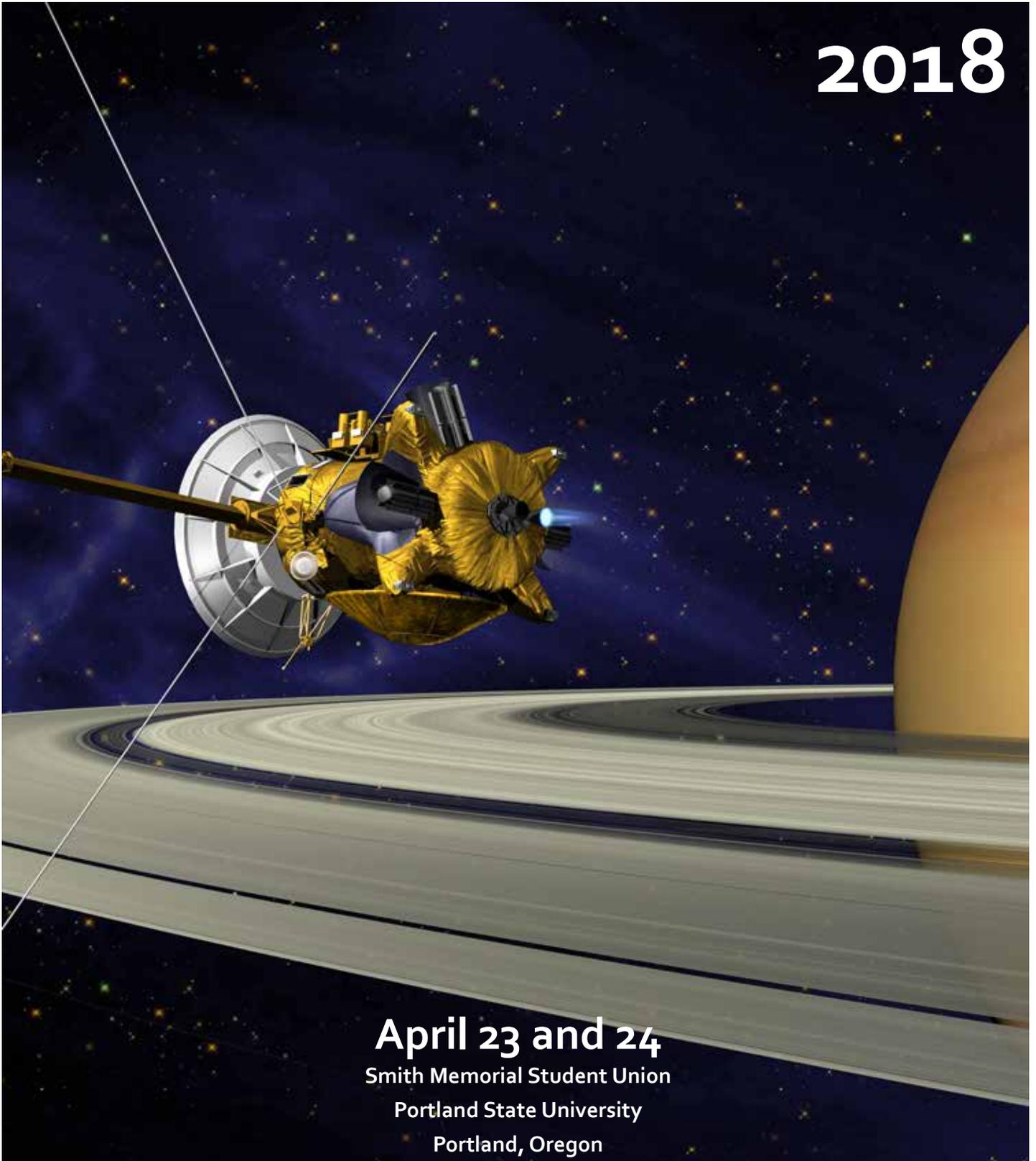# GIS in Action

2018

April 23 and 24

Smith Memorial Student Union

Portland State University

Portland, Oregon

Conference at a Glance

MONDAY

	ROOM 333	ROOM 327/328	ROOM 238	ROOM 296/298
8:30 AM	**WELCOME and KEYNOTE SPEAKER MICHAEL MILASKA** Ballroom			
10 AM	**BREAK**			
10:30 AM	**Remote Sensing I: Photogrammetry**	**Emergency I: Fire**	**GIS for Decision Support I: Childhood Trauma Challenge**	**Data Science I: Automation**
12 PM	**LUNCH** Ballroom			
1:30 PM	**WORKSHOP:** Introduction to R	**Emergency II: 911**	**GIS for Decision Support II: Infrastructure & GIS**	**WORKSHOP:** Developing ArcGIS Pro Python Tools and Processes
3 PM	**BREAK**			
3:30 PM	**WORKSHOP:** GISCorps Mapathon 1: Supporting Humanitarian Projects with OSM	**Emergency III: Response and Recovery Planning**	**GIS for Decision Support III: Smart Communities**	
5 – 7 PM	**EXHIBITOR SOCIAL** Location TBD			

