:
 - Transportation Engineers and Planners
 - City, County & Regional Planners
 - Educators
 - Elected Officials
 - Environmental Scientists & Regulatory Specialists
 - GIS and Information Systems Managers and Specialists
 - Consultants and Service Providers

SESSIONS

Keynote Speaker – Win Holden

State Summary & Roll Call of States – Summary results from a survey sent to GIS representatives in each state will be presented and one representative from each country, state, province, or local agency are asked to briefly describe the status of their GIS implementations and challenges they may face.

Concurrent Sessions – The Symposium will feature seven concurrent sessions, each consisting of multiple tracks of presentations. In addition to the independent tracks planned for GIS-T, there will be opportunities for participants to attend tracks sponsored by GIS-T offering a way of further enhancing the attendee's experience.

GIS Mapping Gallery – Successful GIS projects and Web Mapping applications will be showcased through map products and electronic displays. Prizes will be awarded on a variety of criteria, and all attendees are encouraged to submit multiple GIS products reflecting their own agency's work. For detailed category and submission information, please visit the Symposium website www.GIS-T.org. Mapping Gallery entries must be received by March 31, 2017 to be eligible for display and awards.

Check WWW.GIS-T.ORG for the most current information.

General Schedule

	Monday April 10, 2017	Tuesday April 11, 2017	Wednesday April 12, 2017	Thursday April 13, 2017	
7:00 AM	Registration Breakfast Workshop Attendees Only	Registration Breakfast	Registration Breakfast	Sleep In	7:00 AM
8:00 AM	Workshops (see p4) 1. Highway Performance Monitoring System (HPMS): Concepts, Data Collection & Reporting Requirements 2. GIS Capability Maturity Model Workshop 3. Case Studies for Using GIS in Advancing Highway Safety 4. Unifying Multiple Local Centerline Data Sources to Create a Sustainable ARNOLD Submittal	Opening Session Welcome To Arizona	Roll Call Round Table Sessions Enterprise GIS, Future Trends in Data Collection (see p12)	Registration Breakfast	8:00 AM
9:00 AM		Keynote Speaker Win Holden (see p10)		Session 6 (see p20) Federal Rules & LRS Asset Management Process Improvement Traffic Data	9:00 AM
10:00 AM		Trivia	Break	Break	10:00 AM
11:00 AM		State Summary & Roll Call of States (see p11)	Session 3 (see p17) Data Management Mobile GIS Road Network Process Improvement	Session 7 (see p21) Traffic and Safety Data Visualization Enterprise LRS & Business Integration Data Management	11:00 AM
12:00 PM	Lunch - Workshop Attendees Only	Lunch Provided	Lunch Provided	Box Lunch Next Host State Presentation Awards/Drawings/Raffle	12:00 PM
1:00 PM	Workshops (see p4) 5. HPMS Reassessment 6. The Census Transportation Planning Products Program (CTPP) 7. Transportation Asset Management: Planning, Strategy, and Implementation 8. ROW Data Modernization and Return on Investment	Session 1 (see p15) Imagery and Visualization Addressing Asset Management Traffic Safety and Crash Analysis	Session 4 (see p18) LRS Implementation Traffic Data Solving Geospatial Issues Mobile GIS	Symposium Wrap-Up Come join us for a debriefing of this year's symposium and planning for the next year.	1:00 PM
2:00 PM		Break	Break	Refreshments provided!	2:00 PM
3:00 PM		Session 2 (see p16) Process Improvement Traffic Data LRS Software Deployment Winter Operations and VRP	Session 5 (see p19) Web Maps Energy and the Environment Asset Management Tools Traffic Safety and Crash Analysis	3:00 PM	
4:00 PM	Break	Technology Hall Open (refreshments at 6:30pm)	Break	4:00 PM	
5:00 PM	Technology Hall Reception (see p9)		Technology Hall Open	GIS Map Gallery/ Savvy Mapper/Student Reception (p11) Voting ends 6:30	5:00 PM
6:00 PM	Technology Hall Reception (see p9)	Special Interests Groups (p9)	Lucky Strike: Bowling and Nightlife Appeal... 6:00pm to 9:00pm (see p13)	6:00 PM	
7:00 PM				7:00 PM	
8:00 PM				8:00 PM	
9:00 PM				9:00 PM	

GIS-T Workshops – Monday, April 10

Four tracks for workshops are available at the 2017 GIS-T Symposium. Participants may pick one from the morning and one from the afternoon. Lunch is provided to workshop attendees.

<p>Workshop 1</p> <p>Highway Performance Monitoring System (HPMS): Concepts, Data Collection & Reporting Requirements</p> <p>Ronald Vaughn FHWA</p> <p>Justin Clarke FHWA</p>	<p>Workshop 2</p> <p>GIS Capability Maturity Model Workshop</p> <p>Ian Kidner ODOT</p> <p>Allen Ibaugh DTS</p>	<p>Workshop 3</p> <p>Case Studies for Using GIS in Advancing Highway Safety</p> <p>Eric Green UK</p> <p>Esther Strawder FHWA</p>	<p>Workshop 4</p> <p>Unifying Multiple Local Centerline Data Sources to Create a Sustainable ARNOLD Submittal</p> <p>Joe Breyer Works Consulting</p> <p>Jim Meyer AZ DOT</p>
<p>Workshop 5</p> <p>HPMS Reassessment</p> <p>Tom Roff FHWA</p>	<p>Workshop 6</p> <p>The Census Transportation Planning Products Program (CTPP)</p> <p>Penelope Weinberger AASHTO</p> <p>Petya Maneva Maricopa Association of Governments</p>	<p>Workshop 7</p> <p>Transportation Asset Management: Planning, Strategy, and Implementation</p> <p>Allen Ibaugh DTS</p> <p>Jason Amadori DTS</p>	<p>Workshop 8</p> <p>ROW Data Modernization and Return on Investment</p> <p>Rich Grady AppGeo</p> <p>Patrick Whiteford AZ DOT</p>

MORNING SESSIONS
(MONDAY 8:00 AM – 12:00PM)

Workshop 1 Highway Performance Monitoring System (HPMS): Concepts, Data Collection & Reporting Requirements

Instructor(s): Ronald Vaughn, FHWA

Justin Clarke, FHWA

This workshop will provide an overview and understanding of the Highway Performance Monitoring System (HPMS), and is designed to cover the following topics: (1) Program Background & Data Model, (2) Data Collection & Requirements, (3) Statistical Sampling Requirements, and (4) the Submittal Process. Additionally, this workshop will discuss modifications to various pavement data collection and reporting requirements in accordance with the Transportation Performance Management (TPM)-related Pavement & Bridge Condition Measures (PM2) final rule (slated to be published in December 2016).

