



WAIRISA

Communicating Our World

2014 Washington GIS Conference

May 12—14 • Greater Tacoma Convention and Trade Center

Conference at a Glance

Monday	Tuesday	Wednesday
<p>Registration 8 AM—4 PM Level 3 Foyer</p>	<p>Registration 8 AM—4 PM Level 3 Foyer</p>	<p>Registration 8 AM—1:30 PM Level 3 Foyer</p>
<p>8:30—12:00 Morning Workshops</p>	<p>8:00—10:00 Continental Breakfast Ballrooms</p> <p>8:30—10:15 Opening Plenary Keynote Pt. 1: Breece Robertson & Thought Leaders Introduction</p> <p>10:15—10:30 Morning Break</p> <p>10:30—12:00 Technical Presentations</p>	<p>6:30 AM—Fun Run!</p> <p>8:00—10:00 Continental Breakfast Ballrooms</p> <p>8:30—10:00 Technical Presentations</p> <p>10:00—10:30 Morning Break</p> <p>10:30—12:00 Technical Presentations</p>
<p>12:00—1:00 Lunch Box Lunch</p>	<p>12:00—1:00 Lunch Buffet Lunch with theme tables</p>	<p>12:00—1:30 Lunch Box Lunch</p> <p>BALLOTS DUE</p> <p>12:15—1:15 Leadership Meeting</p>
<p>1:00—4:30 Afternoon Workshops</p>	<p>1:00—2:30 Technical Presentations</p> <p>2:30—3:00 Afternoon Break</p> <p>3:00—4:30 Technical Presentations</p>	<p>1:30—3:00 Technical Presentations</p> <p>3:15—4:45 Closing Plenary Award & Election Results Keynote Pt. 2 Panel: — Breece Robertson & Thought Leaders</p>
<p>6:00— ? Informal Gathering Harmon Brewing 1938 Pacific Ave S</p> 	<p>4:30— 6:00 Vendor Social Vendor Area</p> <p>6:30—8:30 Evening Social The Social Bar & Grill 1715 Dock St</p> 	<p>Esri Learning Lab 8:30—3:00</p> <p>Esri Learning Lab 11:00—4:30</p>  <p>@WAURISA #wagis14</p> <p>Follow 'Washington URISA' here:  </p>

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President's Message



Welcome to the Washington GIS Conference. This year's theme – *Communicating Our World* – really demonstrates what the 17th year of this event is all about. Throughout the conference you'll notice that three aspects of this theme have been integrated into several components of the conference, including our opening plenary, track presentations, lunch activities, as well as our new closing plenary panel. These three aspects are:

- How do you communicate the value of GIS to your organization or clients?
- How do you use GIS to support communication efforts?
- How do you improve communication between stakeholders in your GIS project work?

By coming together for a two day conversation on *Communicating Our World*, we can share the very best ideas, questions and conversations—all to support your growth and expertise. This is more critical than ever as the expansion of geospatial technologies continues into nearly every industry and area of our communities. With 275+ attendees and over 15 sponsor firms with us in Tacoma, you'll have plenty of opportunities to experience *Communicating Our World*.

Thanks for being here this week – enjoy the conference!

Heather Glock, President
president@waurisa.org

Opening Plenary

Tuesday, May 13 8:30 a.m. - 10:15 a.m.
Ballrooms

WELCOME & GENERAL REMARKS	Heather Glock, WAURISA President
PRESENTATION OF SUMMIT AWARD	Karl Johansen, Past Summit Award Winner
CONFERENCE ANNOUNCEMENTS	Chuck Buzzard, Conference Chair
KEYNOTE PART 1	Breece Robertson, The Trust for Public Lands Thought Leaders Introduction

Keynote



Breece Robertston

National GIS Director

The Trust for Public Land

Breece Robertston joined The Trust for Public Land in 2001 to create a comprehensive, coordinated GIS program. Today she provides leadership for the organization’s Conservation Vision and GIS service—the leading provider of “Land for People” science in the country—managing a cutting-edge team of GIS staff and consultants nationwide.

At the 2012 Esri International GIS Users Conference, The Making a Difference Award honored the work of The Trust for Public Land and was accepted by Breece Robertston, the trust’s director of GIS, and Will Rogers, chief executive officer. The award is given to an organization that has used GIS to bring about meaningful change in the world. For more than a decade, The Trust for Public Land has enhanced its conservation real estate expertise with Greenprinting, a community-driven GIS planning service. Greenprinting provides a framework for communities to prioritize their parks and conservation goals and implement funding and land protection strategies. Using GIS in a transparent mapping and modeling process, The Trust for Public Land has used Greenprinting to engage local residents in a thoughtful, place-based planning exercise.

The Trust for Public Land (<http://www.tpl.org>) has over 50 projects in the Pacific Northwest; over 25 of those are in Washington State. From the deserts of Central and Eastern Washington, to the mountains and forests of the Cascades and the waters of the Puget Sound, the Trust of Public Land has projects that touch much of the conservation work that we as GIS practitioners support.



Leadership Meeting

Wednesday, May 14 12:15 p.m. - 1:15 p.m.
Room 315

Join us for the Leadership Meeting during lunch on Wednesday – everyone is welcome and encouraged to attend! The WAURISA board will share a brief overview of what WAURISA is about and highlight some of our successes during the past year. We'll then open the floor up for discussion and feedback from you – our WAURISA members. We're very interested in hearing your ideas for improving WAURISA's relevance for you and your professional development.

Bring your lunch, learn a bit about how WAURISA is run, and share your ideas for the future of WAURISA.

Closing Plenary

Wednesday, May 14 3:15 p.m. - 4:45 p.m.
Ballrooms

BOARD ELECTION RESULTS Nomination Committee

MAP CONTEST WINNERS Suzanne Shull

DICK THOMAS AWARD WINNERS Sarah Myers

KEYNOTE PART 2: PANEL Breece Robertson & Thought Leaders

Be sure to vote...

Ballots due Wednesday, May 14 12:00 p.m.

Washington URISA Chapter Board Position Nominees

Board members are elected for two year positions during the annual conference. Several positions are up for election this year. Ballot and candidate statements are included with your conference program in a separate handout. Please take a few moments to review candidate statements for this year's open positions, fill out your ballot and **return it to the ballot box at the registration desk by Noon Wednesday, May 14th**. One ballot per attendee. Winners will be announced at the closing plenary on Wednesday afternoon.

Map Contest

The Map Contest is a terrific opportunity for conference attendees to showcase their work and let their peers and colleagues be inspired by the interesting projects in which they are involved. All contest maps are on display in the foyer area near the registration desk on the third floor. Please take some time to view the maps and cast your vote for the best maps using the ballot included with your conference program. **Return your ballot by noon on Wednesday, May 14 to the ballot box located at the registration desk**. Prizes for best maps will be awarded at the closing plenary on Wednesday afternoon. Your vote matters!

In Memoriam

DR. ROGER TOMLINSON, THE FATHER OF GIS

Washington URISA extends our condolences to the family of Dr. Roger Tomlinson, the Father of GIS, on his passing earlier this year.



Picture by: Jana Chytilova/Ottawa Citizen

Jack Dangermond had this to say on the passing of Dr. Roger Tomlinson:

Roger was above all else a geographer and was always proud to say that. He loved GIS, the field that he invented, and was so pleased to come to Esri and help us in thinking through difficult problems. He had a passion for staying current with the most recent technologies and always had insights that none of the rest of us had. He also loved attending the annual Esri User Conference and the opportunity to both see and acknowledge the great work of GIS professionals from around the world. He always said that giving out the Special Achievement in GIS (SAG) Awards was his favorite day of the year.

Roger both created and dignified our field with his strong yet graceful spirit and insight. He invariably knew what was important. His vision of first thinking about and then designing and building practical systems that created meaningful information products will be part of his legacy.

With his passing, a beautiful and bright light has gone out in the world. Nevertheless, I know that his spirit and passion will live on in all of us.

He was my friend. I will miss him greatly. And his spirit will be missed by all of us.

His obituary can be found at: <http://bit.ly/1ciVVy7>

Summit Award

The Summit Award, or GIS Person of the Year, began in 2003 to honor the GIS movers and shakers in Washington State. Criteria for the award focus on four areas: longevity of experience, quality of experience, consistency of volunteerism, and degree of mentorship effort. The nominating committee is made up of the former Board President and other interested board members. Each committee member petitions the GIS community for nominees and submits findings to the Chapter Board of Directors for selection. This award is not only an instrument of appreciation, but a statement of qualities that we, as an organization, embrace and continue to promote through our outreach and educational efforts.

Dick Thomas	2003	Nancy Hultquist	2006	Ian Von Essen	2010
Linda Gerull	2004	Donna Wendt	2007	Tom Nolan	2011
Geoffery Almvig	2005	Mike Onzay	2008	Greg Babinski	2012
		Marty Balikov	2009	Karl Johansen	2013

DR. SABAH JABBOURI 2014

WAURISA Board

PRESIDENT: Heather Glock	BOARD MEMBER: Joshua Greenberg
VICE PRESIDENT: Ian Von Essen	BOARD MEMBER: Josh Sisco
SECRETARY: Sarah Myers	BOARD MEMBER: Cort Daniel
TREASURER: Don Burdick	BOARD MEMBER: Dana Trethewy
PAST PRESIDENT: Ann Stark	BOARD MEMBER: Suzanne Shull
	BOARD MEMBER: David Howes

BOARD MEETINGS

Board meetings are held the second Tuesday of every month at Noon via conference call. Updates are presented by each committee.

It is an excellent way to find out what is happening,
what will be happening and how to get involved.

Everyone is welcome to attend!

1-800-944-8766
PASSCODE #: 20311



Esri Hands-On Learning

Tuesday, May 13 10:30 a.m. - 4:30 p.m.
Wednesday, May 14 8:30 a.m. - 3:00 p.m.
Behind the Registration Desk

Take Esri training at your own pace in the Hands-on Learning Lab (HOLL). The lab consists of a group of laptops with headphones where students can work through lessons at their own pace. A lesson consists of a recorded presentation followed by a hands-on exercise. Each lesson typically takes about 45 minutes to one hour to complete and students can generally come and go as they please. Esri instructor Jack Horton will be on hand to assist users with questions and to discuss Esri products, other training opportunities and Esri Technical Certification. HOLL software and exercises are currently using ArcGIS Desktop 10.2.

Introduction to ArcGIS for Desktop

Creating a map in ArcGIS for Desktop

Basics of the geodatabase model

Editing with ArcGIS for Desktop

Introduction to versioned editing

Editing and maintaining parcel data in a parcel fabric

Geocoding with ArcGIS for Desktop

Introduction to ArcGIS Network Analyst

Introduction to linear referencing

Using geometric networks for utilities applications

Introduction to ArcGIS Spatial Analyst

Introduction to ArcGIS for Server

Designing web applications using ArcGIS for Server

Sharing maps and tools using ArcGIS Online

Sharing data with the Community Maps Program

Spatial statistics for public health

Working with CAD in ArcGIS for Desktop

Introduction to geoprocessing using Python

What's new in ArcGIS for Desktop 10 and 10.1

8:30 PM— 12:00 PM WORKSHOP SESSIONS

DATA CAPTURE FOR ASSET MANAGEMENT USING SMART PHONES/TABLETS Jim Lahm, Electronic Data Solutions	ROOM 315
AN OVERVIEW OF SQL REPORTING FOR GIS Don Burdick, Salish Coast Sciences	ROOM 316
ARCGIS ONLINE “UNCONFERENCE” Scott Moore, Esri	ROOM 317
EXTENDING ARCGIS FOR DESKTOP USING PYTHON AND .NET ADD-INS (PT 1) David Howes, David Howes LLC and Jason Pardy, Voyager Search	ROOM 318

1:00 PM— 4:30 PM WORKSHOP SESSIONS

ASSET MANAGEMENT: PLANNING, STRATEGY, AND IMPLEMENTATION Ben Hoffman, Ben Hoffman Consulting and Marcus Glass, 3Di	ROOM 315
INTERMEDIATE PYTHON: TIPS AND TRICKS TO TAKE YOUR PROGRAMMING TO THE NEXT LEVEL Ann Stark, Salish Coast Sciences	ROOM 316
ARCGIS WEBAPP BUILDER: JAVASCRIPT APPS MADE EASY Scott Moore, Esri	ROOM 317
EXTENDING ARCGIS FOR DESKTOP USING PYTHON AND .NET ADD-INS (PT 2) David Howes, David Howes LLC and Jason Pardy, Voyager Search	ROOM 318

