



Lynnwood
Convention
Center

2011

Conference at a Glance

Monday	Tuesday	Wednesday
Registration 8 AM—4 PM	Registration 8 AM—4 PM	Registration 8 AM—1:30 PM
8:00—12:00 Morning Workshops	8:00—10:00 Continental Breakfast Ballrooms	6:30 AM—Fun Run!
12:00—1:00 Lunch Box Lunch	8:45—10:30 Opening Session Keynote: Jack Dangermond, Esri	8:00—10:00 Continental Breakfast Ballrooms
1:00—5:00 Afternoon Workshops	10:30—11:00 Morning Break	8:30—10:00 Technical Presentations
5:30—? Informal dinner Rock Woodfired Pizza & Brewery 4010 196th Street SW, Lynnwood	11:00—12:00 Technical Presentations	10:00—10:30 Morning Break
	12:00—1:00 Lunch Buffet Lunch	10:30—12:00 Technical Presentations
	1:00—2:30 Technical Presentations	12:00—1:30 Lunch Box Lunch 12:15—1:15 Leadership Meeting
2:30—3:00 Afternoon Break	2:30—3:00 Afternoon Break	1:30—3:00 Technical Presentations
3:00—4:30 Technical Presentations	3:00—4:30 Technical Presentations	3:15—4:00 Closing Awards Ceremony Board Election Results
	4:30— 6:00 Vendor Social Vendor Area	
	6:30—8:30 Evening Social Celtic Bayou 19800 44th Ave, Lynnwood	



@WAURISA
#wagis11

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President's message



GIS Friends and Colleagues,

Welcome to the WAURISA fourteenth annual Washington GIS Conference! Together, over the next few days we are “Mapping Washington’s Future”. The choice of that as our conference theme represents the importance of the state GIS strategic plan and the future direction of the industry as a whole. We are very fortunate by having various inspirational speakers giving us insight into that future starting out with our keynote speaker, Esri president, Jack Dangermond. Our state GIS Coordinator, Joy Paulus, is also providing insight into the state’s strategic planning process and what we might expect in the short and long term future.

This conference looks better than ever with so many participants as well as a great number and diversity of workshops and presentations. This is all due to the incredible work of our conference chairperson Heather Glock and a dedicated group of committee volunteers putting hours of volunteer time into making this such a wonderful event. I am sure there is plenty for each of you to enjoy. Take advantage of as much as you can and make their hard work pay off by attending sessions, networking with peers, and connecting with our vendors. Stay and have a free drink at the vendor social Tuesday evening and maybe stay out late to connect with your peers at Tuesday night’s social event at the Celtic Bayou. I would love to see each of you at the leadership meeting helping us form the future direction of our organization and identifying areas for you to get involved with WAURISA.

This is an exciting time and event as we formulate the future of GIS in our state. Our conference puts us in contact with national level people in the industry such as Jack Dangermond and our own Greg Babinski who is the new president-elect for national URISA. See the future movers and shakers of GIS with the fourth grade students from Waterville, Washington at their Tuesday afternoon presentation. Network with the vast diversity of GIS professionals throughout our state as peers from the federal, tribal, state and local level are participating, presenting and involved in shaping our future. This conference also demonstrates the depth and impacts of GIS with presentations and attendees of many other professions like surveying, natural sciences and engineering. This incredible diversity of presenters and attendees with their knowledge and energy certainly directs and propels us into the future. Enjoy the conference; learn, motivate, be inspired and just have fun!

Don Burdick, President

Opening Session

Tuesday May 10th 8:45 a.m. - 10:30 a.m.
Ballrooms

WELCOME & GENERAL REMARKS	Don Burdick, WA URISA President
PRESENTATION OF SUMMIT AWARD	Ian Von Essen, Spokane County GIS Manager
CONFERENCE ANNOUNCEMENTS	Heather Glock, Conference Chair
KEYNOTE ADDRESS	Jack Dangermond, President, Esri

Keynote



Jack Dangermond
President, Esri

Jack Dangermond is the founder and president of Esri. Founded in 1969 and headquartered in Redlands, California, Esri is widely recognized as the technical and market leader in geographic information system (GIS) software, pioneering innovative solutions for working with spatial data. Esri has the largest GIS software installation base in the world with more than one million users in over 300,000 organizations worldwide. Mr. Dangermond fostered the growth of Esri from a small research group to an organization of more than 5,000 employees worldwide. Jack holds ten honorary doctorates and many prestigious awards for his work in geography, geospatial technology and environmental science.



Leadership Meeting

Wednesday May 11 12:15 p.m. - 1:15 p.m.
Room 1F

Join us for the Leadership Meeting during lunch on Wednesday. We'll be meeting to fill you in on our successes during the past year, and spread the news of the exciting things we have planned for the future.

Some of our successes include...

- Hosting successful URISA workshops
- Improving our online forums
- Continuing to outreach to students and encourage their participation

...and a glimpse at what are planning for the future, with your help...

- Planning events for the next year
- Clearly defining ways to volunteer and participate in WAURISA
- Continuing to gather and integrate suggestions from our membership

Closing Session

Wednesday May 11 3:15 p.m. - 4:00 p.m.
Ballrooms

BOARD ELECTION RESULTS Nomination Committee

MAP CONTEST WINNERS Suzanne Shull

DICK THOMAS AWARD WINNERS Amanda Taub

FINAL ANNOUNCEMENTS Heather Glock & Don Burdick

Be sure to vote...

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. 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 11th**. One ballot per attendee. Winners will be announced at the closing session

PRESIDENT: Ann Stark
VICE PRESIDENT: Heather Glock
SECRETARY: Amanda Taub

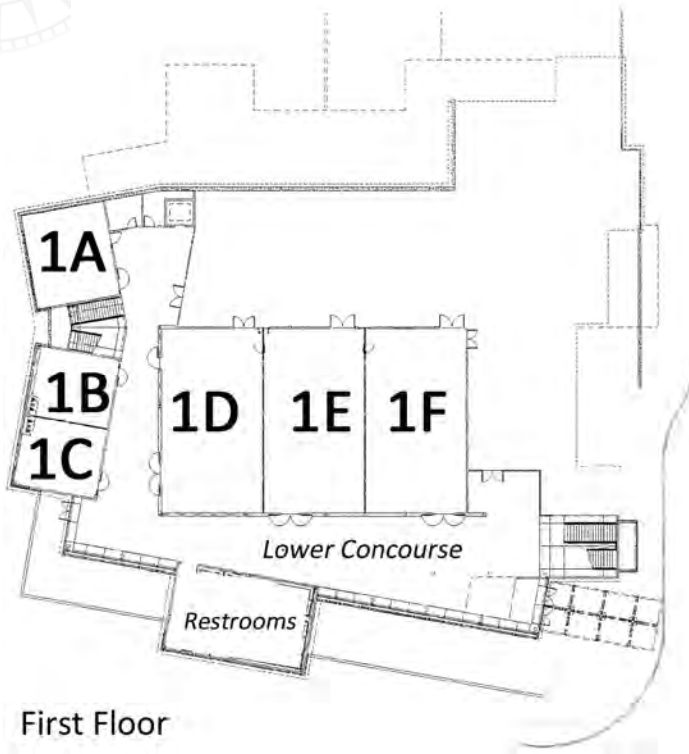
BOARD MEMBER: Neil Berry
BOARD MEMBER: Joe Brentin
BOARD MEMBER: Dana Trethewy
BOARD MEMBER: Donna Wendt (1 Year)
BOARD MEMBER: Suzanne Shull (1 Year)

Map Contest

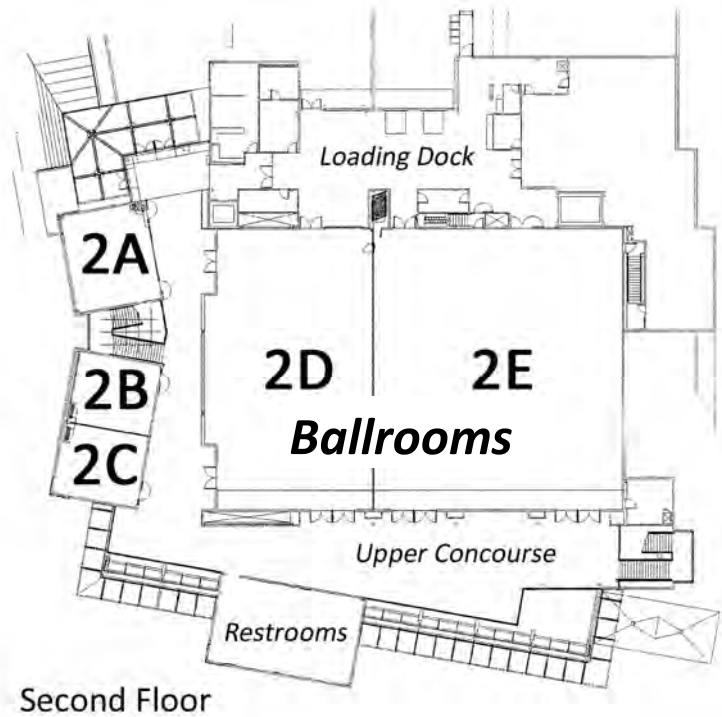
The Map Contest is a terrific opportunity for conference attendees to showcase their work and let their peers and colleagues be inspired by the interesting projects they are involved in. All contest maps are on display in the foyer area outside the main ballroom on the second floor. Please take some 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 11 to the ballot box located at the registration desk**. Prizes for best maps will be awarded at the closing session on Wednesday afternoon. Your vote matters!



Facility Map



First Floor



Second Floor

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	Donna Wendt	2007
Linda Gerull	2004	Mike Onzay	2008
Geoffery Almvig	2005	Marty Balikov	2009
Nancy Hultquist	2006	Ian Von Essen	2010

TOM NOLAN 2011

WAURISA Board

PRESIDENT: Don Burdick	BOARD MEMBER: Neil Berry
VICE PRESIDENT: Greg Babinski	BOARD MEMBER: Whitney Bowerman
SECRETARY: Karl Johansen	BOARD MEMBER: Cort Daniel
TREASURER: Tonya Elliott	BOARD MEMBER: Heather Glock
PAST PRESIDENT: Angela Johnson	BOARD MEMBER: Ann Stark
	BOARD MEMBER: Donna Wendt