In terms of target audience, this workshop is primarily intended for State DOT staff responsible for data collection, processing, and analysis activities which help support the annual HPMS submission process. While primarily targeted for those responsible for the assembling the HPMS submittal, others who can benefit from this workshop are:

- GIS staff responsible for developing and providing HPMS-related data
- Traffic data providers
- Pavement data providers
- Road Inventory data providers
- MPO Staff who provide HPMS-related data to State DOTs
- Local agency staff that provides HPMS-related data to their State DOT

Workshop 2 URISA GIS Capability Maturity Model adapted for State DOT GIS Offices/implementation

Instructor(s): Ian Kidner, ODOT

Allen Ibaugh, DTS

Implementing and maintaining GIS across an organization is a challenging task, as a wide range of factors need identified, assessed and monitored. As budgets tighten while technology demands increase, strategically determining GIS investment areas, business value to the organization, available resources, as well as customer satisfaction becomes a delicate balancing act. One solution to these challenges includes performing organizational maturity assessments, to identify GIS capabilities strengths and weaknesses.

This workshop provides insights regarding factors to consider when tackling organizational GIS maturity assessments. Several DOTs recently evaluated an online Maturity Model assessment tool developed by URISA, and will share the results of these assessments. Goals of this workshop include providing hands-on access to the URISA model for testing and evaluation, and determining further interest from the DOT community to refine the URISA Maturity Model for DOT needs, potentially providing a consistent platform for DOTs to perform on-going self-evaluations and maturity comparisons with peer agencies.

Please bring a laptop if you want to participate in the hands-on portion of the workshop.

Workshop 3 Case Studies for Using GIS in Advancing Highway Safety

Instructor(s): Eric Green, University of Kentucky Esther Strawder, FHWA

This workshop will emphasize the importance of GIS in the highway safety profession. Several case studies have been developed by FHWA to exemplify the role GIS can play in improving highway safety.

Workshop 4 Unifying Multiple Local Centerline Data Sources to Create a Sustainable ARNOLD Submittal

Instructor(s): Joe Breyer, Works Consulting Jim Meyer, AZ DOT

This ½ day workshop will go in-depth to show how Arizona DOT assembles their ARNOLD statewide centerline database in a sustainable fashion when a county, tribal, or federal data supplier updates their localized authoritative dataset. The workshop will provide an overall view of the entire data supply chain in-place at Arizona DOT, which serves other state and regional offices including the Arizona E-9-1-1 office. It will include working demonstrations of:

- The AZGEO Contribute web app as well as the AZGEO ticketing interface that provides feedback to the data owner
- Data validation functionality provided through AZGEO web services supported by 1Integrate by 1Spatial
- Data validation and improvement provided through the desktop using an LRS data review workflow
- Data comparison functionality provided through the desktop, as well as through AZGEO web services
- Data edge-matching and multiple source centerline alignment functionality
- Data assembly into a unified network to support ARNOLD as well as statewide centerlines with address ranges
- Data conflation of address ranges (or other important arc attributes) to appear as LRS events
- Distribution of LRS libraries and toolsets to the authoritative data providers to enable them to deploy efficient LRS within their organizations
- Methods for integrating the data comparison results into the Roads & Highways platform

The workshop is designed to highlight the successful and sustainable practices and policies that allow Arizona to respond immediately to incorporate centerline updates into a dynamic ARNOLD framework, in a response time that satisfies data users and promotes the local county, tribal, and federal agencies as the authoritative centerline suppliers. The issue of handling multiple centerline sources within the same agency will also be a central theme of this workshop.

AFTERNOON SESSIONS **(MONDAY 1:00 PM – 5:00PM)**

Workshop 5 HPMS Reassessment

Instructor(s): Tom Roff, FHWA

This workshop seeks to gather input for the recently announced HPMS reassessment.

Workshop 6 The Census Transportation Planning Products Program (CTPP)

Instructor(s): Penelope Weinberger, AASHTO Petya Maneva, Maricopa Association of Governments

The Census Transportation Planning Products Program (CTPP) is an umbrella program of data, research and technical assistance built around Census Bureau Journey to Work, Workplace based and Flow from home to work data. The Data Access Software includes some robust GIS features for both Geography selection and rendering of results, including map-based thematic analyses. Along with ASCII and EXCEL formats, the data can also be download in .tab and .shp files.

The workshop will be a full blown tour of the CTPP data, that includes a local application explained, a hands-on project with computers recommended for the participants and internet required with all participants creating a profile for a place of their choice, including as many capabilities of thematic analysis and GIS as time permits.

NOTE: To fully participate in this hands-on workshop, participants are encouraged to bring their own laptops to the Workshop.

Workshop 7 Transportation Asset Management: Planning, Strategy, and Implementation

Instructor(s): Ibaugh, Data Transfer Solutions, LLC Jason Amadori, Data Transfer Solutions, LLC

Public and private agencies face continuous challenges to accomplish more with less as increases in demand, regulatory requirements, infrastructure deterioration, and political and economic forces have significantly outpaced increases in capital and operating budgets. Transportation Agencies in particular are facing new requirements via the FAST Act (Fixing America's Surface Transportation). FAST requires transportation agencies to begin adopting performance and risk based project programming and asset management to ensure that public funds are being used in a manner that maximizes the return on investment and promotes access to safe transportation infrastructure; while balancing the acceleration of project delivery. In response, DOT's are increasingly turning to Enterprise Asset Management Programs and Systems to cope with these challenges and improve business performance and effectiveness. This half-day workshop will focus on several aspects of developing an asset management program and implementing an asset management system that could help meet FAST Act requirements, improve performance, reduce long-term costs, and maximize return on investment in infrastructure assets.