TUESDAY

	ROOM 333	ROOM 327/328	ROOM 238	ROOM 296/298
8:30 AM	**WORKSHOP:** Machine Learning and Raster Maps and R	**Web Application I**	**Data Science II: Databases**	**WORKSHOP:** Intro to Survey123 for ArcGS
10 AM		**BREAK**		
10:30 AM		**Remote Sensing II: UAS**	**Data Science III: BI**	**WORKSHOP:** Deep Dive Survey123 for ArcGIS
12 PM	**LUNCH** Ballroom			
1 PM	**URISA Business Meeting**			
1:30 PM	**WORKSHOP:** Spatial Analysis and Visualization with R and Leaflet	**WORKSHOP:** GISCorps Mapathon 2	**Web Applications II**	**Student Session**
3 PM	**KEYNOTE SPEAKER REPRESENTATIVE NANCY NATHANSON** Ballroom			

Table of Contents

Keynotes

The Exploration and Mapping of Saturn's Moon Titan

Michael Milaska, Planetary Ices Group / Jet Propulsion Laboratory / California Institute of Technology, Pasadena, CA

Saturn's moon Titan is the most Earth-like world in the Outer Solar System. Just like Earth, Titan has a thick nitrogen atmosphere that supports an active weather cycle underneath organic haze layers. The Cassini spacecraft discovered that underneath Titan's haze layers are familiar features like rivers, lakes, seas, dunes, plateaus, canyons, and mountains. But unlike Earth, frigid Titan's rainfall is methane, the lakes and seas are liquid hydrocarbons, the dunes, plains, and plateaus are organic sediments, and the mountains are made of rock-hard water ice. We are using the dataset collected by the Cassini-Huygens mission to map, inventory, and explore the surface of Titan and see how the landscape and geological processes on that world compare and contrast with those of planet Earth.

Closing Keynote

Representative Nancy Nathanson, State of Oregon House Representative

Nancy Nathanson is the Oregon State Representative for House District 13. She was elected in 2006, and has been instrumental in the passing of the Geospatial Data Sharing bill during the 2017 legislative session.

Previously was on the Eugene city council, where she was given multiple awards including the "Outstanding Elected Official" award by the Lane Council of Governments and the "West Eugene Wetlands Award," presented by the Wetland Executive Team in 2005.

Nancy attended Northwestern University and later the University of Oregon where she received a Bachelor of Science in urban geography.

Remote Sensing I: Photogrammetry   Room 333

Oregon Imagery and Web Hosting Services Program
Melissa Christie, Quantum Spatial
Brady Callahan, Oregon Department of Parks and Recreation
Ethan Gardner, Quantum Spatial

The Oregon Imagery and Web Hosting Program was created with the purpose of obtaining 1' resolution imagery over the whole state and hosting this data as a web service. The intention of this program is to meet increased demand for high resolution imagery in a timely manner and to distribute new and historical imagery via a web hosting service to every level of government in Oregon, the academic community, private sector business, NGOs and the public. In the spring of 2017, Quantum Spatial was contracted to acquire and process high resolution imagery for the eastern half of Oregon, approximately 47,624 square miles. The western half, approximately 52,290 square miles is planned to be collected beginning in spring of 2018. For this presentation we will focus on the overall project approach, quality control, use cases and a look ahead to 2018.

Forensic Photogrammetry
Jeff Glickman

This presentation reviews the recent application of forensic photogrammetry to the Amelia Earhart mystery. The current status of the search for Amelia Earhart and her navigator Fred Noonan will be reviewed as will some of the recent case findings and advancement.

Integration of LiDAR and Historic Map for Relocating historic Features in Crater Lake NP
Chris Wayne, Mazama Mapping

What makes mapping such an exciting pursuit is the opportunity to solve mysteries. In 2015 and 2017, Crater Lake National Park solved two mysteries using a combination of historic records, modern lidar data and good old ground-pounding. In 2015 a long-lost archaeology site was re-located along the historic rim road, built by the Army Corps of Engineers in the 1920s. In 2017 a long-abandoned stream channel was restored along its original course, allowing the endemic and threatened Bull Trout to return to their historic range in the Upper Klamath Basin. This talk will explore the integration of modern and historic maps to explore the past and present in one of Oregon's most iconic landscapes.

Emergency I: Fire   Room 327/328

Eagle Creek Soil Burn Severity Mapping and Applications
Cara Farr, US Forest Service - Soils

The USDA Forest Service uses Burned Area Emergency Response (BAER) to manage post-fire response actions within a year of a wildfire being contained to protect life, safety and infrastructure and prevent further degradation of natural and cultural resources on National Forest System (NFS) lands. A keystone step in the BAER process is mapping the Soil Burn Severity (SBS). This presentation will describe the process used to map the SBS on the Eagle Creek Fire and how we used this mapping in BAER to look at threats and evaluate risks to NFS critical values.

USGS Post Fire Debris Flow Assessments: Modern Updates to Geospatial Processing and Interactive Mapping

Greg Smoczyk, US Geological Survey

Attendees will hear about the efforts made for the RAPTOR mapping application, how data was gathered related to the total solar eclipse, and coordination and efforts made regarding wildfire season this last year. Specific topics will include an overview of RAPTOR, eclipse data gathering, wildfire situation, and next steps in GIS data for the Oregon Office of Emergency Management.