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

ROOM 1A	ROOM 1B/C	ROOM 1E		
<p>8 a.m.—5 p.m. URISA GIS Capability Maturity Model and Geospatial Management Competency Model Greg Babinski, URISA President-Elect</p>	<p>8 a.m.—12 p.m. Creating Web Maps with ArcGIS Server and ArcGIS.COM Scott Moore - Solutions Engineer, Esri</p>	<p>8 a.m.—12 p.m. Working with GIS resources in Autodesk AutoCAD Map 3D and Civil 3D Dusty Gallinger, PacificAD</p>		
<p>This workshop would really be a work session, with participants expected to provide input for the refinement and development of the two subject models. Full participation would be limited to GIS managers or supervisors, or others with appropriate qualifications. Observers could participate and might be invited to provide comment or questions.</p> <p>The development of the Geospatial Management Competency Model (GMCM) is a new URISA proposal to complete the recently published USDOL Geospatial Technology Competency Model (http://www.careeronestop.org/competencymodel/pyramid.aspx?GEO=Y) by addressing the Tier 9 Management Competencies.</p>	<p>Come learn how to use ArcGIS Server to publish your maps to the internet. This hands-on lab will get you the experience you need to leverage ArcGIS Server and ArcGIS.COM to create elegant web mapping applications without having to be a programmer. Using templates available on the ArcGIS Resource Center, this lab will jumpstart the process of sharing your maps and data on the web. Laptops will be provided for this course.</p> <p>Level: Beginner / Intermediate Limit 40 participants, two per laptop.</p>	<p>This workshop will focus on AutoCAD Map 3D/Civil 3D and how best to use these tools to optimize workflow and productivity when working with GIS data sources. Among the topics that will be covered are data access and exchange, mapping and analysis, data preparation, editing, and data management. Skills gained in this workshop will give you the tools to maximize the value of drawings, maps, and geospatial data using a familiar interface based on the AutoCAD platform.</p>		
<p>12:00 p.m. to 1:00 p.m.—Boxed Lunch</p>				
<p>These two separate models intersect in that both the GISMM and GMCM address the same competencies. The GMCM addresses the competencies that individual managers need and the GISMM addresses process competencies that indicate a mature organization.</p> <p>The goal of the work session will be to engage the participants to critique and improve the existing GISMM and provide input on the development of the GMCM. After the work session, a report will be issued that summarizes the discussion and agreements reached.</p>	<th data-bbox="651 1119 1094 1169">ROOM 1B/C</th> <td data-bbox="1099 1113 1552 1940"> <th data-bbox="1099 1119 1552 1169">ROOM 1E</th> </td>	ROOM 1B/C	<th data-bbox="1099 1119 1552 1169">ROOM 1E</th>	ROOM 1E
<p>1 p.m.—5 p.m. Getting Started with ArcGIS Mobile Scott Moore - Solutions Engineer, Esri</p>	<p>1 p.m.—5 p.m. Asset Management: Planning, Strategy, and Implementation Ben Hoffman - NW Regional Manager, Data Transfer Solutions</p>			
<p>This workshop offers hands-on experience with ArcGIS Mobile. ArcGIS Mobile 10 is now available for ArcView users. Learn how to use the Mobile Project Center to build and deploy applications to both Windows Mobile and Windows Laptop devices. ArcGIS Mobile helps organizations deliver GIS capabilities and data from centralized servers to a range of mobile devices. You can use ArcGIS Mobile to deploy intuitive and productive mobile GIS applications to increase the accuracy and improve the currency of GIS data across your organization. Laptops will be provided for this course.</p> <p>Level: Beginner / Intermediate Limit 40 participants, two per laptop.</p>	<p>This workshop offers hands-on experience with ArcGIS Mobile. ArcGIS Mobile 10 is now available for ArcView users. Learn how to use the Mobile Project Center to build and deploy applications to both Windows Mobile and Windows Laptop devices. ArcGIS Mobile helps organizations deliver GIS capabilities and data from centralized servers to a range of mobile devices. You can use ArcGIS Mobile to deploy intuitive and productive mobile GIS applications to increase the accuracy and improve the currency of GIS data across your organization. Laptops will be provided for this course.</p> <p>Level: Beginner / Intermediate Limit 40 participants, two per laptop.</p>			

ROOM 1D

8 a.m.—12 p.m.
**An Introduction to Land Surveying for GIS
 Technicians and Professionals**
 Michael Kulish, GISP PLS

This seminar presents the subject of Land Surveying for the benefit of GIS practitioners and particularly how a knowledge of land surveying practice can help them use land survey data and services more fully and effectively.

Successful participants will be able to differentiate between technical and boundary survey services; Recognize conditions that suggest the services of a Professional Land Surveyor may be needed; List at least three duties undertaken by the PLS in performing a boundary survey; Define the three types of lines that are considered in boundary surveying; Describe the relationship of a 'Legal Description' to a boundary survey; Describe at least 3 areas where the services of a Professional Land Surveyor may provide benefit to GIS operations; Describe at least three areas where GIS practitioners may provide value to Land Surveying operations.

In addition to these outcomes participants will learn about the history of boundary surveying, review regulations and rules of professional practice that govern Professional Land Surveyors, gain insights into the regular activities and procedures that land surveyors perform in doing boundary work, delve into some of the particular vocabulary of boundary surveying, and generally get a look at what Professional Land Surveyors do.

Michael Kulish is a GISP, a Professional Land Surveyor with over 25 years of experience, and has been an adjunct professor at Olympic College since 1992 teaching courses in Surveying and GIS.

12:00 p.m. to 1:00 p.m.—Boxed Lunch

ROOM 1D

1 p.m.—5 p.m.
**Making Great Apps: User Experience and
 Agile Development for GIS**
 Kirk van Gorkom, Forge Apps

For too long, GIS developers have been laboring under a terrible legacy of enterprise app design. Unwieldy applications created by distant developers have drained many a young geographer of their passion, but in recent years a small movement has emerged to challenge the status quo. Many of us feel trapped, alone, and unable to produce apps that meet requirements and delight users. We're so immersed in the technical challenges of "just making it work" that we assume all that touchy-feely stuff is solely the realm of designer magicians.

The good news is that it isn't magic. This workshop will cover the basics of User Experience (UX) design and an agile development process with a focus on how they apply to typical GIS apps on the web and mobile devices.

"That's nice, but my boss/client/customer/user ignores me and doesn't want to pay for UX!" No problem. If you have any input at all into the planning phases of the apps you build, the sheer goodness of your enlightened ideas will have a positive impact on the final experience. We'll also cover a few strategies for subverting the dominant paradigm at your organization. Soon you'll be leading a merry guerrilla band of managers, users, and developers fighting for agile UX wherever a piece of software cries out for the better experience we all deserve.

Lab exercises will involve attendees breaking up into teams to practice the techniques they've just learned, in the context of a mock project. In these teams they will work on sketching app designs, estimating project tasks, communicating with each other and different teams, revising previous designs based on feedback, and others.

ROOM 1F

1 p.m.—4 p.m.
Census Data for Community Research
 Michaelynn Garcia and Partnership Staff, US Census Bureau

The Census Data for Community Research workshop consists of a 90 minute PowerPoint presentation and Q&A session followed by a 90 minutes demonstration of the new American Fact Finder.

The presentation is geared toward both novice and experienced data users and provides background information on the Census Bureau's three main demographic programs. The goal is for attendees to take away the knowledge and skill necessary to mine the Census Bureau's website for demographic, social, economic, and housing data - for community research, grant applications, and myriad other applications. Audience members will learn basic census geographic terms and Federal government definitions for race and ethnicity, and will then have a look at the content of census and survey questionnaires. The presentation will also include a discussion of the methodology used to produce the data - a 100% count, administrative records, or a sample survey - and the appropriate and effective uses of the data as well as its limitations. Finally, a data release timetable is discussed, along with additional resources available for further research.

The American Fact Finder demonstration is a walkthrough of the new Census Bureau data search tools that have changed considerably. All new data including the 2010 Census will only be available via the new Fact Finder. The legacy Fact Finder is still available but will be migrated to the new search engine during the summer of 2011. The internet demonstration will be customized to state-specific exercises that incorporate all three demographic data sources and reinforce the lessons learned in the PowerPoint presentation.

Tuesday, May 10

Technical Sessions

8:00 AM—4:00 PM	CONFERENCE REGISTRATION	ROOM 2A
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8:00 AM—10:00 AM	CONTINENTAL BREAKFAST	BALLROOMS
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8:45 AM— 10:30 AM	OPENING SESSION: WELCOME MESSAGE & KEYNOTE ADDRESS: ESRI PRESIDENT JACK DANGERMOND	BALLROOMS
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10:30 AM—11:00 AM	MORNING BREAK	BALLROOMS WITH VENDORS
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11:00 AM— 12:00 PM	TECHNICAL SESSIONS	
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PAPER SESSION 1: MAPPING WASHINGTON’S FUTURE	ROOM 1D
Implementing the State's GIS Business Plan: Enterprise GIS Program and Shared Access to Geospatial Data Joy Paulus, WA State GIS Coordinator (20 minutes)	
Panel Discussion: Mapping Washington’s Future Joy Paulus, WA State GIS Coordinator; Ian Von Essen, Spokane County GIS Manager; Scot McQueen, GeoEngineers; Greg Babinski, King County GIS Center; Kirsty Burt, Kirsty Burt GIS; Charlie Spear, City GIS Coordinator for City of Seattle (40 minutes)	

PAPER SESSION 2: LIDAR	ROOM 1E
Using LiDAR to Interpret Landslide Kinematics and Sediment Yield Rodney Cope, Eagle Mapping Inc. and Paul Pittman, Element Solutions	
Current Topics in Open Source LiDAR Michael P. Gerlek, Flaxen Geo Consulting	

PAPER SESSION 3: DISASTER RESPONSE	ROOM 1F
Disaster Response in the Gulf of Mexico -- ERMA Aaron Racicot, NOAA -- ORR	

12:00 PM—1:00 PM	LUNCH BREAK—BUFFET PROVIDED	BALLROOMS
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1:00 PM— 2:30 PM TECHNICAL SESSIONS

PAPER SESSION 4: MAPPING WASHINGTON’S FUTURE

ROOM 1D

Mapping Washington's Future Involving K-12 Students

Karen Dvornich, College of the Environment, UW; Diane Petersen and Justin Grillo, Teachers; Ethan Peterson, Grade 5, Lexi Deishl, Grade 5, Miles Mittelstaedt, Grade 5, Zak Kruger, Grade 9, Waterville Elementary School, WA

The New Esri K-12 Washington State Site License

Heather Glock, Esri

Interactive Presenting, Using ArcGIS to Present Information to an Audience

Kelly Alfaro Haugen, Thurston County GeoData Center

PAPER SESSION 5: SURFACE WATER

ROOM 1E

The NHD: What is it and What Can it Do for You?

Dan Saul and Liz O'Dea, WA State Dept. of Ecology

Moving from "Whatchamacallit" to a Standard Naming Convention for Surface Water Assets

Elaine Eberly, Scott Reese, and Holli Brandt, GISP, Seattle Public Utilities (60 minutes)

PAPER SESSION 6: MUNICIPAL DATA MANAGEMENT

ROOM 1F

Tips and Tricks for Automating GIS Maintenance with Python

Ann Stark, GISP, and Brian Small, City of Bellingham

Municipal Reporter Incident Management

Jim Lahm, Electronic Data Solutions (60 minutes)

PAPER SESSION 7: VENDOR PRESENTATIONS

ROOM 2B/C

3D Mobile Scanning & Imaging for GIS

Richard Hill, The PPI Group (60 minutes)

Advancements in High-Accuracy Data Collection Using Handheld GIS Devices

Bryce Freed, GeoLine, Inc.