Specific topics include:

- Asset Management Fundamentals and FAST Act Requirements
- Strategy and Planning
- Data Collection Methods
- Software Solutions
- Factoring Risk into the Planning and Budgeting Process
- Information Management and Decision Support Tools

Workshop 8 ROW Data Modernization and Return on Investment

Instructor(s): Rich Grady, AppGeo

Patrick Whiteford, AZ DOT

Right of Way (ROW) Data Modernization projects at the Arizona, Colorado and Vermont DOTs are consolidating ROW and property information into statewide GIS layers. This workshop will explore project goals to make ROW data available to new and existing use cases. We will show how to garner buy-in through Return on Investment (ROI) analysis and answering basic questions (e.g., How much ROW land do we own? What is the total value of ROW?). Managing ROW as an asset supports decision-making and enhances efficiency and organizational effectiveness.

Participants will learn how these three states - each differing in size, structure, and ROW asset counts and available resources - got internal support and funding for their projects. The workshop will review the main benefits and drivers of ROI that justify investment in ROW modernization. Participants will also learn how to make their ROW project a success, best practices and lessons learned for constructing a statewide GIS layer, establishing scalable and sustainable ROW data processes, addressing the challenges of project cataloging and CADD to GIS interoperability, and connecting ROW data to business workflows.

TECHNOLOGY RECEPTION – TECHNOLOGY EXHIBITS OPEN

(MONDAY 5:30 PM TO 8:00 PM)
(TUESDAY 6:30 PM TO 8:00 PM)

The Technology Hall opens on Monday evening at 5:30 pm with a reception for all Symposium attendees and guests. On Tuesday, Symposium participants are encouraged to visit our exhibitors in the Technology Hall at 6:30 pm for refreshments.

The Technology Hall will open at 12:00 noon and close at 8:00 pm on Tuesday. On Wednesday, it will be open from 8:00 am to 5:00 pm. On Thursday, the Technology Hall will open at 8:30 am and end at noon. Participants are encouraged to visit with industry specialists to discuss solutions available in today's consulting community.

SPECIAL INTERESTS GROUPS

(TUESDAY 5:30 PM TO 8:00 PM)

This time slot provides an opportunity for groups led by state DOTs or other public organizations to take advantage of being in the same physical location in order to meet face to face with peers. This can also be a great way to hear more about the groups that are out there and how you can be a part of it.

If you are representing a special interests group and would like to inquire about meeting space, please contact:

Kevin Viani
kevin.viani@vermont.gov
802-279-4883

Opening Session / KEYNOTE SPEAKER
(MONDAY 8:00 AM TO 10:00 AM)



Win Holden, Publisher of *Arizona Highways*

Win Holden joined the magazine *Arizona Highways* as its sixth publisher on May 4, 2000. A Valley resident since 1980, he has held positions as General Manager of the Publishing Division of MAC America Communications, Inc.; Publisher and Editor-in-Chief of *PHOENIX* Magazine; and Executive Vice President and General Manager of Phillips-Ramsey Advertising & Public Relations.

Win was recognized by the Phoenix Business Journal as the 2015 Lifetime Achievement Award winner and was the 2007 inductee into the Arizona Tourism Hall of Fame. He is active in many charitable and community organizations. He was co-chair of the board for Arizona 2016 – the group that hosted and staged the 2016 College Football National Championship Game. He served as Chairman of the Fiesta Bowl and Greater Phoenix Chamber of Commerce Boards of Directors and chaired the Phoenix Pride Commission. Win is Past-President of the Endowment Board of the ASU Walter Cronkite School of Journalism and Mass Communications, is Past-President of the Executive Council of King of Glory Lutheran Church in Tempe, and chaired the Phoenix Citizen's Transit Commission. He serves as Chairman of the Board for the Greater Phoenix Convention and Visitor's Bureau as well as on the Executive Committee for the Arizona Tourism Alliance Board of Directors and is Past President of the International Regional Magazine Association (IRMA) Board of Directors. He served as Chair of the Arizona Centennial Commission and was President of the Centennial Foundation Boards of Directors.

As *Arizona Highways'* Publisher, Win leads the organization in its diverse activities centered on the world-renowned magazine including book publishing, licensing, e-commerce, product development, catalog marketing and retailing.

Arizona Highways is recognized as one of the finest travel magazines in the world, has approximately 130,000 subscribers in every state and in 110 countries. *Arizona Highways* has been named Magazine of the Year over 12 times by the International Regional Magazine Association.

STATE SUMMARY AND ROLL CALL OF STATES
(TUESDAY 10:30 AM TO 12:00 PM)

Summary results from a detailed survey sent to GIS representatives in each state will be presented. The Roll Call of States also features one representative from each country, state, province, or local agency briefly describing the status of their GIS implementations and the challenges that they face. Additionally, the Roll Call offers a time for attendees to put a face with a name and to make plans for continuing discussions with their peers.

Mapping GALLERY/Savvy Mapper
(TUESDAY 5:00 PM TO 6:30 PM)

GIS-T 2017 invites registered attendees to participate in the GIS-T Mapping Gallery. In this showcase attendees will be able to display the creative ways they have found to communicate their work through Web applications, GIS generated mapping and poster products. This is an opportunity to share techniques and applications with peers in the transportation GIS community. Come and see how states are using GIS to advance their work. A panel of judges will evaluate each map and mapping application; awards will be presented during the Thursday Box Lunch. Awards for the maps displayed will be given in the categories of: Transportation Publication, Information Usage, Public Presentation, and Effective Cartography. Winners in the Savvy Web Mapping category will also receive awards. Send your maps and posters to the Arizona Department of Transportation at the following address:

Patrick Whiteford, GISP

Arizona DOT
206 S. 17th Ave.
Mail Drop 310B
Phoenix, AZ 85007
(602) 712-8591
PWhiteford@azdot.gov

This year, presenters are also asked to submit a PDF of their map or poster. **Deadline for submission March 31, 2017.** Detailed guidelines for paper and web mapping application submissions are outlined at <http://www.gis-t.org/mapping-gallery/>

The Savvy Web Mapping session allows applicants who develop web mapping applications to present them in a special web presentation session, which is concurrent with the Map Gallery. Each applicant is requested to submit a PDF or PowerPoint slides of their application. A laptop will be provided with internet and a standard browser, or if an applicant wishes a personal laptop can be used. This is a great venue for everyone to showcase their work. The Savvy Web Mapping will be held in Pre-Function A on the 3rd Floor (still to be finalized) on Tuesday from 5-6:30 pm. We expect the web mapping application presentations to be near the printed Map Gallery to encourage everyone to see all submissions. Please contact Patrick Whiteford at pwhiteford@azdot.gov or 602-712-8591 if you wish to submit an application or if you have any questions.