8:00 AM—4:00 PM	CONFERENCE REGISTRATION	FOYER, 3RD FLOOR
8:00 AM—10:00 AM	CONTINENTAL BREAKFAST	BALLROOMS
8:30 AM— 10:15 AM	OPENING PLENARY: WELCOME MESSAGE & KEYNOTE PART 1: BREECE ROBERTSON & THOUGHT LEADERS INTRODUCTION	BALLROOMS
10:15 AM—10:30 AM	MORNING BREAK	FOYER WITH VENDORS
10:30 AM— 12:00 PM	TECHNICAL SESSIONS	ALL 30 MINUTES UNLESS OTHERWISE NOTED
PAPER SESSION 1: COMMUNICATING THROUGH CUSTOM APPLICATIONS		ROOM 315
City of Seattle GIS Applications: Meeting Today’s Needs Harvey Arnone, Brandon Bouier and Dana Trethewy, City of Seattle (90 minutes)		
PAPER SESSION 2: ASSET MANAGEMENT		ROOM 316
How to Setup and Manage Spatial Assets with ArcGIS Online for a Mobile Workforce Matt George and Mike Johnson, Pierce County		
Where’s Our Stuff?: City of Des Moines Cityworks Server AMS Implementation and Application Steve Schunzel, City of Des Moines and Chris Brussow , Cityworks		
Pierce County Annual Levee Assessment Program Using Esri’s Collector Application Renee Quenneville, Pierce County		
PAPER SESSION 3: GIS COMMUNICATION		ROOM 317
Panel: They’ll Stone You When You’re Trying to Build Your GIS: The Multi-Dimensional Role of the GIS Coordinator David Howes, Jason Eklund, Chris Owen, Jennifer Radcliff, Matt Stull, David Wallis (90 minutes)		
PAPER SESSION 4: VENDORS		ROOM 318
An Introduction to Geocortex and Building Esri-based Mobile and WebGIS Applications James van Dyk, Latitude Geographics		
ArcGIS for Open Data Scott Moore, Esri (45 minutes)		

12:00 PM—1:00 PM **LUNCH – BUFFET LUNCH & THEME TABLES** **BALLROOMS**

1:00 PM— 2:30 PM **TECHNICAL SESSIONS**

PAPER SESSION 5: PROJECT MANAGEMENT **ROOM 315**

The Secret Mix of Successful GIS Project Management

Don Burdick, Salish Coast Sciences and Geoffrey Almvig, Skagit County (45 minutes)

PAPER SESSION 6: ENVIRONMENTAL **ROOM 316**

Analyzing the Effectiveness of Deforestation Policies within Mount Halimun Salak National Park

Stephan Gmur, Graduate Student, U of Wa

Updated WA Shoreline Habitat Classifications Now Online

Kris Symer, Web Architect, UW Tacoma—Puget Sound Institute

SWACs - A workflow for simulating the effects of sediment remediation

Jason Taylor, Floyd | Snider

PAPER SESSION 7: GIS COMMUNICATION **ROOM 317**

Panel: The GIS Analyst as an Institutional Resource

Panel: Chris Behee, David Howes, Mark Joselyn, Grete Roeckers, Tim Dewland, Cathy Walker

PAPER SESSION 8: VENDOR PRESENTATION **ROOM 318**

Mobile GIS with ArcGIS Online and Collector

Scott Moore, Esri

Points From Pictures

Jeff Wittaker, Geoline, Inc.

2:30 PM—3:00 PM **AFTERNOON BREAK** **FOYER WITH VENDORS**

3:00 PM— 4:30 PM TECHNICAL SESSIONS

PAPER SESSION 9: DEMOGRAPHICS & DEMOGRAPHIC ANALYSIS ROOM 315

Equity, Social Justice & the King County Way: Systematically Measuring Access to Community Resources

Mary Ullrich, King County

US Census Bureau Geographic Program Update

Michaellyn Garcia, US Census Bureau (30 minutes)

PAPER SESSION 10: DATA VISUALIZATION ROOM 316

Put the WHERE in Your Organization – Everywhere in Your Organization

Heather Glock and Shane Clarke, Esri (45 minutes)

Easy Data Visualization and Interactivity with Google Tools

Jeff Holcomb, Thurston Regional Planning Council

PAPER SESSION 11: GIS COMMUNICATIONS ROOM 317

Panel: Independent GIS Professional Networking and Business Building

Maria Sevier, David Howes, Joanne Markert

PAPER SESSION 12: VENDOR PRESENTATIONS ROOM 318

How M2M Technologies add Value to GIS

Elizabeth Marshall, Marshall GIS

4:30 PM—6:00 PM VENDOR SOCIAL FOYER WITH VENDORS

6:30 PM—8:30 PM EVENING SOCIAL THE SOCIAL BAR & GRILL

10:00 AM— 10:30 AM

MORNING BREAK

FOYER WITH VENDORS

10:30 AM— 12:00 PM

TECHNICAL SESSIONS

PAPER SESSION 17: PROCESS IMPROVEMENT

ROOM 315

Grappling with Goliath

Craig Hanson, Windward Environmental

Creating a Watershed Acquisition Suitability Model - Lake Whatcom Watershed, Bellingham WA

Kate Newell, City of Bellingham

No Longer Just Pass or Fail: Grading Spatial Metadata Improves Data Communication to Users

Frank Whitman and Mike Leathers, King County GIS Center

PAPER SESSION 18: COMMUNICATION WITH WEB MAPS

ROOM 316

Communication Breakthrough with Web Maps

Albert Gonzales and John Edwards, Seattle Public Utilities

Utilizing ArcGIS Online as a Communication Tool for the Puyallup School District

Brian Devereux, Puyallup School District

PAPER SESSION 19: GIS COMMUNICATION

ROOM 317

Panel: Mapping Your Unique Value, a Roadmap to Personal Branding

Tonya Kauhi, Amber Raynsford, Christina Gonzales

PAPER SESSION 20: VENDOR PRESENTATIONS

ROOM 318

Reducing Costs and Raising Effectiveness with a GIS-centric Asset Management System

Jay Clark, City of Shoreline and Chris Brussow, Cityworks

Precision Street Panoramas in GIS

Paul Burrows, Cyclomedia Technology, Inc.

Asset and Infrastructure Mobile Mapping

Chris Aldridge, David Evans and Associates

12:00 PM—1:30 PM

LUNCH BREAK - BOX LUNCH PROVIDED

BALLROOMS

12:15 PM— 1:15 PM

LEADERSHIP MEETING

ROOM 315

1:30 PM— 3:00 PM TECHNICAL SESSIONS

PAPER SESSION 21: ROOM 315

Crowdsourcing Invasive Species Data in Washington using Native Mobile (iOS and Android) Apps

Mike Leech, Spatial Development International (SpatialDev)

Data Collection using ArcGIS for Mobile

Harkeerat Kang, King County

PAPER SESSION 22: LIGHTNING TALKS ROOM 316

Using Python Dictionaries to Perform Raster Math — *Jason Taylor, Floyd | Snider*

Tacoma’s Green Living Guide: Promoting Tacoma’s Environmental Assets — *Mike Murnane, City of Tacoma*

Creating Evidence with GIS for Environmental Planning — *Joel Masselink, Earth Logic, LLC*

Ethics of GIS: Just because you can, should you? — *Kelly Alfaro Haugen, Thurston County GeoData Center*

Classifying Data - The challenge of managing statewide data on recreation and culture in a single framework — *Jennifer Hackett, Manastash Mapping*

Evolution of a Map: The Tacoma Smelter Plume — *Ian Mooser, WA Dept. of Ecology*

PAPER SESSION 23: GIS COMMUNICATION ROOM 317

Panel: A Proposal for National GIS Data Sharing - What Does it Mean for Washington State?

Greg Babinski, Tom Carlson, Nancy Tosta, Karl Johansen, Ian Von Essen, Josh Greenberg

PAPER SESSION 24: EMERGENCY RESPONSE ROOM 318

An Open Source Solution for Component Based Web GIS

Xiongjiu Liao and Michael Payne, Pierce County

Central Pierce Fire Goes Mobile with Fire Hydrant Inspections

Greg Heintz, Pierce County and Radcliffe McKenzie, Central Pierce Fire and Rescue

GIS Support for the SR530 Flooding and Mudslide Incident

Suzy Brunzell, Snohomish County, Kari Randall-Secret and Sean Carson, Skagit County GIS, James Dewar, FEMA—Region X

3:15 PM—4:45 PM CLOSING PLENARY : BALLROOMS
KEYNOTE PART 2: PANEL – BREECE ROBERTSON &
THOUGHT LEADERS



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Cityworks®

Since 1986, Cityworks® has been providing innovative GIS-centric management software to public agencies that own and care for infrastructure and property. Built exclusively on Esri's ArcGIS technology, Cityworks is a powerful, scalable, and affordable platform for asset management, permitting, licensing and more. Time-tested and proven technology, Cityworks is Empowering GIS® at more than 500 user sites around the world.

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Esri's geographic information system (GIS) software gives you the power to think and plan geographically. GIS is used in more than 350,000 organizations worldwide. It helps cities, governments, universities, and Fortune 500 companies save money, lives, and our environment. Whether transporting ethanol or studying landslides, these organizations use GIS to collect, manage, and analyze geographic information, which helps them see relationships, patterns, and trends. They can then solve problems and make better decisions because they are looking at their data in a way that is quickly understood and easily shared.

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Pioneers of industry leading Spatial Data Access Solutions, Valtus provides users with an easy and reliable storage, management and distribution solution, with software agnostic access being gained through multiple protocols such as OGC WMS, WMTS, ArcXML and ArcGIS imagery services, thereby allowing them to derive greater value from their data.



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AND ASSOCIATES INC.

David Evans and Associates, Inc. (DEA) is a multidisciplinary consulting firm doing business in the energy, land development, transportation and water markets. Centered on the core purpose of improving the quality of life while demonstrating stewardship of the built and natural environment, more than 670 professional surveyors, engineers, planners, architects, landscape architects, natural resources scientists, and construction managers work together to understand client needs, provide creative thinking and technical excellence, and deliver extraordinary service that exceeds expectations. As an infrastructure planning and design firm, DEA was founded and is headquartered in Portland, Oregon, with offices across the Western United States. The firm is consistently recognized by CE News magazine as among the best engineering firms to work for in the US and consistently ranks in the top 100 design firms nationally — recognized by Engineering News Record. We offer our clients a dedicated team of creative people working in a positive and caring environment that inspires well-designed solutions to complex problems.

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Founded over 30 years ago, Geoline Inc. has long been the leading industry of advanced positioning solutions in the Pacific Northwest. We provide instruments, tools, supplies, software, and solutions for all your Geospatial needs. With showrooms in the surrounding areas of both Seattle and Portland, remote employees in Eastern Washington and Boise Idaho, as well as a Partner dealer in Medford Oregon, our well trained staff is prepared to assist you in any Sales, Service, Rental, Training, or Support needs. Geoline Inc. is the only authorized Trimble Reseller of all Trimble Geospatial products in the territory of Washington, Oregon, and Idaho. Our objective is always to provide you with the best solution to meet your needs.



The King County GIS Center provides quality service and exceptional value for our clients with one of the most capable GIS organizations in the Pacific Northwest. Unlike most consultants, our professional staff members are not merely theoreticians, but practicing users of the types of GIS solutions government and business require. Why do we offer our services to outside customers? We have a long-term interest in the success of GIS throughout the region. We know that our success depends on satisfied clients and we are committed to delivering quality GIS business solutions that provide value for our customers. Whether you need consulting, programming, data, mapping, or GIS training - - Let KCGIS help you put GIS to work!



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Incorporated in Oregon in 1996, Asea Geospatial, Inc. (AGI) is a computer programming, GIS and database consulting firm. Initially a natural resource GIS business, we now develop custom applications and commercial-off-the-shelf products that focus on mobile data collection, database development, Windows and Web applications, Web mapping and GIS. An ESRI Business Partner and Authorized Developer, AGI specializes in linking databases to GIS and developing tools that make GIS easy to use.