2:30 PM—3:00 PM

AFTERNOON BREAK

BALLROOMS WITH VENDORS

3:00 PM— 4:30 PM TECHNICAL SESSIONS

PAPER SESSION 8: 2010 CENSUS

ROOM 1D

2010 Census Data Release and Current Geographic Programs
Michaellyn Garcia, US Census Bureau (60 minutes)

Illustrating Growth Trends with US Census Data
Chris Behee, GISP, City of Bellingham

PAPER SESSION 9: NATURAL RESOURCES AND WILDLIFE

ROOM 1E

Mapping Floods, Damage, Development, and Habitat for the National Wildlife Federation
Matt Stevenson, CORE GIS

Depicting Yakima Basin Stream Discharge and Spring Chinook Out-migration with Linear Referencing and Time Animation
Paul Huffman, Yakama Nation Fisheries

An Agent-Based Species and Habitat-Specific Population Effects Model
Craig Hanson, Windward Environmental LLC

PAPER SESSION 10: FME AND PYTHON

ROOM 1F

FME for Spatial Processing
Jim O'Leary, City of Vancouver, Canada

Python Productivity for FME
Jim O'Leary, City of Vancouver, Canada (60 minutes)

PAPER SESSION 11: VENDOR PRESENTATIONS

ROOM 2B/C

ArcGIS for Local Government
Matthieu Denuelle, Esri (60 minutes)

King County GIS Data To Go!
Mike Leathers, King County GIS Center Data

4:30 PM—6:00 PM VENDOR SOCIAL

BALLROOMS

6:30 PM—8:30 PM EVENING SOCIAL

**CELTIC BAYOU
19800 44TH AVE**

8:30 AM— 10:00 AM TECHNICAL SESSIONS (CONTINUED)

PAPER SESSION 16: VENDOR PRESENTATIONS

ROOM 2B/C

The Oblique Image and its Benefit to E911 & NG911
Scott Faust, Pictometry (45 Minutes)

Forge Apps Philosophy
Kirk van Gorkom, Forge Apps (15 minutes)

Fully Leverage Your GIS to Manage Municipal Infrastructure
Josh Stroessner, City Works | Azteca Systems, Inc.

10:00 AM— 10:30 AM MORNING BREAK

BALLROOM WITH VENDORS

10:30 AM— 12:00 PM TECHNICAL SESSIONS

PAPER SESSION 17: EMERGENCY SERVICES

ROOM 1D

Data Design and Auditing Addresses for an Emergency Dispatch Travel Network
Donna Wendt, Wendt GIS

Incident Level Symbology
Chris Rogers, Kirkland Fire Department

Near Real Time Data Collection for Emergency Management
Eric Drenckpohl, Port of Seattle

PAPER SESSION 18: CARTOGRAPHY

ROOM 1E

Getting Your 3D Data Onto Your 2D Paper Printout
Craig Hanson, Windward Environmental LLC

Tourist Map Production Using GIS and Desktop Publishing Software
Julianne Fogde, Washington State DOT

Cartographic Standards and Practice in Academic Journals
Robert Norheim, University of Washington

PAPER SESSION 19: ENVIRONMENTAL GIS

ROOM 1F

CALweedmapper -- Mapping the Spread of Invasive Plant Species
Karsten Vennemann, TerraGIS Ltd.

Using Geographic Information System (GIS) Technology to Track Post-Dredge Monitoring
Data in the East Waterway of the Lower Duwamish Waterway
Michael T. Yarns, Windward Environmental LLC

Defining the Wildland-Urban Interface for Wildfire Hazard at Different Spatial Scales
Shea McDonald, Dwight Barry, Peninsula College, and Chris DeSisto, NFS

10:30 AM— 12:00 PM TECHNICAL SESSIONS (CONTINUED)

PAPER SESSION 20: DICK THOMAS STUDENT COMPETITION

ROOM 1B/C

Washington's Geothermal Potential: A Comprehensive Analysis

Korrie Holmes, Green River Community College

Mapping Restoration in the Puget Sound

Alex Wallace, Suzanne Tomlinson, Kathryn Webb, and Joseph Tetteh, University of Washington Continuing Education

A Delineation Model for Watershed Analysis

Dave Schoenfeld, Green River Community College

Predicting the Impacts of Sea Level Rise in the Puget Sound Region

Kristan Blackhart, Jon Medlin, University of Washington

Assessing Designated Forestland Market Value

Robbie Andrus, Trevor Wong University of Washington Continuing Education

PAPER SESSION 21: VENDOR PRESENTATIONS

ROOM 2B/C

Geocortex

Latitude Geographics (60 Minutes)

The New Trimble GeoExplorer 6000 Handheld GPS Mapping System

Jim Lahm, Electronic Data Solutions

12:00 PM—1:30 PM

LUNCH BREAK - BOX LUNCH PROVIDED

BALLROOMS

12:15 PM— 1:15 PM

LEADERSHIP MEETING

ROOM 1F

1:30 PM— 3:00 PM TECHNICAL SESSIONS

PAPER SESSION 22: RESOURCE MANAGEMENT & TRANSPORTATION

ROOM 1D

A Time Aware GIS System for Managing Winter Transportation Operations
Julieanne Fogde, Washington State DOT

Zen and the Art of GIS Program Coordination -- The Community Transit Experience
Jeff Anderson, Community Transit

Sustainable Asset Management
Gregg Selby, Weston Solutions, Inc.

PAPER SESSION 23: MANAGING AND DEVELOPING GIS

ROOM 1E

ROI: King County Measures the Benefits of GIS
Greg Babinski, King County GIS Center

Collaboration for GIS Development
Don Burdick, City of Bellingham, and Kirk Van Gorkom, Forge Apps (45 minutes)

PAPER SESSION 24: GIS APPLICATIONS FOR UTILITIES & PLANNING

ROOM 1F

Emerging Applications at Seattle Public Utilities
Stephen Beimborn, Harvey Arnone and Dana Trethewy Seattle Public Utilities (60 Minutes)

Developing an Interactive Map to Show the Use of Transferable Development Rights
in King County, WA
Michael Murphy and Harkeerat Kang, King County Dept. of Natural Resources and Parks

PAPER SESSION 25: VENDOR PRESENTATIONS

ROOM 2B/C

Putting Open Source Geospatial Software to Work for Your GIS Tasks
Karsten Vennemann, TerraGIS Ltd.

Leveraging ArcGIS Server 10 to Streamline the Permitting Workflow
Lauren Sullivan, CRW Systems, Inc.

3:15 PM—4:00 PM

CLOSING SESSION

BALLROOMS 2D/2E

Mount Rainier Sponsor



Esri's geographic Information system (GIS) technology has given clients the power to think and plan geographically for over 40 years. Used today in more than 350,000 organizations worldwide, GIS helps cities, governments, universities, and Fortune 500 companies save money, lives, and our environment. GIS helps you understand and question data in ways that reveal relationships, patterns, and trends. So whether you are transporting ethanol or studying landslides, you can use GIS to solve problems and make better decisions, because a GIS enables you to look at your valuable data in a way that is quickly understood and easily shared.

Esri supports the implementation of GIS technology on the desktop, servers, online services, and mobile devices.

Mount Adams Sponsor

The logo for Electronic Data Solutions features the company name in a stylized font with a registered trademark symbol. Below the name, the tagline "Field Data Collection" is written in a smaller, sans-serif font. The entire logo is set against a light gray background with a black border.

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Field Data Collection

Electronic Data Solutions proudly offers sales and support services for Trimble GPS mapping systems, Esri GIS software, Laser Technology rangefinders, Ricoh GPS Digital Cameras, Juniper Systems field computers, In-Situ water level and water quality instrumentation, Teledyne ISCO water samplers & flow meters, and Teledyne RD Instruments Acoustic Doppler current profilers. We provide industry specific software and expert guidance while assisting you to find exactly what you need to efficiently capture field data.

Visit us at www.elecdata.com



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 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. **Let us help you put GIS to work!**

Mount Adams Sponsor



GeoLine is proud to be a long-time supplier in the GIS market in the Pacific Northwest. We are both a Trimble Authorized Distribution Partner and a Trimble Authorized Service Partner. In addition to providing hardware and software products, we provide support, service, and training and will work with you to provide solutions that help your company to be more profitable.

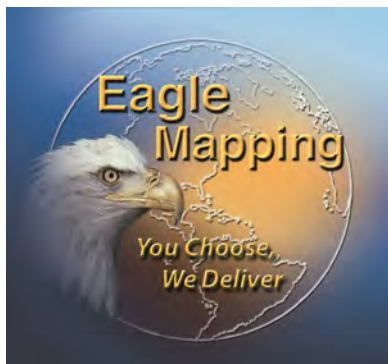


Since 1989 PacifiCAD has always been committed to delivering the highest quality of Autodesk products and services to ensure our customers are able to use advanced technology to accurately and productively model and realize their designs. PacifiCAD services customers from three offices in Spokane, WA, Boise, ID and Helena, MT. PacifiCAD products and services are available throughout the United States for federal government GSA contract groups.

Mount Adams Sponsor



Since 2003 AEX Aerials Maps and Data, formerly Aerials Express-WA, provides high quality, affordable, off-the-shelf, digital, seamless color ortho imagery for most of Washington State. We also supply color infrared imagery. Our customers include counties, cities, tribes, utilities, engineers, consultants, developers and commercial real estate offices.



Eagle Mapping Inc. provides aerial photography, LiDAR, Satellite imagery, GPS survey control and Digital Topographical/Orthophoto mapping services worldwide.

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EnerGov Solutions is a leading and global provider of innovative Land, License and Asset Management software solutions designed specifically for enterprising government agencies. Enterprise software solutions offered by EnerGov include GIS-centric process automation of land use planning & review, permitting, enforcement management, inspections, licensing, work orders and service requests



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A division of Latitude Geographics Group Ltd., Geocortex provides a suite of proven products, services and knowledge that organizations can use to deliver effective, successful web-based mapping using Esri's ArcGIS Server. With success stories around the world, we help clients and partners deliver top-notch web-based GIS implementations to end-users.



Terra GIS provides expertise in Geographical Information Systems, consulting for social and environmental issues, and subjects related to sustainable development. Services include environmental research, field work and reporting, spatial analysis, cartography, implementation of web mapping and information systems, and the creation of specialized tools related to conservation, natural resources management, and public and social engagement issues. In addition we are specialized in GIS training, Web GIS and consulting in Open Source GIS.



Pictometry is the recognized world leader in geo-referenced aerial oblique imagery. Over 890 State and Local Government customers use Pictometry's oblique and ortho imagery primarily in assessor's, public safety, and law enforcement.

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The PPI Group serves the GIS community in both Washington and Oregon. Providing field instrumentation and software solutions. Family owned and doing business since 1927.



Surdex has been recognized as a premier geospatial data provider since 1954, supplying accurate and precise information to a diverse client base. Surdex provides orthophotography; planimetric and topographic maps; LiDAR; and geographic information solutions. We are committed to providing clients timely delivery of quality products.



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Forge Apps is a corps of designers and developers with one passion: building amazing applications. Our dedicated craftsmen have the expertise to make your project a success. Great software comes through collaboration and partnership, so when you decide to work with us, plan to be an integral part of the process. We offer a range of services from developer training and design consultations through fully managed development. Tell us your story and we'll tell you how we can help.



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GIS Services provides training and easy to use solutions to leverage investments in geospatial field data for access in the field and for creation of geospatial features, data and communication in real time. This provides increased efficiency for agency - interagency geocoordination for daily requirements and in times of emergency events to saves lives and protect natural resources and infrastructure.



CRW Systems, Inc. is a professional engineering and consulting firm headquartered in San Diego, CA. We have been providing information management solutions for over 135 municipal agencies throughout the United States since 1991. Our services include application development and implementation of systems for local and state agencies.



About Cityworks® | Azteca Systems, Inc.

Founded in 1986, Cityworks | Azteca Systems, Inc. is the leading provider of GIS-centric Enterprise Management Systems. Created for local government, utilities and agencies, it is designed to leverage an organization's investment in Esri's leading GIS technology. Cityworks is powerful, scalable, and affordable, Empowering GIS for Asset Management, Permitting, Licensing™ and more.