Round Table Discussion Session

(WEDNESDAY 10:30 AM TO 12:00 PM)

TWO CONCURRENT SESSIONS

The following discussion themes were chosen by the GIS-T Planning Committee based on a review of topics submitted by symposium participants for the 2015 Roll Call of States: Symposium participants are encouraged to participate in the discussions, bring their issues, and share their experiences.

Comprehensive Roadway Database Inventories and Applications: How are we getting value from our investment?

***Moderators: John Auble, TomTom
Tom Roff, FHWA***

State DOTs are spending millions on roadway databases to support everything from traditional inventory to next generation applications that go beyond customary transportation uses. The session will enlist data producers and data users to examine the benefits and challenges in keeping up with growing analytical and reporting demands. The intent is to elicit best practices and spark new ideas.

Gaining Situational Awareness; Real-time Data and New Technologies

***Moderators: Jay Clark, GDMIS
Jan Van Sickle, Van Sickle LLC***

The expanding availability of real-time traffic and system conditions data can provide actionable information for transportation operations, planning, and management. This discussion will highlight the geospatial nature of these emerging technologies, how they can be used, their application to autonomous vehicle systems, and how GIS must become more analytical and proactive to support future transportation needs.

WEDNESDAY NIGHT SOCIAL
Lucky Strike: Bowling and Nightlife Appeal...
(WEDNESDAY 6:00 PM TO 9:00 PM)

The logo for Lucky Strike, featuring the words "LUCKY STRIKE" in a bold, red, sans-serif font. The letters are slightly shadowed, giving it a three-dimensional appearance. The logo is set against a background of a light gray grid pattern.

Tucked away in the bustling oasis of Downtown Phoenix, Lucky Strike Phoenix lights up the CityScape Center with a tantalizing array of premium bowling, mouthwatering cuisine, and lavish nightlife appeal. Whether you're looking to cool down with an ice-cold cocktail from our experienced mixologists, have a bite to eat, or just to celebrate another merciless thrashing courtesy of the Suns, Lucky Strike Phoenix is the perfect place to make your stay here unforgettable.

Wednesday Night Social is included as part of the conference registration. Guest tickets for the social can be purchased for \$65 at the conference registration desk.

THURSDAY LUNCH
(12:00 PM TO 1:30 PM)

Box Lunch is provided for presentation of awards, next host state presentation and drawings for prizes.

SYMPOSIUM WRAP-UP AND DEBRIEF
(THURSDAY 1:30 PM TO 3:30 PM)

Come join us for a debriefing of this year's conference and preliminary planning for next year. Refreshments provided.

GUEST TOURS

Tuesday, April 11, 2017

Heard Museum

As we start your expedition with the first natives of Arizona, the American Indian. No place better to capture that, through arts and cultures as you tour the Heard Museum an institution that successfully combines stories of American Indian people from a personal perspective with the beauty of art. This internationally recognized museum known for the quality of its collections and educational programming will provide visitors with a distinctive perspective about the art and cultures of Native people from the Southwest. The Heard Museum is home to the Billie Jane Baguley Library and Archives which offers information about the art and cultures from around the world. The Heard Museum Shops is the ultimate shopping experience promoting American Indian artists to display, sell and educating its visitors about their art.

Windsor Restaurant

Tucked into its namesake historic Phoenix neighborhood, *Windsor* is a neighborhood bar and *restaurant* with a backyard-style patio, and fun trendy decor. Contemporary American Cuisine that is creative and delicious with a robust selection of beer, wine and cocktails. Service is spot on with fast and friendly service, not to mention accommodating. The patrons say, “Electric and amazing”, “Never disappoints” and “Great atmosphere”.

Bead World

Learn to make stretch bracelets at Bead World’s fabulous array of beading classes. Enjoy the fun loving education from staff members, who are skilled bead makers and talented jewelry designers.

Wednesday, April 12, 2017

Desert Botanical Garden

Discover the magnificent beauty of the desert at the Desert Botanical Garden. Enjoy the Garden’s five unique trails to explore and enjoy the beauty of the Sonoran Desert. The Garden is a wondrous and captivating way to experience the beauty of the desert without leaving Phoenix. The Garden’s collection includes over 20,000 catalogued plants representing one of the most important documented collections of desert plants in the world. Featuring outstanding displays, art exhibits, diversity of form, texture and color found in this wonderful array of cacti and succulents, explore and learn about what the desert has to offer. During your visit enjoy the new Butterfly Pavilion it features hundreds of live butterflies, as well as a caterpillar nursery and emergence chamber. The Garden’s newest exhibit will provide visitors with an opportunity for up close interaction with butterflies while learning about their role as pollinators, characteristics of the butterfly in different lifecycles, and conservation efforts to protect them.

Mission Restaurant

Old Town Scottsdale’s heart is beating to a Latin drum, The Mission is cooking up modern Latin cuisine blending influences from Spain, Mexico, Central America and South America The sophisticated yet casual allure of the Mission seamlessly blends old world charm with modern elegance. The restaurant suits a variety of moods from cozy outdoor seating fireside and intimate indoor areas, to the lively community table in the lounge; while the sounds of mixed Latin and modern music resonate in perfect compliment. Succulent aromas from the grill mix tradition and ingenuity while setting the stage for your perfect dining experience.

Historic Old Town Scottsdale

Take the 60-Minute Walking Tour of Old Town and experience the Western shops, Southwest Indian items and Indian jewelry. The tour will take you through historic buildings, shops, galleries, and restaurants. History buffs can visit the “Little Red School House Museum, and the old adobe chapel, one of the first churches in Scottsdale. Don’t forget to stop by the “Sugar Bowl Ice Cream Parlor, it has been in Scottsdale for over 50 years and still has a fun 1950s feel. The ice cream is tasty and the atmosphere makes it a fun stop.