Our GIS solutions are scalable and ensure data integrity while providing access to data through a user-friendly interface. They increase efficiency, improve data quality, enhance safety, enable new users, initiate new services and decrease paper use. We have helped new users get started with GIS and implemented complex enterprise GIS systems.

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3Di is a leading provider of aerial mapping, LiDAR, and GIS related services with a particular emphasis on supporting clients in the Pacific Northwest. Recent projects have focused on site development, floodplain mapping, transportation engineering, landfills, environmental analysis, facilities engineering, airport master plans, and municipal mapping.



With more than 11,000 clients, Tyler Technologies is a leading provider of software and services for the public sector. Designed with an insider's understanding of the public sector market acquired from more than 30 years of industry experience, Tyler Solutions reach all areas of the public sector. Comprehensive and easy-to-use applications streamline processes and improve the flow of information throughout an organization, empowering local and county governments, schools and other entities to better serve citizens.



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Accela's GIS-infused software makes government processes easier, faster and more accessible for local, state and federal workers. Accela Automation® automates tasks associated with permitting, licensing, code enforcement, community development, asset management, emergency response, and more. Tight ArcGIS integration lets workers share data and maps in the office or field.



CyloMedia is the market leader in systematic imaging of large-scale environments from cities to complete countries. CyloMedia's smart imagery solution creates Cycloramas – 360-degree panoramic photos with high accuracy, providing current and clear views of street-level environments.

Our solution revolutionizes the way asset and property assessment is managed and reported. It reduces field visits and provides accurate feature measurements with convenient spot-checking. It simplifies maintenance and enables automated inventory and controlled processes. It also saves valuable resources while simplifying the decision-making process, improving operations and increasing efficiency.

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Geocortex[®] | by Latitude Geographics[®]

Latitude Geographics helps organizations succeed with web-based geography by enabling them to make better decisions about the world around them. Geocortex software by Latitude Geographics transforms how organizations design, develop and maintain Esri ArcGIS Server and ArcGIS Online web mapping applications. They do more; faster, at less cost and risk, and with better results. ArcGIS by Esri is the world's leading GIS platform and Latitude has been an Esri Platinum Partner since 2010.

W **URBAN STUDIES**

UNIVERSITY *of* WASHINGTON | TACOMA

Established in 2001, the Urban Studies program at the University of Washington Tacoma currently offers degrees leading to a Bachelor of Arts in Urban Studies, Bachelor of Arts in Sustainable Urban Development, and professional certificate program in Geographic Information Systems. The program currently enrolls approximately 85 majors and certification students and has approximately 14 faculty and lecturers. Starting in fall of 2014 the program is launching a graduate degree - Master of Science in Geospatial Technology. For more information about these academic programs, see our website at <http://www.tacoma.uw.edu/urban-studies/urban-studies>.

One of three campuses of the University of Washington, UW Tacoma is an urban-serving university that shares the University of Washington's commitment to high quality teaching and research and is committed to participating in the educational, cultural, and economic development of the South Puget Sound. Located largely in renovated historical buildings in Tacoma's downtown warehouse district, UW Tacoma serves a diverse population of South Puget Sound students. For more information about UW Tacoma, see our website at <http://www.tacoma.washington.edu>.



Mount Olympus Sponsor



GIS Training and Consulting by GIS Experts!

Salish Coast Sciences is a small, highly skilled GIS consulting firm located in Bellingham, Washington. With a combined 60 years of experience working with environmental and local government agencies, you get all the benefit of qualified and knowledgeable professionals who are actively using the tools of the trade. Let us help evaluate and fine tune your spatial data to maximize your value in the resources you've cultivated. We specialize in consulting and mentoring on GIS design and implementation, spatial analysis, web mapping and cartography.



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The Kroll Map Company offers a unique blend of custom cartography and CAD/GIS Integration that serves both the private and public sectors. Our client base includes everyone from large financial institutions, to major utilities, to your neighborhood pizza shop! Please visit us at Krollmap.com and at Metskers.com.

PAPER SESSION 1: COMMUNICATING THROUGH CUSTOM APPLICATIONS

ROOM 315

City of Seattle GIS Applications: Meeting Today's Needs (90 minutes)

Communication of accurate, current and meaningful information has been central to the purpose of the City of Seattle's GIS since its inception in the late 1980s. As technology has advanced, and as the City's business needs have changed, the communication role GIS plays has broadened significantly. The central communications issue of the 1980s and early 1990s was that of communicating across departments and between office and field staff. In addition to these needs, the contemporary application of GIS at the City of Seattle addresses a variety of communication opportunities not possible in earlier years. The focus of GIS in recent years has been to:

- blend and present data from a variety of business systems,
- enable one-way and two-way communication with the public, and
- encourage communication and collaboration between the City of Seattle and other agencies.

This presentation will discuss these aspects of communication and demonstrate several custom applications developed by Seattle Department of Transportation, Seattle Police Department and the Seattle Public Utilities.

PAPER SESSION 2: ASSET MANAGEMENT

ROOM 316

How to Setup and Manage Spatial Assets with ArcGIS Online for a Mobile Workforce

How to choose a spatial asset GIS content management system to responsibly maintain core assets with so many options to choose from? Are you ready to extend the reach of your mobile workforce to allow real-time database connectivity without sacrificing data integrity or security? With so many platforms, cloud choices, and mobile devices to choose from it can become confusing what is needed. What to look for in a GIS system to accomplish the task of editing and updating asset data in real-time with the least impact to your workflow without present limiting factors for your organization down the road? How to get data in and out of one system if I want to use it in another or in a different capacity? How can I setup a central database so your mobile workforce can use Smart devices securely on your network with ArcGIS Online? Advances in technology have allowed Pierce County Public Works Road Operations to migrate standalone map layers into an enterprise spatial content management system using ArcGIS Online and Server. Did you know a recently new MDM configuration exists to allow multi users on one iOS device in a shared status? How to share your data for operations, peer and public view. In recent years making your data available for public outreach has become a planning requirement to promote transparency. Expectations are now an expectation to show cost benefit. We can show you where the dollar is being spent down to the asset level with ArcGIS Online. This occurs in reports, live dashboards, or interactive map views. All of these elements combined together in one system are what make ArcGIS Online a perfect platform for Pierce County Public Works Road Operations to manage their core assets in an effective and responsible way.

Where's Our Stuff?: City of Des Moines Cityworks Server AMS Implementation and Application

The city's successful asset management system has been able to communicate asset locations and conditions to city staff. The City of Des Moines is a city of 30,000 and is charged with maintaining its stormwater, traffic and parks assets. Insurance audits in 2009 recommended that the city maintain an active inventory of these assets. After completing collection of these assets in the GIS in 2011, the city decided to implement Cityworks Server AMS as their maintenance management system. The system went live in August 2012 and has been using the system to successfully manage their assets.

This presentation will detail the implementation process; from system setup, to designing workflows to meet the system, to practical examples of its use. The objective of the presentation will be to examine the ingredients chosen for this solution and to demonstrate the path of implementation, including challenges overcome (limited budget & staff, limited technology skills) as well as future opportunities (advanced reporting, inspections).

Pierce County Annual Levee Assessment Program Using Esri's Collector Application

Pierce County, Public Works and Utilities, Surface Water Management (SWM), Washington is tasked with managing 69 miles of levees and revetments that protect the life and public infrastructure of its residents. Annual inspections of these levees are an integral part of this task. Previously, this process relied on a paper inspection form that was entered into Excel, which had no ability to link photos or GIS data related to the inspection. It was time consuming to implement quality control. Only damage locations were captured and the overall condition of the levees and revetments were not assessed. A more efficient and thorough workflow was needed. Levee and revetment assets were mapped using a GPS and stored in file geodatabases as feature classes and divided into 1/10 of a mile segments. A levee inspection map service was built in Arc Map and published to ArcGIS Online with inspection forms attached to the levee or revetment segments with the ability to upload photos. The ArcGIS Online map service was then published to Esri's app Collector. Field staff accessed the Collector app on their iPad, performed a condition assessment of each levee segment and attached photos of damages/work order needs to their inspection form. The project manager could see real time locations of field staff, and their inspection results. Taking levee inspections from a static paper based system to a real-time process has raised situational awareness and the level of service provided by Pierce County.

PAPER SESSION 3: GIS COMMUNICATION

ROOM 317

Panel: They'll Stone You When You're Trying to Build Your GIS: The Multi-Dimensional Role of the GIS Coordinator

Maybe your boss quit. Maybe you applied for the job. Or, maybe the workload just grew to the point where the position was necessary. One way or another, you became a GIS coordinator in a public agency. So what's your story? What are the characteristics that helped you be successful? If you could start again, what advice do you wish you'd been given? What difference does it make if your GIS operation is a separate entity as opposed to being part of, say, an IT department? There are many questions one could ask of a GIS coordinator and in this panel session you'll have an opportunity to ask and answer some yourself. To get you started, five GIS coordinators from different types of agencies and different parts of Washington State will share their experiences and the nature of their roles, especially as they relate to communication. For example, they often have to sell the benefits of GIS to other departments. They have to apply the appropriate technology to represent and express the state of spatial phenomenon. In addition, they have to help ensure that participants in their projects keep each other informed in such a way that they can, collectively, be as successful as possible. Please join us for what will certainly be an engaging and informative conversation.

David Howes

David specializes in the development of GIS tools, processes and supporting infrastructure for a variety of clients from small operations to multinational corporations (www.dhowes.com). With 23 years of academic and private sector experience in the UK and US, including an M.Sc. in GIS from the University of Edinburgh and a Ph.D. in Geomorphology from SUNY Buffalo, David's background is well-suited to developing innovative solutions to spatial problems. He is the founder of the Lone GIS Professional Initiative, helping GIS professionals working on their own or in small groups help each other, and is a Washington URISA Board member.

Chris Owen

Chris Owen, GISP has a B.A. in Geography from the University of Washington and an M.S in Information Technology Management from Colorado Technical University. Chris started working in the GIS private sector in 1996, and began working in the public sector in 2000. Chris began working for the City of Walla Walla in 2002. Chris and staff support all of the GIS activities for the City of Walla Walla, including database design, application development, mobile GIS and system integrations. Chris has 3 kids, bikes to work, coaches, and loves to travel.

Jason Eklund

Jason Eklund, has a B.S. in Natural Resource Management with a minor in Spatial Information Systems Management from Colorado State University. He worked for the Oregon Water Resources Department for 8 years in GIS application development and database design and has been Kittitas County's GIS Coordinator for the past 7 years.

Jennifer Radcliff

Jennifer Radcliff, GISP, has a B.S. in Geography with a secondary major in Natural Resources and Environmental Sciences (NRES), and an M.A. in Geography, both from Kansas State University. She has been getting paid to use GIS since 1996, working mostly for local governments in Kansas, Colorado and Washington. Jen enjoys variety, and has worked on everything from database design and data creation for assessor's offices, to analysis for Emergency Management, to application development for Planning. She has also worked on multiple enterprise solutions. Jen is currently the GIS Coordinator for the Port of Tacoma.

Matt Stull

Matt Stull, GISP, has a B.S. in Cartography and a B.S. in Geography, from the University of Idaho. He also holds a Master's certificate (MSc) in GIS from Simon Fraser University. He started his GIS career in 1997 with a startup software company in Oakland, CA. Later, he moved to the Puget Sound area where he has worked for: Genwest Systems, ESM Consulting Engineers, Mason County and the City of Tumwater. He has extensive experience working with GIS in City and County Government, especially in the areas of public works and 911.

David Wallis

David Wallis, GISP, graduated Magna Cum Laude with Honors from Western Washington University with a B.A. in Technical Writing. He began his GIS career in 1994 with Cowlitz County and holds the IAAO CMS (Certified Mapping Specialist) designation. He is a certified National Instructor for IAAO, teaching mapping and GIS courses around the U.S. and legal description courses for the WA State DOR.

PAPER SESSION 4: VENDOR PRESENTATIONS

ROOM 315

An Introduction to Geocortex and Building Esri-based Mobile and WebGIS Applications

Hundreds of organizations rely on Geocortex software from Latitude Geographics to simplify building and maintaining ArcGIS mapping applications using technology like Silverlight and HTML5. Geocortex is used on desktops and mobile devices, providing both simple and sophisticated applications for users to easily interact with an organization's spatial data. In this introductory session learn how Geocortex accelerates desktop and mobile application deployment and see a live demonstration of the out-of-the box tools that ship with Geocortex. Learn about recent product developments and cutting-edge features like disconnected feature editing on mobile devices, integration with ArcGIS Online web maps, and more.