PAPER SESSION 1: MAPPING WASHINGTON'S FUTURE

ROOM 1D

Implementing the State's GIS Business Plan: *Washington Enterprise GIS Program and Shared Access to Geospatial Data*

This presentation will review the progress that's been made to date to bring the Washington GIS Business Plan into reality. Learn about the efforts that are underway to improve metadata, to establish consistent data standards and guidelines, improve access to data and web services, the establishment of state GIS contracts and the effort to establish a uniform framework and infrastructure for GIS information and related business technology. Even in these tight budget times, with the help of GIS community, progress can be made!

Panel Discussion: Mapping Washington's Future

What should happen next with the state strategic plan and with data sharing at the state, county, and local levels? During these economic times, what is the role of GIS collaboration, resource sharing, and data sharing? Can agencies agree on data standards? GIS leaders will discuss these and other issues from public and private points of view.

Speaker Biographies:

Ian Von Essen is the GIS Manager for Spokane County, a position he has held for the past 21 years, and Chair of the Washington State Geographic Information Council and on the Board of the National States GIS Council (NSGIC). He is also a member WA-Transportation Steering Committee and is currently helping manage the Washington State Department of Transportation's Eastern Washington WA-Trans project. He served on the Northwest ESRI Users Conference Board from 1995-2006 and has helped host three Northwest GIS Conferences in the Spokane area (1995 Coeur d'Alene, 2006 & 2010 Spokane). He has participated in the USGS National Map Program from the original USGS Northwest Pilot Project. Ian received the 2010 Summit Award as GIS Person of the Year and was the keynote speaker at last year's conference.

Joy Paulus is responsible for management and oversight of statewide GIS initiatives and policy in Washington. She provides staff support to the Information Services Boards subcommittee on Geographic Information Technology and to the WA Geographic Information Council. Joy is also the state's representative to the National States Geographic Information Council. She has 30 years of experience in the use, implementation and management of GIS technology and has a Bachelor of Science Degree in Geography from Oregon State University.

Charlie Spear is City GIS Coordinator at the City of Seattle. His first GIS experience was doing address research and data entry on a mainframe in the early 1980s. He became an AML programmer and then supervised the GIS developers at SPU. He also written IT strategic plans and worked as an independent software consultant.

Kirsty Burt has been working in the GIS field for the last 28 years. For the first 10 years of her career she worked in local government, including 5 years as the City of Bellevue's GIS Manager. During that time, Bellevue's GIS received ESRI's President's Award for system excellence. For the last 19 years, she has provided independent GIS consulting services, primarily in the areas of local government and environmental planning. In 2009, she was named the northwest regional partner of the year by ESRI.

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 a masters degree in geography from Wayne State University. Greg Babinski is the President-Elect of URISA – the Association for GIS Professionals.

Scot McQueen has over 14 years of leadership experience designing, developing, and implementing GIS solutions for top-tier commercial companies, government agencies, and publicly funded research institutes around the world. Prior to joining GeoEngineers, Scot worked for Esri as an Instructor, Solutions Engineer, and the Northwest Professional Services Manager. He has also worked for the United States Forest Service.

PAPER SESSION 2: LiDAR

ROOM 1E

Using LiDAR to Interpret Landslide Kinematics and Sediment Yield

In the past 15 years, the use of LiDAR for the rapid and accurate collection of digital terrain models (DTMs) has proliferated. Flood plain studies, road engineering projects, river restoration, volumetric computations, ortho-photo production, and mapping for land erosion are just some of the applications driving the demand for this technology.

Current Topics in Open Source LiDAR

LiDAR is a hot topic these days. Instrument prices are dropping and data sets are becoming more widely available, which means the landscape is ripe for open source software to play a role in providing core library support and assisting in interoperability. In this talk, we'll look at what open source software is already available for reading, writing, and processing LiDAR data -- including libLAS, libPC, libE57, and laszip.

PAPER SESSION 3: DISASTER RESPONSE

ROOM 1F

Disaster Response in the Gulf of Mexico -- ERMA

The Environmental Response Management Application (ERMA) (a tool developed by the University of New Hampshire and NOAA's Office of Response and Restoration) is used by the US government to provide a comprehensive decision support system for responding to disasters. ERMA is built primarily using an Open Source Stack, that includes OpenLayers, MapServer, PostGIS, Linux, Apache, Python, GeoDjango, and GDAL/OGR - just to name a few.

In this session the ERMA development team will give you an overview of the tool and how its OSS components work together to provide a powerful framework for aggregating and presenting data from multiple sources in a unified web-based tool. In particular, we'll discuss:

- * User-facing tools to dynamically create MapServer configurations and add layers to dynamic maps.
- * Techniques used to provide for display of real-time tracking information including ship, aircraft, and ground team position information.
- * Leveraging GeoDjango to provide in-browser data analysis and query capabilities.
- * A framework to allow the web-based tool to operate effectively in an Internet-less environment.

We will also highlight an actual use-case focused on the deployment of ERMA as the Common Operational Picture (COP) for the Gulf of Mexico Oil Spill Disaster of 2010 (GOMEX). With over 16,000 layers currently residing in the GOMEX deployment of ERMA, the system has shown to be flexible and scalable in real world deployments.

Finally, we will also describe a public facing version of ERMA deployed during the Gulf Oil Spill that successfully sustained 20+ million hits during the first 48 hours of deployment and was used extensively to convey the real time situation to the public on a daily basis.

PAPER SESSION 4: MAPPING WASHINGTON'S FUTURE

ROOM 1D

Mapping Washington's Future Involving K-12 Students

A statewide four-year free Esri license for all Washington schools was recently signed. This also includes using the software for operational or administrative use at school districts. Mapping Washington's future can begin with students helping develop datasets needed for their schools, communities, and their future. The NatureMapping Program spearheaded the use of GIS in Washington schools with the "Adopt-a-Farmer Project" in 1999 at the Waterville Elementary School, currently the only school in the US integrating GIS into its curriculum. The project has expanded to "Literate About Biodiversity" where K-8 students are mapping the Waterville Plateau species. With the mobile technologies developed by the NatureMapping Program, a suite of data collection tools is now available for collecting wildlife data by all schools. Teachers are ready to teach other teachers. Students easily train other students. There is a growing network of environmental learning centers certified to provide NatureMapping workshops, materials, and field projects and act as mentors to systematically inventory species and habitats throughout Washington. The nine Education Service Districts across the state are responsible for distributing and supporting the Esri software through their tech teams. Their tech teams have no GIS experience. GIS mentors are needed. Hear about the plan of how GIS mentors through the Education Service Districts can support teachers and students for the successful integration of GIS into K-12 curriculum and a demonstration of how Waterville students are using GIS to become "Literate About Biodiversity."

The New Esri K-12 Washington State Site License

In late 2010, the Washington State Office of Superintendent of Public Instruction signed an agreement with Esri to provide all K-12 schools, districts, and formal youth clubs in Washington state with free access to Esri's ArcGIS suite of GIS software applications. The four-year statewide GIS license has the potential to strengthen K-12 curricula and teaching strategies, and is set to become a key software component of the STARS Project, an online system that enables Washington school districts to submit school bus operation data for review and analysis. This presentation will cover the particulars of the new license and offer points of entry into a dialog on how the professional GIS community can harness the site license to bring spatial thinking to a school or group in their own community.

Interactive Presenting, Using ArcGIS to Present Information to an Audience

Have you ever needed to present large and diverse GIS information to a group? Did you feel you were tied down by the limitations of power point or wall space? With changes in technology and ready access to networks, projectors and laptop computers we now have the ability to present GIS information interactively. Understanding the advantages and disadvantages of using this type of medium we can bring GIS support, versatility and interaction into meetings, workshops and work sessions.

PAPER SESSION 5: SURFACE WATER

ROOM 1E

The NHD: What is it and What Can it Do for You?

The National Hydrography Dataset (NHD) is the surface water component of The National Map. The NHD is a digital vector dataset designed to be consumed by geographic information systems (GIS). It contains surface water features such as lakes, ponds, streams, rivers, canals, dams and stream gages. These data are designed to be used in general mapping and in the analysis of surface water systems. The NHD has been designated as the data standard for all surface water (hydrography) geospatial datasets for Washington State agencies. The Department of Ecology has been designated as the data steward agency for the NHD in Washington State.

This presentation will provide an overview of the NHD system, describe the effort by Washington State agencies to adopt and manage a common hydrography dataset, and provide the context behind the adoption of the NHD as the state standard. The value of having state and federal land management and regulatory agencies in Washington State mapping their attribute data to the NHD will be emphasized. A demonstration of how the NHD flow network can be utilized to analyze data embedded in or related to the NHD will be presented. Examples of how attribute data mapped to the NHD as "linear events" can be analyzed using "out of the box" event overlay tools will also be demonstrated. The presentation will conclude with information about how local governments can become involved with the NHD as contributors and stewards within their jurisdictional areas.

Moving from "Whatchamacallit" to a Standard Naming Convention for Surface Water Assets

If you've been around the utilities business long enough you've likely found that often field maintenance and office staff who converse about the same asset may each have a different name for it. At Seattle Public Utilities (SPU) these groups learned to "interpret" one another's language over the course of years. Once GIS staff, surveyors, asset managers and field data collectors joined the conversation, data capture and even work order generation were affected because the varying business units were not adhering to standard asset-naming conventions. A pilot for a newly-instituted surface water asset data collection program in which all surface water assets were to be inventoried made it clear that some sort of consensus about how SPU defined and identified such assets would have to be reached. To that end members from four Divisions across the Utility discussed nomenclature, developed rules to be used to identify surface water assets in the field and produced a document entitled, Surface Water Assets Glossary and Definitions. The goal was more than the creation of a common language. Among other things it was to ensure improved communication; create efficiencies between the various lines of business; and to improve the management of SPU's assets.

Presenters who represent different perspectives will discuss:

- Possible reasons for the disparity in asset names
- How business units and data sources may have contributed to the disparity in asset names
- The steps taken to document development
- Roll-out to affected parties
- Lessons learned
- Benefits to the business: Examples of SUCCESS!

PAPER SESSION 6: MUNICIPAL DATA MANAGEMENT

ROOM 1F

Tips and Tricks for Automating GIS Maintenance with Python

Wish there were more hours in the day? Wish you had a couple of GIS assistants that quietly did all the repetitive processing? Wish you had a few extra hands? We will grant you those wishes. We'll show you how to do more with automation tips and tricks. Learn how the City of Bellingham uses behind-the-scenes automation to keep up with maintenance on a large enterprise GIS. Yep, even if you "aren't a programmer" we think you can do this stuff. Downloadable examples and light hearted attitude about Python programming will make this suitable for beginner and intermediate programmers that have advanced tasks to complete.

Municipal Reporter Incident Management

Municipal Reporter consists of server software residing in the cloud, one or more field devices, and field software. It's an "incident reporting and managing system" which allows municipalities to efficiently and effectively manage all types of incidents. An incident is something that a citizen would ...report to a city to repair or attend to, such as a pothole, a broken or damaged sign, a traffic light that was out, or anything relating to the city's responsibility to resolve. The field device is a Trimble handheld GPS unit connected to the server via Wi-Fi or cellular modem. A request can be sent to the field device from the home office. Messages can be sent from the office to the field worker. Personnel can be dispatched to the incident based on proximity. Municipal Reporter can also be used for emergency response, disaster management, or any other situation where quick response and the instant updating of information is critical. It's very inexpensive and easy to deploy.