CONCURRENT SESSION 1

1:30 PM, April 11

1.1 Imagery and Visualization		TBD	
Moderator: TBD			
1.1.1	Curating Imagery Collections with Esri Image Extension	Eric Rodenberg	Eric Abrams
		Esri	Iowa Department of Transportation
		New Albany, Ohio	Ames, Iowa
1.1.2	Knowledge from Pixels	Kyle Campbell	Sean Wohltman
		Google	Google
		Austin, Texas	Brielle, NJ
1.1.3	TransitMap - A Visual Depiction of NJ TRANSIT's Bus Operating	Bruce Aquila	
		Hexagon Safety & Infrastructure	
		Madison, AL	
1.2 Addressing		TBD	
Moderator: TBD			
1.2.1	Win/Win Workflow - How AZ Benefits by Participation in the USDOT National Address Database	Curtis Pulford	
		State of Arizona	
1.2.2	State NAD & ARNOLD Data to Meet Multiple Program Needs	Gene Trobia	Steve Lewis
		Arizona State University	US Department of Transportation
		Tempe, AZ	Washington, District of Columbia
1.2.3	Kansas DOT and NG911 Geospatial Collaboration and Road Centerline Conflation	Kyle Gonterwitz	
		Kansas DOT	
		Topeka, KS	
1.3 Asset Management		TBD	
Moderator: TBD			
1.3.1	How Much Can GIS Data Can you Squeeze from a \$1,000 Consumer Drone?	Eric Gakstatter	
		GPS World Magazine	
		West Linn, OR	
1.3.2	Geographic Information System Enabled Culvert Design	Ashton Greer	Andrew Graettinger
		University of Alabama	University of Alabama
		Tuscaloosa, AL	Tuscaloosa, AL
1.3.3	ADOT's Right-Of-Way Data Collection	Patrick Whiteford	
		ADOT	
		Phoenix, AZ	
1.4 Traffic Safety and Crash Analysis		TBD	
Moderator: TBD			
1.4.1	Spatial Distribution of Alcohol Involved Crashes in Louisiana	Jeff Dickey, Ph.D.	
		LSU Highway Safety Research Group	
		Baton Rouge, Louisiana	
1.4.2	Building FHWA's Model Inventory of Roadway Elements (MIRE) Database	Shane White, GISP	
		State of Rhode Island	
		Providence, RI	
1.4.3	Creating Curve Data on Local Roads to Support Safety Analysis	Michael Trunzo	
		Vermont Agency of Transportaion	
		Montpelier, Vermont	

CONCURRENT SESSION 2

3:30 PM, April 11

2.1 Process Improvement		TBD	
Moderator: TBD			
2.1.1	Using GIS Online for tracking development of roadway construction plans	Tom Cox Illinois Department of Transportation Springfield, Illinois	
2.1.2	Lane Closure Information System at Florida DOT	Daniel Teaf Florida Department of Transportation Tallahassee, Florida	Jessica Rogers Florida Department of Transportation Tallahassee, Florida
2.1.3	Big Impacts and Low Costs: ODOT's New GIS Map & Data Portal	Jeremy Planteen Oklahoma Department of Transportation Oklahoma City, OK	
2.2 Traffic Data		TBD	
Moderator: TBD			
2.2.1	MAG Activity-Based Travel Demand Model	Petya Maneva Maricopa Association of Governments Phoenix, Arizona	
2.2.2	Using NPMRDS to analyze and report traffic performance at the Dallas-Fort Worth Area	Francisco Torres North Central Texas Council of Government Arlington, Texas	
2.2.3	FHWA/HERE Traffic Probe Data Project & LRS Conflation Tools	John Hudler, GISP Transcend Spatial Solutions Norcross, Georgia	Keith Hangland Here
2.3 LRS Software Deployment		TBD	
Moderator: TBD			
2.3.1	Eating at the GIS Buffet: Mixing GIS Software to Maximize Efficiency and Output	Elizabeth Thebo SCDOT Columbia, SC	Yelena Kalashnikova SCDOT Columbia, SC
2.3.2	Upgrading and Changes	Nicole Hanson Idaho Transportation Department Boise, ID	
2.3.3	Census Road Dataset Conflation Progress 2017	Dr. Valerie L. Beaudin U.S. Census Washington, DC	
2.4 Winter Operations and VRP		TBD	
Moderator: TBD			
2.4.1	Automating Inspections using the Vehicle Routing Problem	Ray Brice Pima County ITD Tucson, AZ	
2.4.2	Snow Removal by the Numbers: Using FME to Extract Key Metrics for Winter Operations	Mark McCart HNTB/Iowa DOT Ames, IA	
2.4.3	Lessons Learned Using ESRI's Network Analyst to Optimize Snow Treatment Routes in Kentucky	Benjamin Blandford, PhD, GISP Kentucky Transportation Center	Eric Green, PE, GISP Kentucky Transportation Center