ArcGIS for Open Data

The principles of Open Data mandate that data should be; discoverable, explorable, accessible, and easy to use for collaborative purposes. ArcGIS Online is ideally positioned to support the principles of Open Data. Beginning in March, a new application will be available with ArcGIS Online providing GIS professionals with the tools to deploy and support Open Data web sites. ArcGIS for Open Data is a customizable web application that enables data publishers to make their data discoverable, explorable and accessible by public users, business users, and software developers.

PAPER SESSION 5: PROJECT MANAGEMENT

ROOM 315

The Secret Mix of Successful GIS Project Management (45 minutes)

GIS is no longer that silent technology evolving on its own and targeted to its own user base. With projects ranging from complex web applications to simple court presentations, GIS has become the "go to" tool for solving problems; particularly in government. As GIS professionals, we need to insure that the services we provide to our customers are on schedule and on budget. Regardless of the project, there are a set of "best practices" for successful project management. In this presentation, two long-time GIS project managers will discuss the fundamentals of good project management. Learn the steps necessary to effectively communicate project requirements with your customers, establish a project plan, and avoid project risks. Project management skills are a vital component for any successful GIS project. Don't miss this chance to find out the secrets of success!

PAPER SESSION 6: ENVIRONMENTAL

ROOM 316

Analyzing the Effectiveness of Deforestation Policies within Mount Halimun Salak National Park

Studies seeking to understand deforestation within tropical forest protected areas (PA) have shown that targeted policies have effectively slowed the overall rate of deforestation. Spatial analysis was used to explore deforestation within the Mount Halimun Salak National Park (MHSNP), located 60km from the world's second largest metropolitan area, Jakarta, the largest PA on the island of Java in Indonesia. The MHSNP area was first protected by the Dutch colonial administration in 1929 then formally created and managed by the Ministry of Forestry in 1992. In 2003 the park was expanded to its current day boundaries and 2005 policy implementation sought to involve stake holders in a collaborative management paradigm to increase conservation effectiveness. Land use zones within the park: core, culture, rehabilitation, special training & research, use and wildlife have been designated to meet these interests. This study tested the relative performance of policy implementations against deforestation using passively collected remote sensing data to map the extent of forest cover from before the creation of the park in 1991 to 2013. The rate of deforestation within the park from 1992 to 2003 slowed relative to the rate of deforestation in the surrounding production forest. Comparison of deforestation from 2003 to 2013 between strict conservation areas of core and wildlife areas versus all other uses was undertaken. Results characterize how policy within PAs can meet the conservation needs while still meeting the needs of local people. Specific zones within PAs allow for utilization of resources to be contained, allowing other forested areas to regenerate. Use of passive remote sensing and spatial analysis methods helps communicate the additionality of deforestation policies implemented by forest managers.

Updated WA Shoreline Habitat Classifications Now Online

The Encyclopedia of Puget Sound and NOAA's Pacific Northwest ERMA® mapping system now feature a collection of 60 WA shoreline habitat classifications. The dataset is an adaptation of the 2001 Washington State ShoreZone Inventory linear shoreline data. It introduces new attributes describing the original deth_class field, a numeric code based on the 1990 Dethier habitat classification system. All of the 60 Dethier classes occurring in Washington State have updated and enhanced descriptions, physical characteristics, frequency of occurrence, example locations, and related species. This 2014 update was conducted by Megan Dethier, author of the original 1990 WA DNR publication 'A marine and estuarine habitat classification system for Washington State' created for the Washington Natural Heritage Program. The 2014 fish species analysis was conducted by Charles Si Simenstad. The project was commissioned in 2013 by the UW Puget Sound Institute.

SWACs - A workflow for simulating the effects of sediment remediation

Surface weighted average concentrations (SWACs) are used to determine the risks to organisms exposed to contaminated sediment and soil. This talk will discuss a work flow to generate SWACs using Python, ArcGIS, and a handful of open source tools. A very simple and effective way of simulating remediation options using R will also be demonstrated. This talk should appeal to users who work with data concerning contamination of soils and sediments or users interested in batch processing interpolation tools.

PAPER SESSION 7: GIS COMMUNICATION

ROOM 317

Panel: The GIS Analyst as an Institutional Resource

As GIS analysts, most of us find ourselves in a daily race to keep up with the continuous stream of system upgrades, with weekly production schedules, and helping our colleagues figure out how to set up projectors, fix jammed copiers and locate extension cords. While it's true that we all will likely continue doing these things for the foreseeable future, there is a broader role and a larger responsibility we all share. This facilitated panel will focus on the role of the GIS analyst across the institutional landscape. The discussion will cover a range of issues centered around the idea that the analyst's job is a multi-faceted one of data-steward, modeler, statistician, cartographer, advisor, and educator, to name a few. We are responsible for helping maintain the health of what used to be a series of disconnected GIS databases and have now become the integrated data backbones of our respective agencies. As GIS has become pervasive across many disciplines, there has evolved a critical need for informed, articulate communicators who know enough about the data, the applications and the end-user's needs to provide help when needed, and to maximize the resource value. Panelists in this discussion will share from their unique experiences, highlighting successes, evaluating failures and illustrating how the role of the analyst in their organizations continues to evolve.

Chris Behee

With 20+ years experience as a public-sector GIS Analyst, Chris has worked on projects spanning a wide variety of topics including, urban planning, resource management, transportation modeling, and economic forecasting. The projects he enjoys most are those that use spatial data as a means to connect stakeholders in collaborative discussions to solve problems. In particular, his ongoing interest in effective cartography provides many opportunities for bringing clarity to complex issues for City staff, elected officials, and the public.

David Howes

David specializes in the development of GIS tools, processes and supporting infrastructure for a variety of clients from small operations to multinational corporations (www.dhowes.com). With 23 years of academic and private sector experience in the UK and US, including an M.Sc. in GIS from the University of Edinburgh and a Ph.D. in Geomorphology from SUNY Buffalo, David's background is well-suited to developing innovative solutions to spatial problems. He is the founder of the Lone GIS Professional Initiative, helping GIS professionals working on their own or in small groups help each other, and is a Washington URISA Board member.

Mark Joselyn

Mark has spent his career in government settings where breadth of knowledge about GIS, geospatial data, and related technologies is critical. Working in settings focused on natural resource management and research, Mark supports wildlife biologists, hydrologists, forest ecologists, and other departmental staff. Mark was responsible for developing and managing spatial data for the Illinois Natural History Survey before joining Seattle Public Utilities in support of the ambitious Cedar River Habitat Conservation Plan. Trained as a cartographer, the production of maps and the manipulation of spatial data are at the core of the pleasure Mark derives from his professional career.

Grete Roeckers

Starting in a structural test lab for the space shuttle, getting into networking and then specializing in GIS technologies in 1994, Grete has seen quite a range of desktop and server technology evolutions over the years. Started City of North Charleston, SC's GIS from scratch. Migrated to the Northwest when working for ESRI and did site evaluations, teaching, demos and site installs. For Thurston County, she mainly supports the server technology, but also works closely with the customers to understand how to best support them. Always optimizing the GIS infrastructure needed for Thurston County's internal and external customers – the public.

Tim Dewland

Tim has been working in the geospatial industry since completing his undergraduate degree at James Madison University in 2004. In the Spring of 2013 he completed his graduate studies with The Pennsylvania State University's MGIS program. While living in the Washington, DC area he worked on federal government contracts creating and maintaining digital nautical charts. Most recently, he worked as a planner at a utility distribution company in New England utilizing GIS for asset management and expansion projects. Freshly relocated to the Northwest, Tim is interested in projects concerning conservation, resource management and urban planning efforts in the region.

PAPER SESSION 8: VENDOR PRESENTATIONS

ROOM 318

Mobile GIS with ArcGIS Online and Collector

ArcGIS Online includes pre-built applications ready for you to deploy immediately. One of those is the Collector for ArcGIS application. Esri staff will step through mobile GIS workflows currently supported by this app and also the new disconnected workflows for Collector.

- Capture, update, and report spatial and tabular information directly from your Android or Apple device.
- Plan routes and get directions.
- Improve your data quality with data-driven forms.
- Capture photos and video.
- Integrate information into your organization's GIS.
- Configure the app to fit your organization's workflow.

Points from Photos

When you hear the word photogrammetry most of us think about airborne images. I want to change your thinking a bit and insert the word "terrestrial" in front of photogrammetry. Terrestrial photogrammetry is an old principle that a guy by the name of Leonardo came up with in the 1400's. Mr. Da Vinci didn't have the luxury of a computer, yet he figured out how to merge two equal distant objects together and create a measurable image.

Trimble's V10 Imaging Rover has taken this principle into the 21st century and we are now able to collect, capture & process geo-referenced images and use them to create accurate points from digital images. For the 1st time we can add context to our data. By context I mean that instead of simply geo-referencing a feature we can now take surrounding objects in a photograph and put them into relationship or context by creating additional points from the imagery. Trimble's V10 Imaging Rover precisely captures 360-deg. digital panoramas used to visually document and measure the surrounding environment. I would like to introduce to you, via a short power point I would like to introduce to you via a short power point presentation the V10 Imaging Rover and how it can change the way you think about digital imagery.

PAPER SESSION 9: DEMOGRAPHICS AND DEMOGRAPHIC ANALYSIS

ROOM 315

Equity, Social Justice & the King County Way: Systematically Measuring Access to Community Resources

GIS reveals patterns in our spatial data. Through maps we can see these patterns emerge and use them to communicate ideas and drive our decision-making processes. At King County, we are examining demographic patterns to evaluate access to community services.

King County recognizes that our economy and quality of life depend on the ability of everyone to contribute. We strive to remove barriers that limit the ability of some to fulfill their potential. But how should we measure our efforts over time in a consistent manner? How can we reliably identify areas that need improvement, or compare ourselves fairly with our neighbors? Sustainability Tools for Assessing & Rating (STAR) Communities is an organization that helps cities and counties answer questions like these by providing a framework for the promotion of meaningful sustainability. The STAR Community Rating System allows communities to systematically evaluate, quantify, and improve livability and sustainability for the benefit of all.

King County joined the STAR network as a Pilot Community in November 2012. By using the GIS analysis techniques suggested in the STAR Communities' Technical Guide, which includes "Equity & Empowerment" among its goals, King County learned how well its services were reaching the community. In turn, through its role as a Pilot Community, King County helped refine the Technical Guide so that similar communities throughout the country can benefit from a systematic measurement of their services.

US Census Bureau Geographic Program Update

Update on Census Geographic Programs and the Geographic Support Systems Initiative (GSSI). The GSSI is an effort to streamline geographic data collection in preparation for the 2020 Census and future census programs such as the Local Update of Census Addresses (LUCA) and the Boundary and Annexation Survey (BAS).

PAPER SESSION 10: DATA VISUALIZATION

ROOM 316

Put the WHERE in Your Organization – Everywhere in Your Organization (45 minutes)

There is a brave new world of analytics waiting to be used everyday business life – across all sectors. Turn mountains of unstructured and structured data into powerful intelligence. From simple to scientific, you can ask new questions of your data and get the right answers using location as your new analytic. We make maps to answer a question, to solve a problem, and to advance our understanding. And therein lies the power of the map. Even the best maps have no power by themselves; they just exist, like the maps you hang on your office wall, or the maps in the world atlas sitting on your bookshelf. But depending on how they are created, and how they are used, maps can have tremendous power. Maps can help turn abstract issues into tangible, understandable, solvable stories. Maps can inspire action. Let's use them not only to measure and observe the world, but to change it.

Easy Data Visualization and Interactivity with Google Tools

Data visualization and interactivity are becoming more expected and valued in presenting data via the web. The days of static PDF maps have long ended and most GIS organizations now have at least some interactive mapping capability. This is not true, however, for most tabular data which is often available for download only as a simple Excel file with values in rows and columns. These spreadsheets while perhaps useful tend to be rather boring and don't really convey the story or narrative one is trying to present with the data. User interaction with the data is often limited and unsatisfying.