PAPER SESSION 7: VENDOR PRESENTATIONS

ROOM 2B

Advancements in High-Accuracy Data Collection Using Handheld GIS Devices

Mapping data collection equipment has made advancements over the past 10 years both in terms of accuracies and in software and other products that make it easier to manage and work with the data. A new technology introduced in February from Trimble Navigation called Floodlight™ technology provides a major advancement in the accuracy of data collection in challenging areas and represents one of the largest technology advancements in the past 10 years. Data accuracies in the decimeter range have been available in the market for several years on handheld mapping or survey-grade products. But, this accuracy had always been dependent upon the availability of many satellites, the terrain in which the data was collected, and the use of external antennas or other hardware. Trees, buildings, and topographical features such as canyons have traditionally sometimes compromised the accuracy of data collected. These dependencies have limited the applications available to this class of products. Recently-introduced Floodlight technology which uses an internal barometer acts as a fourth satellite and provides accurate data in much more challenging environments. This session will provide a real world example of using this new technology in a local setting – the Mercer Slough – with its thick canopy. Several handheld products from Trimble will gather and record data. Finally, a map of the actual path will be compared to the recorded location of each point from each device.

3D Mobile Scanning & Imaging for GIS

3D Scanning is a hot topic in all the latest magazines and articles but it leaves a lot of people with a ton of questions. We will be explaining the newest advancements in 3D Mobile Scanning and Imaging and providing an inside look in how our system works. I will explain the capabilities of this technology (everything from Roadway Management to 3D Street-View City Mapping), best practices, and how it integrates with your 3D Map or CAD software. Join us for an exciting look at the future of data collection. We will also have The PPI Group's Topcon IP-S2 3D Mobile Scanning & Imaging system there for people to check out.

PAPER SESSION 8: 2010 CENSUS

ROOM 1D

2010 Census Data Release and Current Geographic Programs

Overview 2010 Census data and American Community Survey 5-year estimates and the associated 2010 Census geographic products. This presentation will highlight changes to the American Fact Finder, understanding differences with 2010 Census block and tract files, participation in the Count Questions Resolution (CQR) program that allows governments to challenge census counts and plans for the Census Bureau's geographic update programs.

Illustrating Growth Trends with US Census Data

This talk will highlight the City of Bellingham's efforts at illustrating growth trends using US Census data from 1990, 2000, and the recently released 2010 data. Topics covered will include TIGER & Census tabular data preparation and processing; cross-tabulating decennial census geographies, methods for consistent density calculations; pitfalls to avoid in the GIS environment; and cartographic techniques for effective illustration of trends. Statistical summaries, and examples of dynamic time-series illustrations will show growth trends over the past two decades. Demonstration of techniques will include use of ArcGIS/ArcMap, ArcScene, and MS Excel. While this talk will cover some technical issues, the concepts illustrated are general in nature, and are appropriate for those new to GIS, as well as advanced users.

PAPER SESSION 9: NATURAL RESOURCES AND WILDLIFE

ROOM 1E

Mapping Floods, Damage, Development, and Habitat for the National Wildlife Federation

CORE GIS worked with the National Wildlife Federation (NWF) to create a series of maps and analyses to communicate floodplain issues to decision makers and the public, advance NWF's regional and national floodplain protection goals, and to ensure that the 2008 FEMA Floodplain Biological Opinion (BiOp) is implemented. We used a wide variety of data to generate these maps and analyses, including easily obtainable, publicly available datasets such as parcels and assessor rolls, as well as not-so-easy to obtain data such as repetitive loss properties, flood delineations from the late 1960s, and hardcopy aerial photos from the 1970s. The information presented in these maps tells a story about where floods have occurred, how frequently they have occurred, and the severity of each flood; while at the same time showing where development has occurred, how much development occurred, and when it occurred; and finally, places where development, floods, and habitat overlap.

Depicting Yakima Basin Stream Discharge and Spring Chinook Out-migration with Linear Referencing and Time Animation

The Yakima Nation operates a spring Chinook hatchery at Cle Elum, Washington State, to augment the wild run in the Yakima Basin. Each spring, the juvenile Chinook are hauled to three acclimation ponds in the upper Yakima Basin for an additional couple months of rearing, so they will imprint their homing on a different portion of the river. Each release group is around 240,000. 5 to 10% are marked with Passive Induced Transponder (PIT) tags, so these juvenile fish are electronically detected as they leave their imprinting ponds and, as subsets, are detected again at several dams down the Yakima and Columbia rivers. River flow and temperature data are collected at numerous locations within the basin and collated by the Bureau of Reclamation. The factors that influence their decision to leave the ponds and their progress and success on their downstream migration are often debated, but river flow seems to be important. We have attempted to take this mass of data from all these sources and present an understandable picture of Chinook outmigration and river flows using Linear Referencing and Time Animation.

An Agent-Based Species and Habitat-Specific Population Effects Model

Agent-based models simulate the behavior and interactions of multiple autonomous individual agents to assess the cumulative effects of their actions on the system as a whole. Windward Environmental built an agent-based model using the open-source Repast Symphony modeling environment to study the potential effects of chemical contamination on the population levels of a specific wildlife species over a specified period of time. The model uses a complex polygon habitat model built in GIS and a set of decision and lifecycle parameters derived from a comprehensive literature search. The model further incorporates user-assigned variables for habitat searching, mortality rates, and fecundity rates, and can be run once interactively or multiple times in batch mode to build a Monte Carlo significance data set. The output also includes habitation data that can be linked to the habitat shapefiles to show occupation patterns over time. Windward used this model to examine the effects of polychlorinated biphenyls on fecundity and resulting numbers of mink, but the model can be adapted to other wildlife species for which sufficient information exists to build a habitat model and determine mortality and fecundity rates, with or without chemical effect.

PAPER SESSION 10: FME AND PYTHON

ROOM 1F

FME for Spatial Processing

FME (Feature Manipulation Engine) is the Swiss Army knife of spatial processing. Featuring a tool set of 600 transformers, this GUI-based application allows the developer to extract data sources from hundreds of different formats, perform transformations on their data, and load transformed data into different formats. This presentation will showcase FME's critical role in a two year project that City of Vancouver, Canada undertook to migrate the City's Engineering data into a new Autodesk / Hansen solution. It will include examples of daunting spatial challenges that FME solved with ease.

Python Productivity for FME

Python continues to make inroads in the GIS world. There are many GIS Open Source applications that use Python, while ArcGIS and FME harness Python as their scripting language. What makes Python the language of choice for GIS today? This talk will look at the basics of the Python language and then demonstrate how the City of Vancouver used Python in its FME processes for a large data migration project. Come prepared to ask questions.

PAPER SESSION 11: VENDOR PRESENTATIONS

ROOM 2B

ArcGIS for Local Government

Esri has long shared a vision that GIS can integrate information between local government departments, increasing communication, creating efficiencies, and providing the basis for collaboration and more informed decisions. At the heart of this vision is the recognition that local governments share common challenges and workflows. By using GIS, these departments can harmonize workflows. In this presentation, we will show you how Esri supports the implementation of GIS in Local Governments with the ArcGIS system including maps and apps available freely to help local governments rapidly deploy useful GIS implementations structured around services delivered to their citizens

King County GIS data to go!

King County spatial and tabular data is now available for download directly from the County website. More than 200 up-to-date enterprise data layers are available in three file formats, including KML, a popular format for web-browser and open-source software applications. This site is updated weekly with a menu allowing users to download the data as separate layers, grouped by category, or as a single composite package. From water bodies to mountain peaks, from streets to trails, from bus stops to landmarks and more, there's a treasure house of GIS data waiting for you. This presentation will describe the King County GIS Data Portal, explain its origins, and outline the data that you can find there to download for free.

PAPER SESSION 12: GIS DATA BEST PRACTICES

ROOM 1D

Land Information System Redesign: Designing and Building the Ultimate Parcel and Address Repository

The third time's a charm. Two previous attempts to build a land information repository at the City of Bellevue fell short of the mark. The resulting system limped along, an incomplete and confusing array of questionable address, parcel, and tax account data that could not keep up with the complexity of development in a burgeoning city. A dataset that should be the GIS lifeblood of a municipal organization was poorly maintained and headed for irrelevance. This was unacceptable, so over a 4-year period, a cross-departmental team designed a system and tools for managing parcel, address and street information to serve as the backbone of the City's GIS. Datasets are integrated such that parcels are tied to addresses which are tied to street centerlines. The database is positioned to be the single source of property information for all City business systems including permitting, work order management, electronic content management, business licensing and public safety. The final product is an Esri SDE database stored in SQL Server 2008 Spatial and a full set of scripts and tools for managing the data.

This presentation will highlight the challenges and successes encountered while reengineering the business processes, developing business rules and requirements, establishing addressing standards, implementing the database, and building the tools and interfaces to other systems. An Agile project management approach was used and despite unmet resource requests, the team delivered the new, robust and extensible Land Information System in a timely manner.

Mobile GIS Interactive Mapping: Utilizing Esri's Flex API for ArcGIS Server

An efficient approach to mobile mapping applications is needed given the proliferation of mobile devices and platforms. Utilizing Esri's Flex API for ArcGIS Server, a single code base was developed by Critigen Research and Development Team to be deployed onto an Apple iPad, Samsung Galaxy, and Trimble Yuma. The use of server based remoting and messaging technology to perform collaborative mapping activities in real-time will be demonstrated. Multiple use-cases across various industries will be discussed during the presentation.

PAPER SESSION 13: SURVEYING AND MAPPING

ROOM 1E

Managing Survey Control with GIS

The City of Bellingham has thousands of survey control points scattered throughout the city. These points, in the form of survey monuments and benchmarks, are the foundation for a comprehensive horizontal and vertical survey network supporting development, utilities, property and right-of-way boundaries and GIS mapping. This presentation looks at how the city uses its control and how we use GIS to monitor the structures, track visits and conditions, and provide important information to surveyors, engineers and the community. We will demonstrate a custom GIS application the city built for this purpose and discuss how it helps in our control management efforts.

Deceptively Similar GIS and Survey Maps Have Completely Different Purposes

Surveyors and GIS Professionals both work with spatial data and create maps. However, their work is not the same. Surveyors create original data using methods that reduce instrument errors to a minimum and have a spatial accuracy that is usually set by law and client standards. State law sets the standards for licensing and conducting surveys. Professional standards are maintained by both state review boards and professional organizations. Surveys are legal evidence of land ownership and control tied to the locations of monuments marking a boundary. The location of a boundary marker was sacred in ancient times. Boundaries are based on title and deed for different divisions of a land areas, not just on measurement. Disagreements on boundary locations are decided by the legal system.

GIS is a system for working with spatial data in a coordinate system which fits the geometry of our planet. The spatial accuracy of datasets differ and are matched to how the data will be used. Geoprocessing operations such as dissolving similar areas into one large area create new data with less detail than the original. The common practice of snapping points to lines changes the location of the point features and creates a less accurate dataset. GIS is concerned with the spatial relationships among the features in a landscape, and processing the data to discover new data and spatial relationships. This presentation will compare GIS and PLS professional practice, discuss shared areas which present opportunities for collaboration and the areas of practice unique to each. GIS professionals and Surveyors will benefit from this presentation by understanding the differences between the practice of GIS and PLS and the opportunities for working together.

Mapping Inside: Creating a Floor Plan GIS

GIS has long been a technology devoted to cadastre, natural resources, utilities, and other mapping and analysis applications in the world outside. Yet as a society most of us spend much more time working, living and socializing in the spaces inside of buildings—according to the EPA, Americans spend an average of 90 percent of their time indoors.

For the University of Washington, our greatest assets lie within the building envelopes. Students, faculty, staff—our workers and researchers all use space. This space has value— intellectual, cultural, and monetary. Tracking space within the UW system allows us to know how this valuable asset is being used—and plan accordingly.