		Lexington, KY	Lexington, KY
CONCURRENT SESSION 3			10:30 AM, April 12
3.1 Data Management			TBD
Moderator: TBD			
3.1.1	PennDOT's Maintenance-IQ: How Has It Been Used to Better Operations	Matthew Long	Nate Reck
		PennDOT	GeoDecisions
		Harrisburg, PA	Camp Hill, PA
3.1.2	Improved Data Consistency through Workflow Manager and Training	Jesse Pearson	
		MnDOT	
		St. Paul, MN	
3.1.3	High Availability: Technology Leveraged by Iowa DOT's Mapping Applications	Mark McCart	Eric Abrams
		HNTB/Iowa DOT	Iowa Department of Transportation
		Ames, IA	Ames, IA
3.2 Mobile GIS			TBD
Moderator: TBD			
3.2.1	Next Generation Travel Surveys - GPS Tracking and Interpretation	David P. Racca	
		University of Delaware	
		Newark, Delaware	
3.2.2	Sweeping on the Job: Minimizing Inspection Costs Using GPS, GIS and Custom Widgets	David Olson	Kusi Akuoko
		Maricopa County	Maricopa County
		Phoenix, Arizona	Phoenix, Arizona
3.2.3	Collector for The Things We Collect	Brian Andersen	
		Montana Department of Transportation	
		Helena, MT	
3.3 Road Network			TBD
Moderator: TBD			
3.3.1	Using ARNOLD to Build a Statewide Planning Model Network for Indiana	Bruce D. Spear, Ph.D.	
		Cambridge Systematics	
		Cambridge, MA	
3.3.2	Automating the Maintenance and Update of ADOT's Statewide Street Centerline	Duncan Guthrie	James Meyer
		ISpatial Inc.	ADOT
		Sterling, VA	Phoenix, AZ
3.3.3	North Carolina's New Statewide Road Centerline Data	Erin Lesh	Tim Sheldon
		NCDOT	Timmons Group
		Raleigh, NC	Candler, NC
3.4 Process Improvement			TBD
Moderator: TBD			
3.4.1	DOT's Continuous Improvement of GIS Workflows	Patrick Whiteford	
		ADOT	
		Phoenix, AZ	
3.4.2	Working Towards Data Integration Across the Geospatial Data Life-Cycle	Shawn Blaesing-Thompson	Brad Cutler
		Iowa Department of Transportation	Iowa Department of Transportation
		Ames, IA	Ames, IA
3.4.3	Moving Your on Premise GIS to Amazon Web Services	Mark Flahan	
		Arizona DOT	
		Phoenix, Arizona	

CONCURRENT SESSION 4

1:30 PM, April 12

4.1 LRS Implementation		TBD	
Moderator: TBD			
4.1.1	Practices and Challenges in Adopting Esri Roads and Highways in the U.S. DOTs	Xiao Qin University of Wisconsin-Milwaukee Milwaukee, Wisconsin	
4.1.2	Auto-Updating Multiple LRMS with Esri Roads and Highways	Darryl Mack Louisiana Department of Transportation Baton Rouge, LA	Adrien Litton Arcadis Irvine, CA
4.1.3	Onboarding Business Units with Roadway Characteristics Editor	Tim Sheldon Timmons Group Richmond, VA	Sarah Wray NCDOT Raleigh, NC
4.2 Traffic Data		TBD	
Moderator: TBD			
4.2.1	Enterprise Data Collection: ESRI Collector	Ian Kidner, GISP Ohio Department of Transportation Columbus, Ohio	John Puente, GISP Ohio Department of Transportation Columbus, Ohio
4.2.2	Conducting In-Service Performance Evaluations of Guardrail End Terminals Using SURVEY123	Jared Causseaux Florida Department of Transportation Tallahassee, Florida	Mitch Davidson FDOT – Office of Maintenance Tallahassee, Florida
4.2.3	MassDOT Field Inspection Editing Application	Jose Simo MassDOT Boston, MA	
4.3 Solving Geospatial Issues		TBD	
Moderator: TBD			
4.3.1	MIRE MIRE Pants On Fire	Jesse M. Day Transcend Spatial Solutions Sarasota, Florida	William Schuman Transcend Spatial Solutions Sarasota, FL
4.3.2	Setting Priorities for New Interchanges in the Twin Cities	Nick Meyers Bolton & Menk Burnsville, MN	
4.3.3	Will SAVs Increase VMT?	Peyvand Hajian California State University of Fresno Fresno, California	Aly Tawfik California State University of Fresno Fresno, California
4.4 Mobile GIS		TBD	
Moderator: TBD			
4.4.1	Canadian GIS-T Survey 2016 Results	Dave Loukes Opus International Consultants Fredericton, NB	
4.4.2	A Big Change is Coming	Dr. Jan Van Sickle Critical Infrastructure Denver, Colorado	
4.4.3	Geospatial Online Transportation User Group	Becky Hjelm Utah Department of Transportation Salt Lake City, Utah	Matt Robinson Michigan Department of Transportation Lansing, Michigan

CONCURRENT SESSION 5

3:30 PM, April 12

5.1 Web Maps		TBD	
Moderator: TBD			
5.1.1	UDOT's Design to GIS Conversion Evolution	Paul Damron UDOT Richfield, UT	
5.1.2	Active Transportation Planning - Web based tool to evaluate performance of investments	William E. Walter, GISP Cambridge Systematics, Inc. Austin, TX	
	TBD		
5.2 Energy and the Environment		TBD	
Moderator: TBD			
5.2.1	Evaluating Accessibility of Urban Transit Systems: An ArcGIS-Based Model and a Case Study	Peyvand Hajian California State University of Fresno Fresno, California	Aly Tawfik California State University of Fresno
5.2.2	Climate Resilient Transport Asset Management System in Belize	Bishwa Pandey NepCol International LLC Stone Ridge, VA	Frederico Ferreira Fonse Pedroso The World Bank Washington DC, DC
5.2.3	PennDOT Connects - Linking Planning and NEPA using GIS	Greg Ulp GeoDecisions Camp Hill, PA	John Parker Pennsylvania Department of Transportation Harrisburg, PA
5.3 Asset Management Tools		TBD	
Moderator: TBD			
5.3.1	ADOT's Asset Management and Performance Management System Tool	Dane Stephenson ADOT Phoenix, AZ	Patrick Whiteford ADOT Phoenix, AZ
5.3.2	Using GIS for Communication About Operation and Maintenance of Hanshin Expressway	Masato Okayama Hanshin Expressway Company Limited Osaka-City, Osaka, Japan	Takayuki Arakawa Hanshin Expressway R&D Company Limited Osaka-City, Osaka, Japan
5.3.3	Michigan DOT's GIS-Centric Transportation Asset Management System	Kevin McKnight Michigan Department of Transportation Lansing, Michigan	William Schuman Transcend Spatial Solutions Sarasota, FL
5.4 Traffic Safety and Crash Analysis		TBD	
Moderator: TBD			
5.4.1	Implementing Iowa's Web Based Safety Analysis Tool	Brad Cutler Iowa Department of Transportation Ames, IA	
5.4.2	Integrating with Roads and Highways for Traffic Data Management at ALDOT	Dawson Grant Alabama Department of Transportation Montgomery, Alabama	MaryGail Broussard PMG Software Professionals Madison, Alabama
5.4.3	Safety Screening Analysis Geometric Deficiency and Crash Map Automation	Glenn Vorhes, PE, GISP University of Wisconsin - Madison Madison, Wisconsin	Steven T. Parker, Ph.D. University of Wisconsin - Madison Madison, Wisconsin