Commercial products available for data visualization are expensive and developing your own solution requires advanced programming skills. Free, open source data tools provided by Google including Google Docs, Google Fusion Tables and Google APIs for Charts, Visualization & Maps are an easy & cost-effective resource. You can create appealing and illustrative charts, interactive filtering & querying capabilities, and spatial mapping abilities relatively quickly with only basic HTML and Java Script knowledge.

Fusion Tables provides geocoding abilities to add a mapping component to any dataset with a coordinate or address field and can be exported as a KML file for use in other GIS software. All datasets are stored in the cloud allowing for viewing over the web by anyone with a browser. The Visualization and Charts APIs provide the ability to create interesting and informative charts and graphics from your tabular data. The Maps API allows you to easily display your data over Google's basemap and imagery (including Street View), and also provide address search and directions capability.

Data visualization using Google's tools can significantly improve user interaction and satisfaction with your data making it more likely to be understood and appreciated.

Fun Run!

Wednesday—6:30 AM
Meet at the Convention Center

Washington GIS road warriors – bring your running gear and roll out of bed Wednesday morning for a group fun run, led by Greg Babinski, Heather Glock, and other WAURISA board members. We'll meet at 6:30 a.m. at the Tacoma Convention Center, then run at an easy pace along the water front and the streets of Tacoma. We'll plan on being back by 7:15 a.m., so there will be plenty of time to freshen up and get some breakfast at the Convention Center before the day's activities begin.

PAPER SESSION 11: GIS COMMUNICATION

ROOM 317

Panel: Independent GIS Professional Networking and Business Building

Are you an independent GIS Professional working on building a business or are you considering starting your own GIS practice? Have you found yourself challenged with networking, time management and navigating the nuances of growing a business? Join us for this panel session and connect with other GIS professionals to discuss strategies and techniques for building a strong and successful GIS business as an independent professional. Learn what resources are available for developing and growing a business, such as helpful data sources, tools for collaboration and mechanisms to support your operation. A small panel of independent GIS professionals who have enjoyed their own successes and faced their own challenges will share their experiences with you and invite you to participate in an engaging and constructive discussion.

Come prepared to connect, brainstorm and find solutions!

Maria Sevier

Maria has worked in the GIS industry for over 18 years with experience ranging from State, County and City to small business and non-profit focused projects. She worked within the government realm for over 16 years and most recently has owned and operated her own independent GIS consulting company which specializes in creative mapping and project solutions for small business and non-profit organizations. Maria is solutions focused with experience in project management, database management/development, research and documentation and business start-up. She has also shared several years of time volunteering with WAURISA.

David Howes

David specializes in the development of GIS tools, processes and supporting infrastructure for a variety of clients from small operations to multinational corporations. With 23 years of academic and private sector experience in the UK and US, including an M.Sc. in GIS from the University of Edinburgh and a Ph.D. in Geomorphology from SUNY Buffalo, David's background is well-suited to developing innovative solutions to spatial problems. He is the founder of the Lone GIS Professional Initiative, helping GIS professionals working on their own or in small groups to help each other, and is a Washington URISA Board member.

Joanne Markert

Joanne has more than 15 years of experience leading and directing complex technology projects, including web-based solutions, database management and GIS applications. Her science-based background allows her to understand the technological and analytical issues that her clients face and recommend approaches that include technologically sound solutions. Joanne enjoys organizing complex GIS projects that require significant coordination, complex spatial analysis and implementing enterprise-wide GIS systems. These projects have included strategic planning, development of conceptual architectures, data design and application development. She has extensive experience managing and delivering large projects with sub-consultants and a team of developers on time and on budget.

PAPER SESSION 12: VENDOR PRESENTATION

ROOM 318

How M2M Technologies add Value to GIS

Many agencies that use GIS do so because the resources they manage are complex and cover large areas. This paper explores the value added by bringing 'machine to machine' or 'internet of things' solutions to GIS. Typically our distributed resources are being managed by staff that are mobile for a significant part of their day. We will review methods for integrating vehicle locations, staff locations, and real time vehicle engine and onboard system data to GIS. In addition we will explore what level of GIS integration is needed for this machine data to be useful.

Washington Women in GIS And Technology Wednesday – 8:00 AM

Join the Washington Women in GIS and Technology in the ballroom for breakfast, conversation and community building.

PAPER SESSION 13: TRANSPORTATION

ROOM 315

HPMS Network and ARNOLD

In 2010 FHWA required annually reported Highway Performance Monitoring System (HPMS) road inventory and traffic data to be reported in a spatial format – GIS network with LRS for all Arterial and Collector public roads. For 2013 reporting this requirement was expanded to include all public Local Access roads. This spatial network is known nationally as ARNOLD – All Roads Network of Linear Referenced Data. This is the story of the steps WSDOT progressed through to create the first all public roads GIS LRS for Washington – known as WAPR. As of March with help and input from local agencies WSDOT has completed 56% of the ARNOLD Local Access roads (This will be 77% by the time of the conference). We are projected to complete the network by the end of the year. Since much of WSDOT’s work with local agencies is related to the road network, WAPR has allowed us to collect and share information that can be seen and understood in web maps. As this potential is leveraged, the WSDOT Transportation and GIS Data Office (TDGO) has brought together customer’s data into a single GIS network which serves multiple data needs. These results can be seen in the WSDOT GeoPortal as well as the increasing use of ArcGIS Online maps. WSDOT is continuing to expand on the use of GIS-based maps as a tool to collaborate with local agencies whose roads and data must be accurately represented by WSDOT and presented to FHWA as the Washington component of the FHWA national network.

Washington State Department of Transportation’s Community Planning Portal

The Community Planning Portal was developed by WSDOT for use by state, regional and local transportation planners. Built using ArcGIS Online, the Portal gives planners easy access to WSDOT data for use for general planning purposes anytime, anywhere. Through the Portal, WSDOT has compiled select state transportation data that we think will help local and regional planners, decision makers, and citizens better understand the story of the state transportation system within their jurisdictions. The goal of the Portal is to foster a closer partnership with local and regional planners so that together, we can identify opportunities to operate our transportation system more efficiently, manage demand and where appropriate, fund strategic capacity improvements.

In this presentation, we will share:

- The reason for creating the Community Planning Portal
- How the Portal was developed
- Key features of the Portal
- The lessons learned
- Plans for the future

Leveraging GIS in the World of Traffic Fatality Prevention

In November 2013 the Washington Traffic Safety Commission, in an effort to further its Target Zero goal of eliminating all traffic fatalities and serious injuries by 2030, expanded its analytical capacity by recruiting a GIS analyst. Up until that point, the data WTSC used was represented by charts and graphs, driven by statistical analysis: now, with a mapping professional on board, WTSC can demonstrate with point maps, density analysis, and other forms of visual spatial information transmission both the good trends and the troubling ones in the yearly count of fatal and serious injury crashes on Washington public roads. We focus on three case studies and the challenges associated with information conveyance presented by each scenario.

1. A brief examination of fatalities vs. millions of vehicle miles traveled (VMT) choropleth maps, and some discussion of ways to mitigate the perceptual skew of rate maps – specifically, counties such as Island and Wahkiakum that have very low VMT numbers appear to be highly unsafe.
2. Using GIS to demonstrate change over time and space with animated GIFs. Point maps are created in GIS and tweened in Photoshop to enable visualization of temporal and spatial changes in fatal crash location. Definition queries and data-driven pages are used to speed image generation.
3. Displaying public-facing data through 3rd party portals: WTSC’s experience with Google Maps Engine and displaying pedestrian fatality data.

PAPER SESSION 14: DICK THOMAS STUDENT COMPETITION

ROOM 316

Modeling elk habitat suitability in the North Cascades

The Washington State Department of Fish and Wildlife (WDFW) would like to adjust the distribution of elk on the landscape in the North Cascades to reduce negative impacts to private property while maintaining a healthy population of elk. Elk management goals can be achieved through a combination of practices, such as forage enhancement that encourage elk in tolerated areas, and fencing, hazing, and/or hunting of elk in areas of low tolerance. This project focused on mapping elk habitat suitability across the 8,000 km² North Cascades elk management area and then identifying potential areas of high elk tolerance which would be suitable for forage enhancement. GIS tools were leveraged to evaluate elk home ranges using Kernel Density Estimation, classify key landscape vegetation parameters using satellite imagery, calibrate a custom elk habitat suitability model, and evaluate the landscape for potential elk forage enhancement locations. Outputs from the GIS analysis were communicated to WDFW and the Elk Forage Enhancement Working Group, a collaborative multi-stakeholder committee who evaluates the predicted elk habitat suitability within the context of various resource management constraints. Landscape scale elk resource management issues were quantified using GIS tools, and the realities of land ownership, land use limitations, seasonal variability, and the dynamic nature of elk herds were all considered in order to produce final recommendations for elk forage enhancement in the North Cascades.

Development of a Tree Inventory and Tree Data Collection Framework for Seattle Parks

Tree inventories are useful tools for cities to monitor the current urban forest to meet future canopy goals, track maintenance history, assess wildlife habitat, plan work, document memorial trees, plan volunteer events, and assess tree values. Though the City of Seattle's Parks and Recreation Department [Parks] has a fair amount of data on existing trees in parks, the department does not have a tree inventory. For our student project, we developed a tree inventory and data collection framework for Parks.

Parks has started developing tree inventories several times, but no efforts were maintained, and only sporadic GIS tree data are currently available for Parks trees. These past efforts highlight the importance of making a tree inventory simple to use by many people.

The project required the review of other tree inventories in the region, and we worked with University of Washington, City of Seattle's Transportation Department, and Seattle Audubon Society to gather this information. We met with Parks staff, including arborists, GIS professionals and field crew personnel, to determine what data should be collected and to what level of detail.

We developed a framework for field work assignments and data collection, based on ArcGIS Online and Collector. We plan to test the system and tools by developed the inventory for a small Seattle park as a proof-of-concept.

Project deliverables will include a tree inventory which combined the data we collected along with that collected during earlier efforts, in addition to the mobile tool framework. We hope that we have made the tools straightforward and easy to use and that Parks will adopt our efforts to their needs.

Flow accumulation and runoff volume of three watershed basins in the City of Bothell

This study combines vector overlay techniques and raster modeling within a geographic information system framework to analyze water infiltration and flow in three of the twenty-two watershed basins in the City of Bothell. Based on two and one-hundred year maximum precipitation values during six hour periods for the greater Seattle area, and saturated infiltration rates for known surface soils and slopes, this study tried to specifically estimate runoff volumes and flow accumulation values for the Blythe Creek, Horse Creek, and Maltby Hill Creek watershed basins in the City of Bothell. Results show that flow accumulation during a maximum rain event with a frequency of two years, when assessed as a function of rate versus total area of the basin, in Horse Creek basin experienced approximately 4x the amount of accumulation (per square foot) than Blythe Creek basin, and 1.7x the amount of accumulation (per square foot) than Maltby Hill Creek basin. The methods, data sources, and equations this study is based on can be used by the City of Bothell to complete run off and flow accumulation models of the remaining nineteen sub-basins in order to assess which areas are at a critical stage for intervention in case of a large scale rain event.

PAPER SESSION 15: GIS COMMUNICATION

ROOM 317

How Good are Your Data and Analyses? Communicating Quality. Part 1 of 3: Framework

Presentation of geographic information in map form assumes that underlying elements of information have known bounds of quality. While cartographic presentation may purposely compromise some elements of information quality, such as locational accuracy, in the digital era we expect that we can drill down to specific attributes of our information and retrieve a representation of the true position and nature of an object. Early geographic information quality paradigms focused on locational and thematic quality but alternative models of quality have emerged in the context of the discipline of enterprise information management. These models are more holistic in their approach to defining and measuring information quality. We consider here how one such model may be developed for the geographic information resources of Seattle Public Utilities, focusing on the capability to communicate the fitness for purpose of the available information resources. A set of data quality dimensions (e.g., McGilvray, 2008) allows the management of information quality throughout the information lifecycle and the measurement of performance against quality benchmarks for the specification, acquisition, management, application and retirement of information resources. In this way, we can deal with the complexity of modern GIS implementations. For example, the approach allows us to define a Data Specifications quality dimension that measures the existence, completeness, quality and documentation of data standards, data models, business rules, metadata and reference data. A consumer can reference this dimension to explain how real world objects are represented. Once information is acquired, in the management phase of the information lifecycle, the Consistency and Synchronization dimension measures the equivalence of information that is used across various data stores, applications and systems and the processes for making information equivalent. In the application phase, the Timeliness and Synchronization dimension communicates to consumers the currency of information and the expected time frames in which they become available.