Because of the value of space, the University of Washington has prioritized the mapping of the interiors of its buildings. Over the past couple of years, we have implemented data and processes that allow us to map our building floor plans in a GIS. In this presentation, we will share the key points of how we created the system that tracks over twenty million square feet of floor space at the UW.

PAPER SESSION 14: ENVIRONMENTAL GROWTH & MODELING

ROOM 1F

Modeling Future Growth: An Introduction to the Envision Skagit 2060 Project

The Envision Skagit 2060 project seeks to develop and implement a broadly-supported, 50-year plan to protect the Skagit and Samish River watersheds' many environmental values, maintain our highly productive natural resource industries, and accommodate population growth in livable, walkable, and economically vibrant communities. The project is a partnership among Skagit County and numerous local and regional organizations, including conservation groups, tribes, local farmers and foresters, cities, economic development interests and universities. One component of the project is the development of a spatial model. Envision modeling, developed by Oregon State University, is a GIS-based tool for scenario-based community and regional planning and environmental assessments. It combines special representations of a landscape, scenarios policies, landscape change models, and models of ecological, social, and economic services to simulate land use change and provide decision -makers, planner, and the public with information about resulting effects on landscapes.

Monitoring Seattle, Olympia and Tacoma Forest Canopies Using Object-Based Image Analysis

Urban forest ecosystems provide a range of social and ecological services but due to the heterogeneity of these canopies their spatial extent is difficult to quantify and monitor. Traditional per-pixel classification methods have been used to map urban canopies, however, such techniques are not generally appropriate for assessing these highly variable landscapes. Landsat imagery has historically been used for per-pixel driven land use/land cover (LULC) classifications, but the spatial resolution limits our ability to map small urban features. In such cases, hyperspatial resolution imagery such as aerial or satellite imagery with a resolution of 1 meter or below is preferred. Object-based image analysis (OBIA) allows for use of additional variables such as texture, shape, context, and other cognitive information provided by the image analyst to segment and classify image features, and thus, improve classifications. We demonstrate a 1m per-pixel resolution, LULC classifications of Seattle, Olympia and Tacoma, WA, USA, using OBIA techniques and freely available public aerial photography and LiDAR data. We analyzed the differences in accuracies which can be achieved with OBIA using multispectral imagery and show the improvements when LiDAR data are implemented. We also compared our results to a satellite based OBIA LULC and discussed the implications of per-pixel driven versus OBIA-driven canopy assessment field sampling campaigns. We demonstrated that the OBIA approach can generate good and repeatable LULC classifications suitable for canopy cover assessment in urban areas.

PAPER SESSION 15: GIS SOLUTIONS

Room 1B/C

GeoCollaboration and Mobile GIS Solutions

GIS software combined with mobile data capture solutions can eliminate technology boundaries for access to GIS data and allow for mobile data collection by end users. GIS professionals can distribute their data in manageable formats thus leveraging their investment in geospatial data. Mobile data collection solutions provide for access to and creation of geospatial features and data by public works, planning, appraisers, emergency responders, operational managers, associated support personnel and the general public - many who have no background in GIS or databases. These solutions provide intra agency and inter agency coordination for workflow requirements as well as a better understanding of the roles and responsibilities of each.

By enabling and expanding the base from which spatial information can easily be captured and providing the capability for an ongoing dialogue decisions can be reached for planning purposes as well as in times of disaster and emergency events that can save lives and protect infrastructure and property.

Communication between the agencies and or the general public allows for access to existing data with the ability to input new data and comments in a spatial context. Objectives of agencies can then provide for interactive solutions that fit for those in the field and allow for evaluation by those who manage agencies or determine the solutions to events that could happen, events developing and for post event response.

openbasemap.org -- A Project of your Local Open Source GIS Group -- CUGOS

CUGOS (Cascadia Users of Geospatial Open Source) have been hard at work over the last year spreading the word about Open Source GIS technology, as well as providing hands on learning opportunities for the local GIS community. As part of this ongoing effort, OpenBaseMap (OBM) was born.

We will take a close look at what OBM is, what projects it is undertaking (including NAIP imagery processing, OpenStreetMap hosting, code sprints, etc.) as well as talk about how OBM will be integrated into a set of larger national efforts such as the OpenAerialMap and OpenStreetMap projects.

A technology discussion will include a look at the software stack being used to host OBM including PostGIS, Mapnik, Mapserver, OpenLayers, GDAL/OGR. We will also discuss the idea of GIS community development, learning opportunities, and engaging new community members in the context of GIS. We will explore what has worked and what has not in terms of organization, code management, hardware and software platforms, as well as where we are planning to go this next year.

We encourage participation from the community at all levels... whether you are new to GIS, a seasoned professional and Esri user, or just interested in exploring... there is something for you at CUGOS. This is truly a local grassroots effort and we hope you will come and learn about the project and get involved!

Development Considerations for ArcGIS Desktop Add-Ins

The introduction of an add-in model in ArcGIS 10 simplifies the process of customizing and extending desktop applications, a process that can be enriched significantly through adherence to software construction practices that need not be solely in the domain of the expert developer. The goal of this presentation is to explain some useful practices in simple terms in order to help ArcGIS users make the shift into the development world, if this makes sense for them, and thus enhance the value of their Esri investment. That said, the practices discussed are applicable not only to ArcGIS Desktop add-in creation but also to any type of development, regardless of the development environment. Supporting the presentation is an example .NET (C#) add-in used in the maintenance of an electricity transmission network geodatabase. The add-in complements the ArcGIS Desktop editing tools by providing functionality to check network connectivity, ensure consistent attribution and create bookmarks.

PAPER SESSION 16: VENDOR PRESENTATIONS

ROOM 2B/C

The Oblique Image and its Benefit to E911 & NG911

With statistics showing that up to 70% of all incoming 911 calls are from wireless phones the need to arm call takers and radio dispatchers with imagery to help them determine where the call is coming from has never been more important. Compiled below are some of the key benefits the oblique image can offer in the E911 environment.

- Instantly view multiple images of caller location at time of call
- See where calls are coming from and landmark the caller
- With the click-of-a-mouse see alternate traffic routes to incidents with digital images of your entire county
- Save time eliminating guesswork by knowing and routing first response crews to true location of incidents
- View each address from multiple angles for entry and escape points
- Coordinate responses for major structures and facilities
- Provide remote guidance to first response crews on potential dangers to neighboring structures or populations
- Plan for evacuation routes and traffic control
- Land/air coordination in search and rescue efforts
- Overlay shapefiles and geo-referenced data directly over imagery
- Have historical data for areas that are affected by natural and other disasters.

Forge Apps Philosophy

We believe better software makes a better planet, and that the best software doesn't just come from tools and technology, but also passion and process. This candid presentation will explain how Forge Apps approaches every project and what we do to ensure a successful outcome.

Fully Leverage Your GIS to Manage Municipal Infrastructure

The presentation "Fully Leverage Your GIS to Manage Municipal Infrastructure" will discuss how Cityworks can be used to assist Municipalities, Counties, and Utility Districts with complaint tracking, service requests, work orders and regulatory reporting. Cityworks is a GIS-Centric asset management application running on the Esri software suite which directly uses an organization's existing GIS as the only asset database. Cityworks can be applied to any and all infrastructure being maintained in an organization including water, sewer, storm, electric, gas, streets & signs, permitting, land management, licensing, etc.

PAPER SESSION 17: EMERGENCY SERVICES

ROOM 1D

Data Design and Auditing Addresses for an Emergency Dispatch Travel Network

Quality addresses and boundaries are the foundation for a reliable travel network for dispatching emergency services. Address data can be quickly sized up by comparing address points to streets and using “fishbone lines” to catch addressing whoppers. The address auditing process can be worked together with suppliers of the data for a high quality finished product. Python scripts are used to automate tasks.

Solutions to travel network challenges to be discussed are:

- What to do about those persnickety 00 addresses
- Hard boundaries: who responds to which side the street right-of-ways?
- Tuning your travel model with dual speed limits
- Data pitfalls that will take your travel network down
- NSNTAS – Nearest Street Not The Access Street, an Address Point routing problem
- Hierarchy – How to use it and what to avoid
- Setting up a travel network with global turns, streets, and driveways
- Conquering Freeway Addresses
- Creating tight response area polygons from line attributes

Incident Level Symbology

The National Alliance for Public Safety GIS is a non profit group dedicated to supporting the public safety and homeland security communities in the advancement of data interoperability and information sharing, through geospatial technology. NAPSG host several Fire Department Users Groups throughout the country and just recently started a workgroup to help facilitate a standardized platform for incident level map symbology that crosses disciplines. This presentation is an overview of the Incident and Pre-Incident Level Symbology Workgroup, what are the initial guidelines that we are recommending, and what is likely in the future.

Near Real Time Data Collection

The Port of Seattle operates very much like an independent city. It has it's own Police Department, Fire Department, E-911 Dispatch Center, and Emergency Coordination Center (ECC). The Port of Seattle operates Seattle-Tacoma International Airport (STIA) which handles over 31 million passengers every year as the nation's 17th busiest airport. With over 100,000 people every day it is larger than the City of Bellevue.

Managing emergencies in this complex environment can be very difficult. Getting accurate and timely information from the first responders in the field to the decision makers in the Emergency Coordination Center (ECC) is very important. The new Emergency Management GIS system is being developed to address this need by creating a common operational picture and increasing our situational awareness. The system uses specially prepared map books, bluetooth enabled digital pens, Blackberry phones, and desktop GIS to quickly capture information and transmit the data to the ECC in seconds. In addition, the ECC is able to communicate ongoing status by publishing updated maps out to distribution lists in multiple formats.

PAPER SESSION 18: CARTOGRAPHY

ROOM 1E

Getting Your 3D Data Onto Your 2D Paper Printout

Geographers and laypersons alike are by now familiar with the impressive zoom-and-swoop 3D visualizations that can be achieved using modern software. Typically we see these either as interactive applications of one form or another, allowing the user to move the scene around and examine it from different viewpoints, or as a recorded video fly-through of the study area highlighting the features of interest. When restricted to static images, we usually see some variation of one or more angled, top-down views that show elevations in relief, but obscures objects that “hide” behind others because of the chosen angle.

Scientists and other data analysts, however, want the advantages of 3D analysis and visualization, but often don’t yet have the luxury of providing an electronic deliverable allowing an interactive or recorded fly-through; nor can they afford to obscure data that needs to be seen in its entirety and in context. This presentation will cover the technical and cartographic details of one solution for condensing the all of the information of 3D data, in this case a bathymetric survey and chemistry data from subsurface sediment cores in Seattle’s East Waterway, into a static, informative 2D paper product.

Microstation to ArcGIS to Adobe Illustrator: Recreating the Washington State Tourist Map

For the past 20 years, the Washington State Department of Transportation has used Microstation to publish the biennial Washington State Tourist Map. This year, the 2011-2012 edition of the State Highway Map will be available as a vector-based .pdf. Changes in the tools available in Microstation, enhancements to ArcGIS, and the requirement that the map be made available on the Internet to the public as high resolution .pdf necessitated the move from CAD to ArcGIS.