CONCURRENT SESSION 6

8:30 AM, April 13

6.1 Federal Rules & LRS TBD

Moderator: TBD			
6.1.1	ARNOLD in Arkansas: Stick a Fork in Us, We're Done!	Sharon Hawkins	Jonathan Duran
		Arkansas Highway Department	Arkansas GIS Office
		Little Rock, Arkansas	Little Rock, Arkansas
6.1.2	FAST Act TPM Implementation: Leveraging HPMS to Assess Pavement Condition	Ronald Vaughn, PMP	Justin Clarke, AICP
		Federal Highway Administration	Federal Highway Administration
		Washington, DC	Washington, DC
6.1.3	HPMS Data Quality Discovery with Ease and Velocity	Bo Guo	
		Gistic Research Inc.	
		Tempe, AZ	

6.2 Asset Management TBD

Moderator: TBD			
6.2.1	Georgia DOT's Programmatic Striping Plan	Scott Susten/Paul Harvey	Ryan Bowman
		Georgia Department of Transportation	Arcadis
		Atlanta, Georgia	Atlanta, Georgia
6.2.2	SCDOT Performance Dashboards for Bridge and Pavement	Yelena Kalashnikova	Mitch Stephens
		SCDOT	PMG Software Professionals
		Columbia, SC	Cumming, Georgia
6.2.3	Performance Based Planning: MDOT SHA Innovative Approach	Laurie Goudy	Candice Ottley-Francois, PMP, GISP
		MDOT State Highway Administration	JMT Technology Group
		Baltimore, MD	Sparks, MD

6.3 Process Improvement TBD

Moderator: TBD			
6.3.1	Integrating Performance Measures into MPO Programming Process	Josh Pope	Paul Casertano
		Pima Association of Governments	Pima Association of Governments
		Tucson, AZ	Tucson, AZ
6.3.2	Using ArcGIS Online as a Traffic Count Monitoring Tool	Tyler Halverson	Scott Kiley
		Wisconsin Department of Transportation	MSA Professional Services
		Madison, Wisconsin	Madison, Wisconsin
6.3.3	VDOT ArcGIS Online Lessons Learned	Brian Kingery, GISP	
		Virginia Department of Transportation	
		Richmond, VA	

6.4 Traffic Data TBD

Moderator: TBD			
6.4.1	Using Web AppBuilder Developer Ed. to Query and Present Transportation System Performance	David P. Racca	
		University of Delaware	
		Newark, Delaware	
6.4.2	Enabling Public Consumption of Traffic Volume Data with an Initiative Web Map	Stephanie Snider	Matt McCracken
		Nevada Department of Transportation	Timmons Group
		Carson City, Nevada	Richmond, Virginia
6.4.3	Improving Traffic Safety Data with GIS	Pradeep Tiwari	Jothan Samuelson
		Arizona Department of Transportation	Works Consulting LLC
		Phoenix, Arizona	Gilbert, Arizona

CONCURRENT SESSION 7		10:30 AM, April 13	
7.1 Traffic and Safety		TBD	
Moderator: TBD			
7.1.1	Visualization and GIS Analysis of Recorded Bicycle and Pedestrian Collisions in Tucson	Gregory Rothwell Works Consulting LLC Gilbert, AZ	
7.1.2	Spot Reserved for paper winner		
7.1.3	Analyzing Spatial Patterns, Statistics Based on MAP21/FAST Act Safety Performance Measures	Abhishek Bhargava AgileAssets Cedar Park, Texas	
7.2 Data Visualization		TBD	
Moderator: TBD			
7.2.1	Communicating Key Messages to the Public via Maryland State Highway Administration's Public Outreach	Craig Mackowiak Maryland State Highway Administration Baltimore, MD	Niki Miller JMT Technology Group Sparks, MD
7.2.2	Interactive Data Visualization Tools for Travel Demand Model Datasets	Shuyao Hong Maricopa Association of Governments Phoenix, Arizona	
7.2.3	Maximizing the Benefits from Your LiDAR Data	Hussein Elkhansa West Virginia Department of Transportati Charleston, WV	Connie Gurchiek Transcend Spatial Solutions Sarasota, FL
7.3 Enterprise LRS & Business Integration		TBD	
Moderator: TBD			
7.3.1	Turning an LRS into an Enterprise LRS	Phil Hardy AgileAssets San Clemente, CA	
7.3.2	Leveraging LRS Across the Enterprise	Troy Marsh PMG Software Professionals Marietta, GA	
7.3.3	LRS & Business Integration: To Boldly Go Where No One Has Gone Before...	Jesse Pearson MnDOT St. Paul, MN	
7.4 Data Management		TBD	
Moderator: TBD			
7.4.1	State DOT Organizational Assessments and Capability Maturity Models for GIS	Mark Sarmiento Federal Highway Administration - HQ Washington, DC	Michael Green The Volpe Transportation Systems Center Cambridge, MA
7.4.2	Establishing Enterprise-Wide Data Governance for the Ohio Department of Transportation	Greg Yarbrough Data Transfer Solutions, LLC Lake Lure, North Carolina	Dave Blackstone Ohio Department of Transportation Columbus, Ohio
7.4.3	Connecticut Department of Transportation (CTDOT) Right-of-Way MOSAIC Project	Mark Goetz CT Metro Council of Governments Bridgeport, CT	John Durling CT Department of Transportation Newington, CT