How Good are Your Data and Analyses? Communicating Quality. Part 2 of 3: Data

Within the GIS Section of Seattle Public Utilities, maintaining and enhancing the quality of the Utility's GIS data has always been a top priority, though our practices for doing so have evolved organically. From customer surveys, service desk calls, user group discussions, consultant reviews, and other means, we have a good sense of where we are doing well and where we could improve, but we still have difficulty answering the basic question: How good are the GIS data?

What is the basic vocabulary for communicating about data quality? How can one measure it or manage it? The McGilvray Data Quality Dimensions provide a standard framework for assessing the current state of our GIS data and our practices for maintaining and enhancing the quality of the data.

This presentation will focus on each of the individual data quality dimensions and give examples of our current management practices for addressing each dimension. We will also present a preliminary assessment of where gaps exist and what actions should be taken to address them.

How Good are Your Data and Analyses? Communicating Quality. Part 3 of 3: Analysis

If you're in the business of providing clients or members of the public with the results of GIS-based analysis, it's in your interests to maintain records of exactly how your deliverables were developed. Public scrutiny and the threat of litigation are strong motivators for keeping such records, yet, fortunately, many of us are rarely, if ever, faced with them. Of course, that doesn't lessen their importance and, if a request did come up, how effective would you be at explaining precisely what you did months or years ago? The reality is that, compared to generating a map or creating an application, documenting processes is not very stimulating. A framework for thinking about the requirements may help.

In "Executing Data Quality Projects: Ten Steps to Quality Data and Trusted Information" (Morgan Kaufmann, 2008), Danette McGilvray provides a set of "data quality dimensions," each of which may be used to "define, measure, and manage the quality of data and information." Examples include "ease of use and maintainability", "accuracy" and "perception, relevance and trust." Would it not make sense to apply this way of thinking to our analyses and processes, as well as to our data? Could such an approach help us be more accountable to ourselves and those we serve? Could it make us more efficient? The purpose of this presentation is to explore these questions and, potentially, help prepare us for the moment when the call for details comes. That call may not be a legal one, which could be rather frightening, but could be just an attempt to remember what we did a couple of weeks ago. Regardless of the situation, any attempt to make the response less onerous and more efficient seems worthwhile.

PAPER SESSION 16: COMMUNICATING BETTER MAPS

ROOM 318

Understanding Breeds Success: Better Questions Mean Better Maps.

Whether part of large organizations, small consulting firms, underappreciated municipal departments, or single-shingle shops, GIS analysts are almost always working in highly-collaborative environments. But in the litany of skills we imagine as drivers of professional GIS success (Python! Design Chops! Web Development! Servers! GISP!), it's far too easy to undervalue the ability to ask great questions and make use of the answers.

Drawing on the wisdom of documentary filmmakers, design consultants, architects, and others, this paper/presentation provides its audience with strategies and methods for asking better (and more!) questions at all stages of the project life cycle. Asking better questions is about reframing your collaborative project planning as research unto itself—attempting to uncover blind-spots, misunderstandings, biases, and unspoken expectations. It's about turning what you unearth and what you learn into better work.

As collaborators, we're often downstream of a project or request. Your clients or colleagues may need a beautiful paper map. Perhaps they need some gnarly analysis. Maybe they're looking for a piece of custom software. Maybe they need a web map application. These work products and related analyses are inherently complex. Our targets are rarely clear. In almost every case, a GIS project stands a better chance of success when we ask better (and more!) questions of our collaborators and seek to think critically about the answers.

Cartography and Composition of Interactive Maps

Web mapping and associated technologies have been evolving rapidly over the last two decades and especially quickly over the last several years. With the advent of free and commercial services map services and APIs such as Google, Yahoo, Bing, MapQuest, and Open Street map it became easy for an entire generation of web map designers and developers to quickly spin out web maps, mash-ups and spatially enabled apps for use on a growing number of digital output devices. While the technology to create ever growing numbers of applications and interactive maps has been mastered by this community, there has been a lack of comprehensive resources and research that cover aspects of cartography and composition of maps that are specific to the respective output devices, especially the differences compared to traditional cartographic media (paper maps). Several freshly published articles and books are targeting to close this gap and building on these new resources the talk will focus on summarizing general principles and considerations of interactive map cartography and composition related to interactive media. Composition in this context refers not only to the graphical design, layout and map element placement (e.g. legends, scale bar, map tools) of the map, but also includes the considerations regarding choice of map elements and their functionality on the interactive map. Differences in map design and cartography as they apply to traditional (static and paper maps) and interactive maps will be discussed without going into detail about specific software to be used in their technical implementation. In order to create useful interactive maps it is essential to design the map, its cartography, map element composition & functionality, and layout in a way that clearly communicates the purpose of the map to the expected user audience.

PAPER SESSION 17: PROCESS IMPROVEMENT

ROOM 315

Grappling with Goliath

1 Report, 271 Maps, 100 Feature Classes, 58 Data Tables, 3 Raster Data Sets, 5 Orthophotos, 3 GIS analysts

How did three GIS analysts at a small environmental consulting firm build the largest map folio in the company's history and then double it without ending up in the psychiatric ward? By relying on the fundamentals: organization, standardization, and communication. Windward Environmental LLC submitted the 800-plus-page final remedial investigation report (RI) to the Washington State Department of Ecology and the US Environmental Protection Agency. The initial draft of this report had 112 maps. Prior to the production of the draft RI report, the average number of maps included in a Windward document was around 20, with the majority having fewer than 10. The process of scaling up to 112 and then to 271 maps – with all of the attendant data exploration, analysis, reviewing, commenting, data and file management, quality assurance/quality control, and cartographic issues – involved establishing layout, symbolization, and data handling standards; a rigorous but flexible map, data, and comment tracking system; and constant communication between the clients, the project scientists, and the GIS team.

Creating a Watershed Acquisition Suitability Model - Lake Whatcom Watershed, Bellingham WA

The City of Bellingham Watershed Acquisition program began in 2001 with the directive to purchase available land in the Lake Whatcom Watershed to insure pure drinking water. Prior to creation of this GIS-based acquisition model, multiple boards and agencies had evaluated properties on an individual level using a very confusing, non-technical and time consuming 'Ranking Sheet'. This ranking sheet failed to look at the properties as a whole and effectively and equally compare properties to one another. The model uses real-time and objective GIS data to score and ultimately rank appropriateness of property acquisition on a watershed-wide level. Values assigned to data/criteria were derived from qualified staff and advisory board members. Finding consensus on the included data and associated values was one of the most difficult portions of model development. This talk will discuss the processes of building consensus, working with multiple departments/agencies, creating the model, effectively communicating the technical aspects to non-GIS staff, and will look into the technical details of the model. The Watershed Acquisition model was created in python and run as an interactive script tool in ArcGIS Desktop.

No Longer Just Pass or Fail: Grading Spatial Metadata Improves Data Communication to Users

The distribution of greater and greater amounts of GIS data and increasingly complex data sets require complete and descriptive metadata. Good metadata eliminates questions, quells frustration, advertises your data, and helps communicate the message of your enterprise operation. King County GIS is working toward improved metadata content through a defined workflow and a detailed metadata 'grading' system. Tailored metadata templates serve as the starting point for data stewards, who are supported by instruction and classes to help them update key subjective information. Metadata is permanently wedded to its data set - from its initial ArcCatalog import and upgrade, through editing and/or geoprocessing steps, with final posting to the internal production library and external GIS data portal. During production posting, metadata is exported to stand-alone FGDC-formatted files. Prior to final check-in to the master metadata library, the metadata is 'graded'. A custom-designed python application evaluates the metadata's completeness in over 30 areas, ranging from key elements like the abstract and purpose to minor elements containing KCGIS-specific hyperlinks and data set name references. The application also performs a detailed investigation of the entity attribute section of the metadata, comparing attribute domains, where they exist, to a real-time snapshot of the data set's contents. Once the analysis is completed, a summary 'report card' is generated for each data set informing the steward of how complete their metadata is, along with an additional report illuminating where gaps or issues may still require remediation. Agency summations are created to give managers a measure of their workgroup's status, and a running enterprise summary tallies a friendly scoring competition between agencies. Comprehensive data dictionaries, derived coincidentally during the metadata grading, provide a searchable database of the entire enterprise library, field attributes, contact information and other extractable information.

PAPER SESSION 18: COMMUNICATION WITH WEB MAPS

ROOM 316

Communication Breakthrough with Web Maps

Using Esri's ArcGIS Online, the City of Seattle has implemented a platform that enables webmasters, GIS professionals, and business users alike to easily develop web maps and sophisticated mapping applications. This presentation will recap the steps the City took to develop an operational ArcGIS Online environment and show examples of how users throughout the City are taking advantage of that work to easily communicate with each other and their customers. This presentation will appeal to anyone looking to learn from the experience of an agency that has successfully implemented a full-featured ArcGIS Online for Organizations site.

Utilizing ArcGIS Online as a Communication Tool for the Puyallup School District

The Puyallup School District is the ninth largest (enrollment) district in the state of Washington, and second largest school district in Pierce County, serving a population of approximately 119,000 residents within a 54 square mile jurisdiction. The district is located six miles east of Tacoma, 30 miles south of Seattle, and is situated in the heart of the Puyallup Valley.

The district has 21 elementary schools, seven junior high schools, three comprehensive senior high schools, and an alternative school, all of which serve more than 20,500 students. The district employs approximately 1,255 certificated, 1,388 classified staff, and 750 substitute personnel.

With a district of this size, it can be challenging to communicate with all stakeholders and residents. In an effort to more effectively communicate with staff and the general public, the Puyallup School District Planning Department has looked to ArcGIS Online as a web-based solution to disseminate information that was relatively isolated within the department previously.

Within the past year, the district's ArcGIS Online website has educated decision makers, including our superintendent and school board members, on the power and potential of GIS. This is a significant accomplishment, considering we have been using GIS for nearly a decade with little recognition given to its use or purpose. Furthermore, this was accomplished with a modest budget and didn't require additional staffing.

In summary, we have now created an organizational appetite to view common data sets geographically, which has been an incredibly rewarding experience. We plan to widen our use of GIS as a communication tool via ArcGIS Online to better inform our corner of the world.

PAPER SESSION 19: GIS COMMUNICATION

ROOM 317

Panel: Mapping your Unique Value, a Roadmap to Personal Branding

When someone asks you what you do for a living, what do you say? Do you say 'I work with GIS'? Do you quickly define the acronym 'GIS' hoping this will provide clarity but often spurs more confusion? You finally surrender and say 'You know...I make maps.'

How clearly can you define what you do? Your job title is only the beginning. How do you communicate your value and set yourself apart from other GIS Analysts, Technicians, Developers, and etcetera?

You do this through your personal brand. Your brand is your reputation. Your personal brand matters. It's the secret to describing your key attributes, defining your unique value, and telling your story. It's about bringing who you are to what you do and how you do it. Having a personal brand is essential for explaining your value and the applicability of your skills and expertise. This is especially true for complex and technical disciplines, like GIS, where it can be difficult to explain one's profession without glossing-over your specialization or burying it with technical jargon.

This session provides an opportunity to start defining and talking about your personal brand. Through guided activities you will have the opportunity to identify your skills, talents, values and passions that make you unique, start defining your personal brand and create a plan to share your story.

The session will cover the basic criteria to start creating your personal brand for example:

- What are the key attributes that describe you?
- What distinguishes you from your colleagues?
- How to develop brand advocates and where do you tell your brand story?

Delivering your brand clearly and consistently creates memorable interactions with colleagues and clients and potentially opens the doors to new opportunities. Your brand is working 24 hours a day, let's make sure it is communicating what you want.

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Tonya Kauhi

Tonya has a background in Environmental Science and GIS Analysis and has worked with GeoEngineers for over 13 years. She is an expert in Enterprise Architecture, data management best practices and GIS. Tonya provides value to her clients by truly understanding their business needs and implementing the best solution for those needs.