This presentation will present the process that we used to turn CAD cartographic product into a database-driven, GIS product. In this presentation you will hear the unvarnished truth about:

- What worked well (using Cartographic Representations in ArcGIS)
- What went wrong (relying too heavily on “the way it used to be” in Microstation)
- What still presents a challenge (using semi-transparent raster layers in ArcGIS, and the tendency of ArcGIS to produce .pdfs that look different in layout view than they do as a .pdf.)
- What took far more time that we ever anticipated (the entire project)
- How we plan to do things better in the future

Cartographic Standards and Practice in Academic Journals

With the proliferation of GIS, cartography sometimes suffers. Many GIS professionals have a hard time keeping up with all of the advances in the software and don’t take the time to take training in cartography. Yet the message of all of the expert analysis can be lost if it is not presented on a well-designed map.

While it is difficult to address this challenge in general, there is an opportunity to improve the situation in at least one venue: edited journals. The editors of academic journals could provide, with their instructions to authors, guidelines for maps that are submitted.

This presentation reviews the guidelines for map submission that are provided by approximately 100 journals in Geography and related fields. One would think that journals in Geography might have some requirements for cartography, but most guidelines are either vague or comically specific. For example, one journal requires that italics be used for water features but offers no other, more useful guidelines, such as requiring maps to be projected or to have a scale bar. Examples of maps that follow guidelines a little too closely will be displayed.

The talk will conclude with a set of guidelines recommended to journal editors. The guidelines address some of the issues that are specific to journals, such as the small page size, and are intended to be practical, so that GIS analysts without specific cartographic training can implement them.

PAPER SESSION 19: ENVIRONMENTAL GIS**ROOM 1F****CALweedmapper -- Mapping the Spread of Invasive Plant Species**

The California Invasive Plant Council (CALIPC) and its partners, is currently building a web based GIS to support mapping of the spread of invasive plant species across the State of California. The application is based on open source software and is developed in multiple stages. The first two phases of the project, the system design and implementation of the basic online data collection & editing tools have been completed. Currently CALIPC teams are collecting data for over 200 invasive plant species and are assigning occurrence values to USGS topo quads boundaries as spatial reference using the online tools. For each mapping quad and each invasive plant species the system can hold multiple records in a PostgreSQL / PostGIS database. In each data record occurrence values are assigned to a plant species/quadrangle combination in order to describe the plant species evaluation regarding their current state and spatial spread tendency. The technical set-up involves PHP for server side scripting, an OpenLayers map viewer in conjunction with the ExtJS and GeoExt JS libraries to handle client side functionalities, and MapServer as the map rendering engine. The system enables the display of dynamic map layers for all of the over 200 species including their abundance, spread and management (treatment) values. The dynamic map layers are auto generated any time new data records are added to the database. Additional efforts of the project involve modeling of future spread of invasive plants and the impact of climate change on their spread behavior; the creation of an interface to the CALFORA plant species database to integrate automatic updates of the CALweedmapper database via data extraction, evaluation and aggregation methods; and the creation of an online user interface which can be used by interested volunteers to add their own observations regarding the spread of invasive plant species.

Using Geographic Information System (GIS) Technology to Track Post-Dredge Monitoring Data in the East Waterway of the Lower Duwamish Waterway

Following completion of dredging in 2005, a four-year, post-dredge monitoring program began for a defined study area in the East Waterway, Seattle WA. The monitoring program was conducted between 2005 and 2008 and consisted of a total of five sampling events. After each sampling event, GIS was employed to illustrate contaminant distributions and guide decisions on future post-dredge monitoring operations. Maps for each sampling event were created as well as a single map containing all sampling event maps in temporal succession. Maps created during the post-dredging program displayed sample locations, Inverse Distance Weighted (IDW) interpolations, and post-dredge areas of interest for every sampling event. Areas of potential concern were identified with the aid of the IDW interpolations. Chronological trends for two of the post-dredge chemicals of concern within the study area, mercury and polychlorinated biphenyls (PCBs), were mapped as well.

Defining the Wildland-Urban Interface for Wildfire Hazard at Different Spatial Scales

Many areas of Washington are experiencing rapid population growth and development, with much of it occurring in the wildland-urban interface (WUI), "the area where houses meet or intermingle with undeveloped wildland vegetation" (2001 Federal Register definition). The Federal Government has determined that the wildland-urban interface (WUI) issue is perhaps the most significant of the natural hazards to communities of the western United States, and that a Community Wildfire Protection Plan (CWPP) provides the best means to determine how fire professionals should plan to reduce catastrophic loss. Unfortunately, many wildland fire prevention and reduction efforts across the Northwest are limited due to the lack of a geographically-specific definition of the WUI, which is also a required step for the development of a CWPP. Defining this area depends on combining data layers for vegetation, topography, weather, and—most importantly—human population distribution and values at risk. At larger spatial scales, such as an entire county, using Census Blocks to define human distribution has been the general approach, while at the neighborhood scale, high resolution orthophotos and simple paper maps are an easy way to help delineate wildfire hazard areas. At intermediate scales, however, both approaches break down, requiring that GIS analysts make somewhat arbitrary decisions in defining these areas. This presentation demonstrates recent GIS-based analyses of wildfire hazard assessment and WUI delineation for Clallam County and Bainbridge Island, comparing and contrasting analysis approaches at the large and intermediate scales. We will particularly highlight the difficulty of determining vegetative fuel types and population density at the intermediate scale, as decisions made at these points will necessarily define hazard mitigation priority levels in the final map products, which in turn provides the basis for any subsequent CWPP.

PAPER SESSION 20: DICK THOMAS STUDENT COMPETITION

ROOM 1B/C

Washington's Geothermal Potential: A Comprehensive Analysis

With the cost of energy and heating today skyrocketing, more and more communities are looking to alternative energy sources to satisfy their energy needs. Geothermal energy is a clean, renewable, and virtually untapped energy source. Locating and developing new energy resources is a priority for Federal, State, and Commercial agencies. Washington needs to better understand how utilizing its abundant geothermal resources can contribute to meeting the increasing demands for cheaper electricity and clean, sustainable energy.

Current industry standards classify Geothermal Reservoirs as Low-Temperature (<150°Celsius) or High-Temperature (>150°Celsius). High-Temperature reservoirs are suitable for commercial production of electricity, while Low-Temperature reservoirs support many Direct-Use applications, such as heating and cooling of homes and businesses, as well as applications in agriculture and horticulture that require temperatures of only 50°C. Previous studies have shown that along the Cascade Range, Washington's geothermal systems have the best potential for high-temperature development; and exploitable low-temperature thermal water underlies large areas at shallow depths of less than 1,000 meters.

The project will compile the most recent data on Washington's geothermal resources to create a geothermal database and interactive map containing existing thermal wells; Thermal Springs, potential locations for High and Low temperature reservoirs; as well as counties with communities located near existing thermal wells, current populations and number of housing units, energy consumption rates, and projected population growth.

Project goals:

Use spatial and statistical analysis to establish a database of the State's geothermal resources and the communities that could benefit most from them, possible locations for implementation of various geothermal technologies and power generation sites.

To promote future investment in providing clean renewable energy sources for Washington's residents. Geothermal power can become an integral part of dependable, cost saving energy resources.

Mapping Restoration in the Puget Sound

The Puget Sound is at a turning point. Toxic soils and polluted waters are causing decreased wildlife populations, reproductive issues, and negatively impacting our health and economy. Our project sponsor People for Puget Sound (PPS) has collected several gigabytes of restoration site data over the years, yet does not have a database built to query and visualize relationships in their data. Our team is transforming PPS datasets into a relational geodatabase, developing a data management template to be used in partnership with Environmental Science Research Institute (Esri) and Restore Americas Estuaries (RAE) for development of a nation-wide online geographic information systems (GIS) database. Making PPS datasets widely available and easily accessible will guide Puget Sound-wide restoration professionals and policymakers to the development of comprehensive restoration strategies.

PPS currently uses Esri software solely for cartographic representation of their 26 restoration sites. Datasets are stored locally on a server in a file structure that is difficult to navigate and impossible to analyze for spatial relationships. Our project addresses data management and editing concerns by creating a Microsoft Access linked geodatabase model, utilizing Access as an entry form for attribute editing and data transfers from the field. PPS staff will be able to perform sophisticated analysis on their restoration sites, querying spatial data to gain quantitative and historical information on ecological management, education and fundraising use. PPS will also use this database to track the progress of their 26 restoration projects and assess their impact on the greater Puget Sound area.

Through an easy to use GIS, People for Puget Sound will contribute more effectively to Puget Sound's rehabilitation. Our team leverages a strong background in ecology, database management, and natural resource policy to make PPS's restoration data more accessible within their organization and as a data model for estuaries nationwide.

A Delineation Model for Watershed Analysis

Water resources are important to agencies for stream and wetland preservation, flood control and assessment, solving conflicts over water rights, and rapid response to disasters. It is important that a GIS professional has access to all the data that is needed for any specific assessment that may arise.

The project started as building a model for watershed analysis for GIS 194, Special Topics. The model allowed a user to click anywhere on the map and create a watershed above that point, provided a flow accumulation raster and flow direction raster existed. Now, using Python 2.6, the project expanded to add more functionality to the model.

The model uses USGS stream gages as pour points for watershed analysis. The user needs only a DEM and the Stream gage points as inputs for the model. The output is an ArcMap document that the user opens. On this map document the user will find a filled a symbolized DEM, hillshade with transparency set to 40%, streams that are smoothed and symbolized, and a stream gage shapefile that contains the station ID number. The map document also has watersheds above the gages that are smoothed and symbolized. The acreages and square miles of the watershed are in the attributes. With the Identify tool, the user is able to click on any watershed and get all the stream gage information for that watershed, including a hyperlink to the USGS website that the user can use to get real-time data for that stream gage.

This project shows the results for a 10m DEM of the Green River watershed. It could benefit anyone working with watershed management, hydrology, natural resources, or other closely related fields.

Predicting the Impacts of Sea Level Rise in the Puget Sound Region

Sea levels have risen an average of 8" globally since the industrial revolution. A majority of this increase was seen during the latter half of the 20th century, and levels are expected to continue rising at accelerating rates due to the impacts of global climate change. In the Puget Sound region, local predictions for sea level rise (SLR) range from 6" above current levels by 2050 to as much as 50" by 2100. Some global SLR models predict even more drastic SLR over the next century. Such increases in sea level, accompanied by predicted increases in coastal erosion, storm activity, and flooding, could drastically alter coastal habitats and strongly impact coastal communities and the 1.5 million people that live in them in the Puget Sound region. Predictions of the extent, spatial distribution, and potential impacts of SLR in the Puget Sound region is important information for resource managers and urban planners to have available in their efforts to plan for, minimize, and mitigate the effects of climate change on coastal communities. To that end, this project uses a digital elevation model (DEM) created from high-resolution LiDAR (light detection and ranging) data in combination with other available data to predict the potential impacts of SLR in the Puget Sound region. Specifically, this project will: 1) determine the total areal impact and spatial distribution of impacts of SLR across the Puget Sound region under a range of SLR scenarios; and 2) use Pierce County, WA as a test case to develop a repeatable method for analyzing specific impacts to economic, population, infrastructure, and ecological factors under a range of SLR scenarios at the county level.

Assessing Designated Forestland Market Value

Forestland parcels in Washington State under the Designated Forestland Program (DFL) (RCW 84.33.130) are currently assessed by one state wide average rather than being assessed individually. Annually, the Washington State Dept of Revenue provides the county assessor with a schedule of per-acre values to determine land value for taxation. The land value is based upon three factors: Operability, Land grade, and Location. "Operability" refers to slope of the land and the ease of timber extraction. "Land grade" is assessed by the productivity of the land. The "Location" or distance to a timber market influences the haul distance. Forestlands in close proximity to a timber market are assessed a higher value due reduced hauling costs. These three criteria are based on statewide averages. Comparatively, conventional forestland is annually assessed based on two methods: the Cost Approach and the Market Approach. Both these methods assess individual parcels based on current market trends and replacement costs of a comparable parcel.