GIS-T Attendee Registration Form

Please use our easy On-line Registration at: <http://www.gis-t.org>

ONE REGISTRATION PER PAGE PLEASE

NOTICE: IF YOU HAVE GUEST(S) ATTENDING, PLEASE SEE OUR GUEST REGISTRATION FORM

Name (Mr. Ms.) _____ Nickname _____
First Last

Address _____
Street City State ZIP

Business Name _____

Business Phone _____ Fax _____ Email: _____

_____ GIS-T Attendee

FEES

	Early-Bird (3/10/17)	After Early-Bird	Total
GIS-T 2017 Symposium	\$350	\$400	\$
GIS-T 2017 Workshops	\$150	\$175	\$
Student – Symposium and Workshops	\$135	\$160	\$
One Day Symposium <input type="checkbox"/> Tue <input type="checkbox"/> Wed <input type="checkbox"/> Thurs	\$150	\$175	\$
AMOUNT ENCLOSED			\$

Note on Fees

1. **GIS-T Symposium fee does not include workshops.**
2. Workshop fee covers a morning and afternoon workshop session (Monday, April 10th, 2017) and includes Breakfast and Lunch. Please select choice of workshops below.
3. Student Fee covers attendance at the Symposium, Workshops, Lunches, and Exhibit Hall Receptions. Please select choice of workshops below.
4. One Day Registration Fee covers attendance for one day at the Conference, Lunch, and Exhibition Hall Reception. **It does not include the Wednesday Social.**

Workshops (IMPORTANT: REGISTRATION FEE FOR THE SYMPOSIUM DOES NOT INCLUDE WORKSHOPS, SEE FEE LIST ABOVE)

Morning Session - Pick One	Afternoon Session - Pick One
<input type="checkbox"/> Highway Performance Monitoring System (HPMS): Concepts, Data Collection & Reporting Requirements	<input type="checkbox"/> HPMS Reassessment
<input type="checkbox"/> URISA GIS Capability Maturity Model adapted for State DOT GIS Offices/implementation	<input type="checkbox"/> The Census Transportation Planning Products Program (CTPP)
<input type="checkbox"/> Case Studies for Using GIS in Advancing Highway Safety	<input type="checkbox"/> Transportation Asset Management: Planning, Strategy, and Implementation
<input type="checkbox"/> Unifying Multiple Local Centerline Data Sources to Create a Sustainable ARNOLD Submittal	<input type="checkbox"/> ROW Data Modernization and Return on Investment

REGISTRATION WILL OPEN ON Monday, April 10th, AT 7:00 AM and CONTINUES THROUGHOUT THE SYMPOSIUM

PAYMENT BY CHECK, MONEY ORDER OR REGISTER ON-LINE USING CREDIT CARD

Send Registration & Check
to:

AASHTO GIS-T
c/o Sarah Wray
NCDOT GIS Unit
1521 Mail Service Center
Raleigh, NC 27699-1521
(919) 707-2167
sbwray@ncdot.gov

Make checks Payable to "GIS-T". Check <http://www.gis-t.org> for the most up to date information.

Refund Policy: All cancellations and refunds are subject to a \$50.00 processing fee. No refunds will be provided after April 1, 2017. Please contact Sarah Wray, NCDOT GIS Unit, 1521 Mail Service Center, Raleigh, NC 27699-1521 for refunds.

We are encouraging the use of the electronic program. As such a limited number of paper final programs will be available on site at the registration desk. The program is available on Guidebook in electronic format.

Guest(s) Registration Form

Please use our easy On-line Registration at:

<http://www.gis-t.org>

This registration is for Guest(s) of Symposium Participants

Symposium Participant's Name (Mr. Ms.) _____
First Last

ADULT GUEST REGISTRATION (Includes Guest Tours, Breakfasts, Receptions, Tuesday Social, and Wednesday Boxed Lunch.)

Adult Guest Name (Mr. Ms.) _____
First Last

Address _____
Street City State ZIP

Business Name _____

Business Phone _____ Fax _____

E-mail: _____

Fees include continental breakfast each morning, day trips on Monday and Tuesday, and Social on Tuesday night. Lunch will also be provided on the Tuesday day trip.

FEES

	Number of Registrants	Total
\$165.00		\$
TOTAL AMOUNT*		\$

CHILD(REN) REGISTRATION (Under age of 18)

Child(ren)'s Name(s)/Age(s) _____
M/F _____ M/F _____

M/F _____ M/F _____

FEES

	Number of Registrants	Total
Children Ages 6 & under	Free	\$
Age 7 - 18	\$35.00 for Each Child	\$
TOTAL AMOUNT		\$

GRAND TOTAL ENCLOSED FOR ALL REGISTRANTS	\$
--	----

Send Registration & check to:
AASHTO GIS-T
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(919) 707-2167
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Make checks Payable to "GIS-T". Check <http://www.gis-t.org> for the most up to date information.

Phoenix, Arizona – Lodging and Logistics

Hotel Information:

Sheraton Grand Phoenix

340 North 3rd Street
Phoenix, AZ 85004
(602) 262-2500

The Sheraton Grand Phoenix hotel special group rate is \$179/night from April 9 - 14, 2017. The last day to book at this rate is March 10, 2017.

Make your hotel reservations on the [reservation website](#).

Internet: Included with rooms and in public spaces in the hotel.

Weather in Phoenix: The average high temperature in Phoenix for this week is 84°F, and the average low temperature is 58°F. Rain and thunderstorms are unlikely. April humidity levels average around 28%, and wind speeds average 6 mph.

Travel: Airport Information

Phoenix Sky Harbor International Airport (PHX)
3400 E Sky Harbor Blvd
Phoenix, AZ 85034
<http://skyharbor.com>

Car Rentals: Rental Cars are available from PHX. Go to this link for more details:

<http://skyharbor.com/ParkingTransportation/RentalCars>

Airport Transportation: The conference hotel does not provide airport shuttle services. Suggested options for transport from the airport to the hotel include:

- METRO Light Rail: \$2. METRO stop is three blocks from the conference hotel, on Central Avenue and Van Buren
- [Super Shuttle](#) (one-way): approximately \$13
- Airport Taxi (one-way): approximately \$22



GIS-T Symposium Affiliates

**American Society for Photogrammetry and Remote Sensing
Association of Metropolitan Planning Organizations
Highway Engineering Exchange Program
National Association of Regional Councils
National States Geographic Information Council
Transportation Research Board
Urban and Regional Information Systems Association
U.S. Department of Transportation**

- **Federal Highway Administration**
- **Federal Transit Administration**

GIS-T 2017 - Local Host Contact

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