Amber Raynsford

Amber has a background in landscape architecture and natural resource management. With a decade of GIS experience, her specialty is using GIS as a tool for design projects, including land planning and development. She works as a Landscape Designer and GIS Analyst at The Watershed Company, an environmental consulting firm, in Kirkland.

Christina Gonzales

Christina recently graduated from Western Washington University, spending the first year after graduating working for the western Washington tribes in a GIS capacity. She has been at GeoEngineers for almost a year now where she specializes in cartography for a variety of earth science projects and is enthusiastically learning new skills.

PAPER SESSION 20: ASSET MANAGEMENT

ROOM 318

Reducing Costs and Raising Effectiveness with a GIS-centric Asset Management System

The City of Shoreline implemented a GIS-centric asset management system, Cityworks, in 2013, and has realized many benefits as a result of this investment. By directly integrating asset information in the GIS, work flows have been simplified and response times have been reduced for the maintenance and repair of the City's stormwater facilities. Cityworks offers a set of tools for staff to more easily interact with asset information by directly leveraging the power of GIS. Traditional asset management systems lack this "GIS centric" capability. This ease of use has led to reliable stormwater maps, work order history and condition information. Further improvements will be gained as the City migrates other City divisions, including streets and traffic in 2014. Also, as the City continues to collect asset condition information, we will be able to evaluate the effectiveness on how we manage our City infrastructure. Advanced analysis tools in Cityworks allow all levels of user to be able to get more out of GIS. Heat Maps, condition analysis, maintenance analysis, Asset Analytics are available with a few clicks allowing management to make quality business decisions more quickly. This presentation will highlight the key points and ROI pieces, as well as the analysis tools.

Precision Street Panoramas in GIS

The goal is that attendees gain new insight into street-level surveying technologies and their application in asset management, site visualization, and transportation

Asset and Infrastructure Mobile Mapping

Making our current infrastructure last longer is a challenge that many agencies are facing today. Managing the life cycle of the physical assets associated with our particular systems (transportation, water, utility, etc.) has moved steadily upward on our priority lists. Asset management begins with knowing what your assets are and where they are located. The Asset and Infrastructure Mobile Mapping (AIMM) service offered by DEA, Inc. is a method to gather and confirm that information for your system quickly, efficiently, and economically. Using the power of photogrammetry in a terrestrial environment, DEA is able to help you gather accurate position and classification information from street level imagery and record that information, along with detailed information about the asset, directly into your GIS environment. This presentation will give a brief overview of the system and explore some of the numerous other applications imagery and derived data.

PAPER SESSION 21:

ROOM 315

ENVIRONMENTAL

Crowdsourcing Invasive Species Data in Washington using Native Mobile (iOS and Android) Apps

Invasive species can devastate biological diversity and the natural resource-based industries that rely on it. These species threaten biodiversity, habitat quality, and ecosystem function and are believed to have contributed to the decline of 42% of the endangered and threatened species in the United States. In Washington, the realized and opportunity costs of non-native species invasions are in the millions of dollars each year. While invasive species inventories provide State agencies, local governments and tribes with vital data to consult when managing their watersheds and natural resources, creating and keeping an up-to-date inventory is a time consuming and resource intensive process. Additionally, local governments (specifically County-level noxious weed boards) often do not have sufficient financial backing to support survey, monitoring and control of invasive species in the region.

The goal of the WA Invasives mobile app is to make species identification simple and help improve detection and reporting of harmful invasive species statewide. Sighting reports are submitted to Washington Invasive Species Council (WISC) staff and technical experts throughout the state to review and approve sighting reports. Sightings that are approved are viewable directly through the app's mapping tool. Features include leveraging GPS and photo features along with offline caching for sightings that can be saved locally to the mobile device for uploading when there is network connectivity. Download the free app on the Apple Store: <http://bit.ly/1nagd3N> and Google Play: <http://bit.ly/1nagfsr>.

Crowdsourcing mobile data collection is enabling the public to utilize geospatial tools from their smartphones to help map priority invasive species statewide. The data that they collect help to communicate (via mapping) the presence and distribution of these species, then communicate (via notification) to technical reviewers to provide a rapid response plan for control/mitigation. These tools will help improve communication for all members of the invasive species community through empowerment.

ARCGIS FOR MOBILE SOLUTION

Data Collection using ArcGIS for Mobile

Stormwater facilities are engineered facilities designed to convey storm runoff, remove pollutants and control flow rates. These systems contain pipes, ditches, filters, ponds, underground tanks and vaults. This infrastructure works together to control and treat storm runoff, which reduces flooding and prevents pollutants from entering streams and other water bodies.

King County staff inspects facilities periodically to ensure safety and proper function. Field staff performing inspections will benefit from accurate location and attributes on a mobile device.

The King County Stormwater Services section wanted to create a complete GIS inventory of their facilities and chose to use ArcGIS for Windows Mobile for field data collection. Field staff collects data for over 20 layers. The staff uses Windows tablets, which feature bigger screens. The basemap, imagery caches and project data are saved on the devices, allowing field personnel to work in a disconnected environment. Data is synchronized daily with a SDE database when the staff returns to the office.

I will discuss the development process, challenges and lessons learned through the implementation of the project.

PAPER SESSION 22: LIGHTNING TALKS

ROOM 316

Using Python Dictionaries To Perform Raster Math

Performing math across multiple rasters can be a tricky process. ArcGIS Desktop offers a tool called Raster Calculator that enables user to do complicated math across multiple rasters relatively easily. This tool however require a Spatial Analyst license. What is a GIS Analyst to do when this tool is not available? My talk will introduce a method that performs a similar task using Python dictionaries.

Tacoma's Green Living Guide: Promoting Tacoma's Environmental Assets

Tacoma's Green Living Guide is an innovative way to educate community members about what sustainability-related efforts exist within Tacoma. It communicates the numerous measures that have been taken to increase sustainability throughout the city, from agriculture and education, to open space and transportation. This interactive story map provides information

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to the public in a way that may be more appealing than information on a website alone, and allows a visual representation of Tacoma's environmental assets. The intended audience for this story map are: community members hoping to learn more about what is available to them personally, environmentally-minded people hoping to learn about what sustainability-related efforts have been taken in Tacoma, and people who may be interested in moving to Tacoma who want to learn more about what the city offers.

The map was created from over 300 individual points in seven categories, and will continue to grow. After the data was compiled in a spreadsheet, Esri's ArcGIS Online provided the format to easily create a story map that will be simple to update and add to in the future, as necessary.

Learning Objectives for this presentation include: how to communicate both a vision and existing efforts towards sustainable practices, how to organize and review data, and how to use ArcGIS Online to create a story map.

Creating Evidence with GIS for Environmental Planning

Starting with examples from Cambodia and DR Congo, cursory analysis of freely available land use data provokes important questions related to development priorities and processes. Analysis and subsequent decision-making, is seriously inhibited by the lack of available baseline data. In contrast, GIS analysts in the Pacific Northwest have an abundance of spatial data available and opportunities to conduct analyses on complex data in order to address environmental sustainability issues. Whereas spatial data creation may be of generic value, further data analysis and development of scenario models adds value to GIS by efficiently highlighting important sustainability issues. This presentation will demonstrate examples of how GIS data has been analyzed and used to develop models of future development to better inform decision-making. Furthermore, this presentation will highlight gaps where environmental assessment efforts have been limited to spatial data collection and basic mapping, and thus under-utilized as an analysis and decision making tool.

Ethics of GIS: Just Because You Can, Should You?

This talk highlights the ethical issues we face as GIS professions being asked to produce maps and data to support, defend, oppose or question a myriad of potential positions. A quick peek at the things we know, think we know and may not have thought about. It asks the viewer to think about how to identify ethical issues. Communicate them to our project partners and customers. Ultimately resulting in how we Communicate our World.

This talk incorporates topics addressed in "How to Lie with Maps" by Mark Monmonier, The GIS Certification Institute "Code of Ethics", and cases of GIS ethical dilemmas.

Classifying data - the challenge of managing statewide data on recreation and culture in a single framework

In order to make a map, you need to be able to symbolize information meaningfully, which means that you have to group your data into relevant categories. This can be challenging. Schools or campgrounds can be mapped with a single icon, but you still have to decide what constitutes a school: is it just K-12, or does it include a dance academy. Is a campground any spot where you are allowed to camp or just places with specific camping facilities? Are a primitive campsite, a fishing access point that allows camping and a formally designated campground all campgrounds? Dividing a single category (K-12 education or campgrounds) into smaller categories becomes even harder. If you classify K-12 schools as elementary, middle/junior or high school, what do you do with a school that is K-12, K-8, or an alternative school? Should you base classifications on the terminology of the managing agency? In Wenatchee National Forest, a horse park is a road-accessible campground that has facilities for horses, but in North Cascades National Park, a horse campground is a backcountry campground with horse facilities that cannot be reached by road. The same terminology refers to a very different type of camping experience. At Washington Hometown, we are building a single data set of recreation and cultural resources that covers all of our state. In order to do this, we have to organize places managed by different agencies and in different regions into a single framework. We will talk about the classification system we are developing, the challenges we have encountered and how this system will help us create maps that meet the needs of many different users.

Evolution of a Map the Tacoma Smelter Plume

The Washington Department of Ecology uses maps for public outreach about Arsenic contamination and to work with local jurisdictions. Where did this Arsenic come from? It came from the Asarco copper smelter. That operated for almost 100 years in Ruston, Washington.

This is a look at Arsenic maps used by the Department of Ecology this includes 'Dot maps' (2003 Credible Evidence Report), 'Voronoi diagram' (2005 PGG Report) and the new 'Geostatistical model & Monte Carlo Simulation' map (2014). As well as some historical Arsenic maps (circa 1970's to 1980's).

PAPER SESSION 23: GIS COMMUNICATION

ROOM 317

Panel: A proposal for national GIS data sharing - What does it mean for Washington State?

This panel session will discuss a new proposal to develop a national data sharing infrastructure and what it might mean for Washington State at the Federal, state, and local levels.

In March 2014 the URISA GIS Management Institute published URISA GMI Discussion Paper #1 titled: A DISTRIBUTED MODEL FOR EFFECTIVE NATIONAL GEOSPATIAL DATA MANAGEMENT: BUILDING A NATIONAL DATA SHARING INFRASTRUCTURE (See: <http://www.urisa.org/clientuploads/directory/GMI/Discussion%20Papers/GMIDiscussionPaper1.pdf>).

This paper was authored by:

- Jim Sparks, Geographic Information Officer, State of Indiana
- Philip Worrall, Executive Director, Indiana Geographic Information Council
- Kevin Mickey, GISP, CTT+, Director, Geospatial Technologies Education, The Polis Center

The paper abstract states, in part:

- Geospatial professionals have developed vast quantities of data, but the potential value is often unrealized.
- Congress has recognized the challenge of coordinating and sharing geospatial data from the local, county, and state level to the national level, and vice versa.
- Congress explored issues of geospatial information in hearings during the 108th Congress. However, the issues were not resolved.
- The paper examines impediments to effective data development and data sharing and offer solutions that reflect the employment of effective coordination, carefully directed funding, and the application of current information technology tools and strategies.

The paper examines the various roles of Federal, state, and local governments in regard to data creation and maintenance, and link these roles to strategies that have produced successful initiatives. It suggests a national strategy for geospatial data that benefits local agencies, states, and the Federal government.

This is an extremely important paper and the ideas deserve understanding and discussion at the national, state, and local levels. The paper authors are soliciting comments which will be discussed during the URISA Annual Conference GIS-Pro 2014 in New Orleans.

To develop and refine comments for the authors, this 90 minute panel session brings together perspectives from across each level of the state.

Greg Babinski

Greg Babinski, GISP, is the Finance & Marketing Manager for the King County GIS Center in Seattle, where he has worked since 1998. Previously he worked for nine years as GIS Mapping Supervisor for the East Bay Municipal Utility District in Oakland. He holds an MA in geography from Wayne State University. Babinski is Past-President of URISA and Chair of URISA's GIS Management Institute Committee. In 2005 he founded The Summit – the Washington GIS Newsletter. In addition to GIS consulting, he is a GIS researcher, author, and instructor. He has spoken about GIS across North America, Europe, Asia and Australia.