With data made available by the Rural Technology Initiative and counties in Washington State, we seek to address this issue by building a statistical model to better understand and assess market value of individual parcels enrolled in the Designated Forestland Program. The Rural Technology Initiative has been tracking the ownership of forestland and land use in an effort to provide data for rural forest resource based communities. Our model will provide additional assistance to the Rural Technology Initiative's efforts to inform science, research, and public policy that help drive economic decisions in rural areas.

PAPER SESSION 21: VENDOR PRESENTATIONS

Room 2B/C

The New Trimble GeoExplorer 6000 Handheld GPS Mapping System

We are introducing the new Trimble GeoExplorer6000 handheld GPS mapping system. Using GPS and GLONASS satellites, this unit provides for excellent visibility and accuracy even in very difficult environments, such as heavy tree canopy or high rise urban areas. With a built in 5PM digital camera, photo attributes can be added as descriptive data to point, line and area features in the field. Come see this new ground breaking technology.

PAPER SESSION 22: RESOURCE MANAGEMENT & TRANSPORTATION

Room 1D

A Time Aware GIS System for Managing Winter Transportation Operations

The purpose of this presentation is to provide an overview of Washington State Department of Transportation's (WSDOT) Winter Operations (WinterOps) system. The WinterOps GIS enables Maintenance and Operations personnel to view and analyze road conditions and mitigating activities across time and space.

The system provides a real-time map that depicts asset activity information such as truck location, type, heading, speed, and material application; as well as road conditions such as temperatures, ice, snow, frost, wet, dry and road treatment such as sand, salt and brand of deicer. The system is also capable of displaying information from the past, allowing for historic and trend analysis.

This dynamic map based system provides situational awareness and operational planning tools, providing managers the ability to visualize complex data in (near) real time, and make informed decisions about how to best use the available resources to respond to winter storm events. With WinterOps managers are able run detailed labor, equipment and material usage reports. Live situational awareness and historic data enhances WSDOT's ability to improve the mobility and safety of the traveling public.

The system uses truck-mounted controllers for data collection, wireless transmission, and a server-based GIS supporting a web-based client with multiple map services.

Zen and the Art of GIS Program Coordination -- The Community Transit Experience

Coordinating a GIS program can be a particularly challenging job – especially if you are the lone GIS professional in a transit agency of 600 employees serving a sizable metropolitan and rural area such as Snohomish County. The objectives of this paper are to:

- Describe the current GIS Program landscape at Community Transit,
- Share a few of the accomplishments of the GIS Program at CT over the last few years,
- Explain a few of the current projects underway at Community Transit and how the GIS Program is leveraging these projects to expand the GIS footprint in the agency,
- While, at the same time, sprinkling in some known and unknown words of wisdom from the Orient (and other popular sources) and sharing some lessons learned along the way.

In the end, the objective is to invite audience participation to ask questions of me and/or to share their own (short) stories of GIS triumph and/or tragedy and lessons learned in the process.

Sustainable Asset Management

Local governments are being challenged to make do with less funding. They are also facing significant pressures to improve the environmental performance of their facilities and infrastructure. In a time when it is increasingly difficult to provide acceptable levels of service, many public administrators do not believe that they cannot afford to invest in the sustainable management of their assets. This presentation explores how sustainable asset maintenance practices and capital improvement alternatives can actually reduce operational and environmental costs. It also explores what is needed to establish the cost accounting framework to develop and audit the business case for incorporating these approaches.

PAPER SESSION 23: MANAGING AND DEVELOPING GIS

ROOM 1E

ROI: King County Measures the Benefits of GIS

A geographic information system (GIS) has become a common component of city and county governments. All large municipalities and many medium and small sized cities and counties have now established GIS capability. Enterprise GIS is expensive to develop, maintain, and operate. It is common for GIS development projects to be implemented only after a cost-benefit analysis shows a projected return on investment (ROI) that justifies the financial investment by the municipality. Rarely if ever, do municipalities look back after their enterprise GIS has been implemented and is in operation to analyze and measure their actual ROI realized.

This presentation discusses the challenges of conducting an after-the-fact GIS ROI analysis and outlines the benefits of performing such ROI analysis. This presentation will describe the King County GIS ROI study conducted by a team from the University of Washington, Evans School of Public Policy, Cost-Benefit Analysis Center. The methodology used for the King County GIS ROI analysis will be outlined and the results summarized. Lessons learned from the KCGIS study will be presented and recommendations made for a standardized GIS ROI measurement approach. This presentation will be of value to managers to measure the benefits realized from their GIS investment and help to enhance confidence in projected ROI for future GIS investments.

Collaboration for GIS Development

Developing great software and systems requires team effort and cooperation to be successful. Gone are the days of defining the goal and then sending programmers off for months at a time only to return with the budget exhausted and results questionable. We will share our story of how we use agile development on all projects from big ones like CityIQ, our information portal, to small python scripts. Agile isn't a buzzword or fancy set of tools for us, it is simply an iterative approach where we brainstorm as a team, build little pieces, test them out and demo to our users, then go back to step one and improve based on what we learned. We take small steps through each project rather than making risky big leaps forward. Keeping everyone in the loop ensures buy in and effectiveness at all levels. We'll share lessons learned and practical advice for working as a team to build an application with an agile development process. Come learn why agile development as a team works so well we'll never go back to waterfall and cowboy coding. Learn how to listen to your collaborators and users to get the right job done. Learn how to use the best processes and tools that we've discovered and refined over 3 years of development together. You'll leave this presentation with words of wisdom, words of warning, and ways to improve your application development today.

PAPER SESSION 24: GIS APPLICATIONS FOR UTILITIES & PLANNING

ROOM 1F

Emerging Applications at Seattle Public Utilities

Seattle Public Utilities will present several newly-introduced browser-based applications that reflect our current focus on modular components and web services. The first application to be presented is our Field Operations Mapping System (FOMS) which displays the locations of vehicles (fed from AVL), work orders (from the work management system), calls to our response center, and much more. First introduced to support the Drainage & Wastewater line-of-business during storm events, the system has proven to be essential to everyday operations. We are now expanding the system to display the same data for the Drinking Water line-of-business and to allow both datasets to be displayed at the same time. The second application to be presented, called "UtiliView" and based on ArcGIS Server and Geocortex, is intended to support the viewing and research needs of users across the Utility, many of whom are were using our popular ArcView applications until recently.

We will also show a few other SPU and Seattle Transportation applications to demonstrate how web services, tile caches, and modular web applications are being used to reduce development costs, integrate systems, and promote consistency across applications and platforms. A brief look at upcoming applications, including a mapping module embedded in the Maximo work management system and an ArcMap-based companion to UtiliView, to be called UtiliMap, will close the presentation.

Developing an Interactive Map to Show the Use of Transferable Development Rights in King County, WA

King County's Transfer of Development Rights (TDR) Program seeks to shift the Region's development growth away from rural farms, forests and open space lands into designated "urban" areas. The program allows landowners of these properties to separate their rights to develop land from the bundle of other property rights. These transferable development rights or "TDRs" become a tradable commodity that can be sold to developers to create more building capacity than would otherwise be allowed in their urban building projects. When a landowner chooses to transfer development rights, their property (a 'sending site') is permanently protected by a conservation easement. TDR Program staff needed a simple way to illustrate to the Public the locations of TDR sites, sending-receiving site relationships, and other data about the creation and use of TDRs in King County. TDR and GIS staff collaborated to develop an interactive online mapping application using Esri's ArcGIS API for Javascript. The application uses a SQL Server database as a back-end with MS Access front-end interface for data entry. The TDR spatial data layers are generated using Python scripts with very minimal GIS editing. The result is a seamless interactive mapping application, available to anyone with internet access, which shows details of how the King County TDR program protects important lands and simultaneously redirects growth into urban areas where infrastructure exists to support higher density development. King County staff will discuss development process, technological challenges, and provide a real-time demonstration of the application showing how King County's TDR program has protected more than 141,000 acres – more than any other TDR program nationally!

PAPER SESSION 25: VENDOR PRESENTATIONS

ROOM 2B/C

Putting Open Source Geospatial Software to Work for Your GIS Tasks

Karsten Vennemann, Principal of Terra GIS Ltd will present case studies from his own work on how Open Source software solutions can be successfully used in GIS projects. Web mapping applications based on MapServer, PostGIS, and Openlayers or the MapBender framework are the base for very flexible, robust, standards compliant, low cost alternatives to proprietary systems. Such systems can be used in 'pure' open source architectures or in hybrid architectures alongside with already existing other GIS technology. Desktop GIS packages such as gvSIG or QGIS can be put to good use as general GIS software toolkits for your day to day tasks or can be customized and extended to efficiently fulfill specific tasks in your workflow. Examples and case studies will include web mapping applications alongside with desktop applications and span all sectors of clients from State government agencies, non-profit organizations, to business clients. Among the highlights shown will be web mapping applications for the WA State Office of Civil Legal Aid OCLA GIS, Calweedmapper a web mapping application for collection of invasive plant species in CA, and VFS Viewer an online information system for Forest owners in Bavaria /Germany. On the desktop side a new free QGIS plug-in that allows rapid stream-mode digitizing with subsequent customized attribute entry, providing an effective workflow for data collection in the field (for example for us in tablet computers) will be presented. Other examples include online list matching tools, geocoder applications and web GIS system demos for utility companies and electrical co-ops.

Leveraging ArcGIS Server 10 to Streamline the Permitting Workflow

Use ArcGIS Server 10 technology to its fullest extent within the permitting and planning process. We'll explore the ability to edit GIS data in a permitting application, to automate aspects of the permitting process based on spatial rules, and to create maps or reports with spatial analysis at the click of a button. Integrate and manage GIS data with your permitting system in real-time to maximize ROI by using your enterprise geodatabase and ArcGIS Server 10.

Supporting Organizations

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

ACSM Washington Chapter	Central Washington User Group
ASPRS Puget Sound Chapter	GITA Pacific NW Chapter
Association of Washington Cities	King County GIS User Group
APWA Washington Chapter	Land Surveyors Association of Washington
Cadalyst Magazine	Northwest Washington GIS User Group
NW Esri GIS User Group	Portland Area GIS User Group
Association of Washington Geographers	Puget Sound Autodesk User Group
Washington Chapter – Intergraph GIS User Group	Tri-Cities AutoCad User Group
Aboriginal Mapping Network	Society of American Foresters
Central Puget Sound GIS User Group	Cascadia Users of Geospatial Open Source
Southeast Washington/Northeast Oregon GIS User Group	Washington State County Association of County Assessors
	Washington State Geographic Information Council



Every Washington GIS Conference is a
labor of love
supported by volunteers who contribute
hundreds of hours of their time to the effort.
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Dana Trethewy

MODERATOR GURU Bob Wendt

POSTER CONTEST Suzanne Shull

GRAPHICS AND BOOKLET Ann Stark

DICK THOMAS CONTEST Amanda Taub

MARKETING Whitney Bowerman, Greg Babinski,
Amanda Taub & Tonya Elliott

FOOD Don Burdick

SOCIAL EVENT Dana Trethewy

WORKSHOPS Education Committee

NOMINATIONS Angela Johnson, Nominating
Committee & Karl Johansen

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