Tom Carlson, PhD, GISP

Geographer - Geospatial Liaison NW Region, United States Geological Survey

Karl Johansen

Principal, Port Madison GIS

Ian Von Essen

GIS Manager, Spokane County

Josh Greenberg, PhD, GISP

Senior GIS/RS Analyst, Skagit County

PAPER SESSION 24: EMERGENCY RESPONSE

ROOM 318

An Open Source Solution for Component Based Web GIS

In 2013, to adapt to current technologies, Pierce County completed a rewrite of its emergency management web GIS application, MapView. MapView allows the responders to browse and query spatial data layers, report and manage incidents, interactively draw incident symbols on the map, and overlay county data layers on multiple regional base maps. The new MapView was developed on mainstream open-source technologies like ExtJS, OpenLayers, GeoServer and Java, with a unique difference from previous Web GIS applications: all UI elements including the layer tree, tool bar, and map window are implemented as components, which can be flexibly assembled into a web GIS application, but are maintained or extended independently. This component-based design has introduced enormous convenience in maintenance and code sharing across projects. In this presentation, we are going to introduce the implementation details behind the component design and discuss further research directions.

Central Pierce Fire Goes Mobile with Fire Hydrant Inspections

Central Pierce Fire in Pierce County, WA needed a paperless and affordable mobile solution for fire hydrant inspections. Their current process of using paper inspection forms for inventorying hydrants proved to be burdensome and inefficient. Many ineffective work processes existed such as managing hydrants in multiple databases, inspecting hydrants unsystematically, inventorying hydrants via paper forms, transcribing hydrant information to office computer, and updating hydrants through multiple databases. In an effort to eliminate these inefficiencies, Central Pierce Fire contacted Pierce County GIS to help remedy the situation. Considering budget constraints, Pierce County GIS proposed a low-cost mobile solution using ArcPad 10 and a mobile device. Before creating an efficient and user-friendly hydrant inspection process, GIS standardized the existing hydrant inventory database, which had numerous look-up codes, inconsistent data values from multiple inspectors, and data entry errors. GIS standardized the existing hydrant inventory database by creating attribute domains in ArcGIS. This eliminated the need for paper inspection forms and simplified inspector data entry. Utilizing ArcGIS's ArcPad Data Manager, the hydrant geodatabase was simply checked out for use on the mobile device at the beginning of the day and checked in at the end of the workday. In addition, the new mobile solution allowed for a logical and systematic hydrant inspection process in the field. After purchasing ArcPad 10 for under \$700 and utilizing the software on an existing laptop, Central Pierce Fire recognized a 10-15% increase in hydrant inspections in the summer of 2013. Finally, after implementing this paperless hydrant inspection process, many work processes have been improved such as tracking crews work progress, tracking workflow by water purveyors, producing accurate hydrant reports by purveyors, and maintaining one data source for all hydrants.

GIS Support for the SR530 Flooding and Mudslide Incident

On Saturday, March 22, 2014, at 10:37 a.m. local time, a major mudslide occurred 4 miles (6.4 km) east of Oso, Washington, United States, when a portion of an unstable hill collapsed, sending mud and debris across the North Fork of the Stillaguamish River, engulfing a rural neighborhood, and covering an area of approximately 1 square mile (2.6 km²). Within hours, GIS resources were mobilized from Federal, State and Local agencies to respond at multiple Emergency Operation Centers and Command Posts. This presentation will outline the GIS roles the presenting agencies played, highlighting successes, lessons learned and suggestions on what would better prepare us for a similar event in the future

Acknowledgements

Every Washington GIS Conference is a
labor of love

supported by volunteers who contribute
hundreds of hours of their time to the effort.
It would not be possible to bring you these fun
and educational opportunities without the
contributions of the following people,
for which we are
very grateful.

CHAIRPERSON Heather Glock & Chuck Buzzard

WEBSITE Cort Daniel & David Howes

REGISTRATION Don Burdick

VENDOR SUPPORT Sarah Myers

**PRESENTATIONS AND
ABSTRACTS** Renee Quenneville & Steve Savage

MODERATOR GURU Bob Wendt

POSTER CONTEST Suzanne Shull

CONFERENCE BOOKLET Ann Stark

CONFERENCE OUTREACH Ian Von Essen & Lisa Stapleton

DICK THOMAS CONTEST Sarah Myers

MARKETING Amanda Taub

VOLUNTEER COORDINATOR Trisha James & Grace Bergman

CATERING Don Burdick & Chuck Buzzard

SOCIAL EVENT Renee Quenneville

WORKSHOPS Josh Greenberg

NOMINATIONS Ian Von Essen

FUN RUN Greg 'Jack Rabbit' Babinski &
Heather 'Legs' Glock

Supporting Organizations

WAURISA would like to thank the following professional organizations, user groups, GIS news, and businesses who support and promote our activities and efforts:

Urban and Regional Information Systems Association (URISA)	American Planning Association (APA) – Washington Chapter
URISA - British Columbia Chapter (URISA BC)	ASPRS – Columbia River Region
Central Puget Sound GIS User Group (CPS-GIS)	GIS User.com
Central Washington Users Group (CWGIS)	Directions Magazine
Northwest Washington GIS User Group	GIS Lounge.com
Cascadia Users of Geospatial Open Source (CUGOS)	Salish Coast Sciences, LLC
Washington State Geographic Information Council (WAGIC)	Esri
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Washington Women in GIS and Technology	Wendt Consulting and GIS Services
Lone GIS User Group	Pierce County
Northwest GIS User Group (NWGIS)	Taub Haus
Northwest HAZUS User Group	Oregon & Southwest Washington Chapter of URISA

Daily Matrix

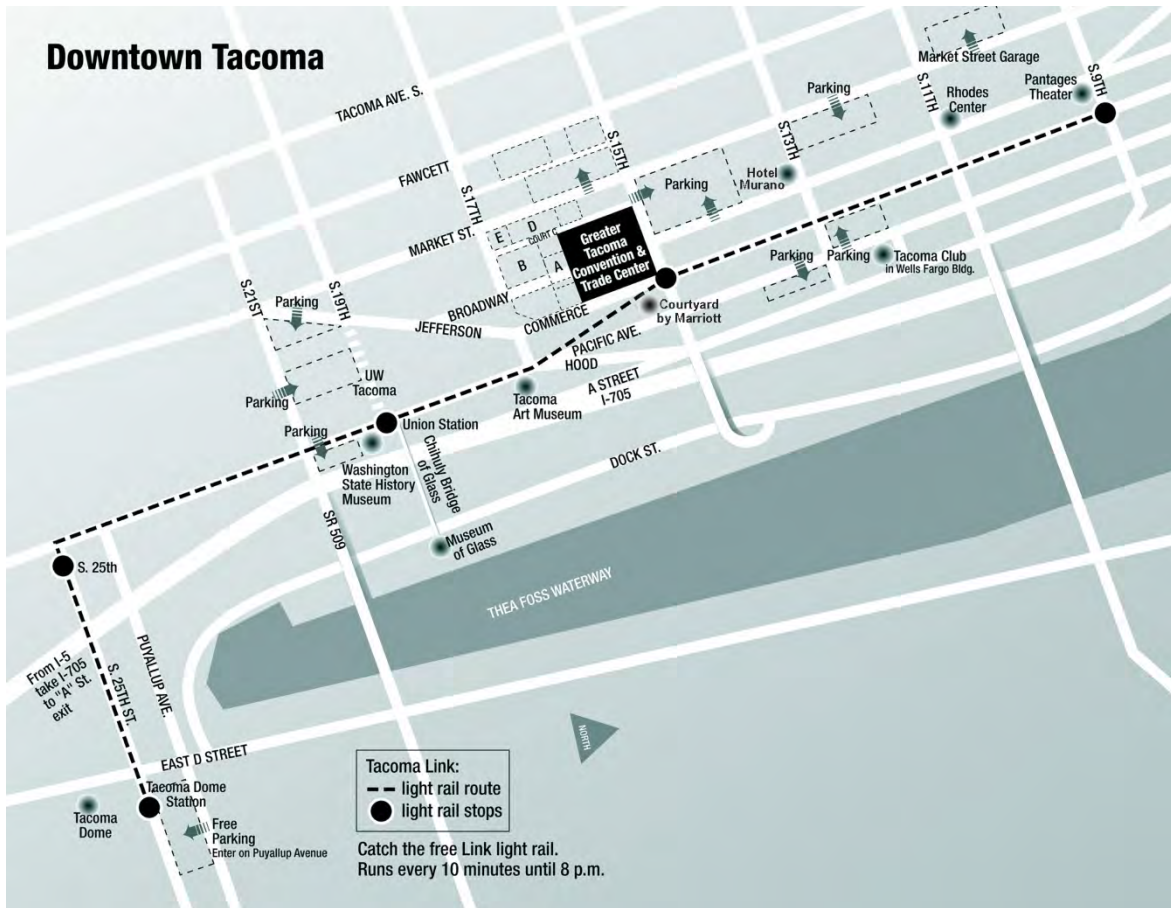
Tuesday

	Room 315	Room 316	Room 317	Room 318
First AM Session	Breakfast, Keynote Part 1, Break			
Second AM Session	Communications Through Custom Applications: Harvey Arnone, Dana Trethewy, Brandon Bouier	Asset Management : Matt George, Steve Schunzel, Renee Quenneville	PANEL: They'll Stone You When You're Trying to Build Your GIS: The Multi-Dimensional Role of the GIS Coordinator: David Howes Jason Eklund Chris Owen Jennifer Radcliff Matt Stull David Wallis	VENDOR: James van Dyk, Scott Moore
First PM Session	Project Management: Geoffrey Almvig, Don Burdick	Environmental: Anna Yost, Stephan Gmur, Kris Symer	PANEL: The GIS Analyst as an Institutional Resource: Chris Behee David Howes Mark Joselyn Grete Roeckers Tim Dewland Cathy Walker	VENDOR: Scott Moore, Jeff Whittaker
Second PM Session	Demographics & Demographic Analysis: Mary Ullrich, Michaellyn Garcia	Data Visualization: Shane Clarke, Jeff Holcomb	PANEL: Independent GIS Professional Networking and Business Building: Maria Sevier David Howes Joanne Markert	VENDOR: Elizabeth Marshall

Daily Matrix

Wednesday

	Room 315	Room 316	Room 317	Room 318
First AM Session	Process Improvement: Craig Hanson, Kate Newell, Parker Wittman, Mike Leathers	Dick Thomas Student Competition Anna Yost, Emily Spahn, William Jonsson	How Good are Your Data and Analyses? Communicating Quality: Duncan Munro Stephen Beimborn David Howes	Communicating Better Maps: Parker Wittman, Karsten Vennemann
Second AM Session	Transportation: Pat Whittaker, Kyle Miller, Gary Montgomery	Communication with Web Maps: Albert Gonzales, Brian Devereux	PANEL: Mapping Your Unique Value, a Roadmap to Personal Branding: Tonya Kauhi Amber Raynsford Christina Gonzales	VENDOR: Asset Management 2: Paul Burrows, Chris Aldridge, Jay Clark
First PM Session	Native Mobile App Development: Harkeerat Kang, Mike Leech	Lightning Talks: Jason Taylor, Mike Murnane, Joel Masselink, Kelly Alfaro Haugen, Jennifer Hackett, Ian Mooser	PANEL: A Proposal for National GIS data sharing - What Does it Mean for Washington State? Greg Babinski Tom Carlson Nancy Tosta Karl Johansen Ian Von Essen Josh Greenberg	Emergency Management: Xiongjiu Liao, Greg Heintz, Suzy Brunzell
Second PM Session	Awards, Election Results, & Keynote Part 2			



Tacoma offers a free light rail train service. The light rail train runs every ten minutes, regularly from 6:00am to 8:00pm, Monday- Friday, Saturday 8:00 am-10:00pm and Sunday 10:00am - 8:00pm. A convention center light rail stop is located just outside the first floor of our facility (on Commerce Street) for convenient access throughout downtown Tacoma. Free parking is located at the Tacoma Dome Station. Parking is available at the Convention Center for \$10 a day.

Mark your calendars for the 2015 GIS conference!
 We'll be joining forces with the Oregon chapter of URISA for a combined conference May 4-6 at the Hilton Hotel in Vancouver, WA.



Facility Map