RAPTOR - 2017 Fire Season/Solar Eclipse
Daniel Stoelb, Office of Emergency Management - Oregon Military Department

Attendees will hear about the efforts made for the RAPTOR mapping application, how data was gathered related to the total solar eclipse, and coordination and efforts made regarding wildfire season this last year. Specific topics will include an overview of RAPTOR, eclipse data gathering, wildfire situation, and next steps in GIS data for the Oregon Office of Emergency Management.

GIS for Decision Support I: Childhood Trauma Challenge   Room 238

Childhood Trauma Proof of Concept
Cy Smith, State of Oregon Geospatial Enterprise Office
Rob Kirkman, Portland Metro

At GIS in Action last year, the community took up a challenge from former Governor Kitzhaber to get involved in helping support decisions that would improve outcomes related to childhood trauma. Since then, the community has had a meeting to discuss next steps, and several smaller meetings have been held with various stakeholders to get started. The Metro Data Resource Center and the Oregon Geospatial Enterprise Office, with the help of Resource Data, Inc. and 211.info, have developed a prototype mapping platform to assist in meeting the challenge. This session will present progress made and attendees will be asked to help envision how to proceed with next steps.

Data Science I: Automation   Room 296/298

Synchronize Your Cloud Data Using Python
David Mangold, Clean Water Services

Stop struggling with awkward file geodatabases and dangerous copy-paste operations. Embrace the ArcGIS REST API today and sit back, relax, and watch your data flow with ease. Clean Water Services uses ArcGIS Online, Portal for ArcGIS and ArcGIS Server, which creates a challenging data management environment. We also work with contractors, private partners, public agencies and across internal departments. To facilitate timely and maintainable data transfer processes, we built some Python tools to help us synchronize between environments that support the ArcGIS REST API. With a bit of forethought and a few lines of code, you can take control of your data and realize the full potential of the cloud. Please join me as I present specific case studies that recount my journey from ArcGIS Online novice to cloud data integrator and share lessons learned along the way.

Presentation TBD
Eric Nielsen, Institute for Natural Resources – Portland

Is your data A+ or F? Using ESRI Data Reviewer & SQL for data QA QC
Caleb Anderson, City of Salem Public Works

How confident are you in your spatial data's quality? What if you had a score for the data you use that indicates whether it's A+ quality data or F data that needs work? The City of Salem is addressing utility data quality issues by evaluating a series of metrics, weighting the results, scoring the data, generating reports, and sharing the results with consumers. Some of the metrics include analyzing the number of unlinked assets between our GIS and asset management software, disconnected features (tracing in network datasets), feature location methods (GPS), unenforced topology, domain validation, key fields with missing data, duplicate records, and more. The resulting data score gives an overall sense of data quality, it highlights records that need to be corrected, and drives efficient resource management and budget re-allocation. This score can also be passed on to engineers, consultants, and others as a calculated disclaimer as to how much the data can be trusted. Our data drives decisions, and confidence in data quality is confidence in policy and decision making.

WORKSHOP: Introduction to R   Room 333
Aaron Cochran, Oregon Department of Human Services
Emilie Henderson, Institute for Natural Resources

This workshop will introduce people to the R statistical language for computing. We will cover the basic data structures of R, how to manipulate data in R, basic descriptive stats, plotting, and more. This will be taught in both Base R and using the "tidyverse" collection of packages. Class materials will be made available online prior to the workshop. Workshop participants will need to supply a computer with R and RStudio installed on it, and will need an internet connection.

Duration: Half-day (3.5 hours)

Max class size: 15

Special instructions for students: Bring a laptop with R and RStudio installed on it. I'll help everyone download the course materials once they are in class.

Emergency II: 911   Room 327/328

GIS for NG9-1-1
Jeff Ledbetter, Michael Baker International

Have you heard of Next Generation 9-1-1 (NG9-1-1) and the requirements that it may bring on your GIS data? In this session, we'll explore:
- 9-1-1 concepts
- The transition to NG9-1-1
- GIS's role in NG9-1-1
- How to connect with your PSAP in order to serve their GIS needs
- NG9-1-1 GIS data standards and the implications for other business processes

Where to start with your GIS data
- You should walk away from this session with a basic idea of:
- The outreach and education you'll need to do with your public safety communications department
- The work you'll need to accomplish to prepare your GIS data for NG9-1-1
- An understanding of the governing standards and information documents that will help you insure your GIS data meets your public safety stakeholders' needs

GIS for Decision Support II: Infrastructure & GIS   Room 238

Geospatial Information is the Key to Smart Infrastructure Investments
Cy Smith, State of Oregon Geospatial Enterprise Office

As the nation begins prioritizing infrastructure renewal, accurate and reliable information of myriad types will help ensure relatively scarce dollars are spent in the most efficient and effective manner possible. Geospatial information and technologies which facilitate awareness and understanding of the precise location of every facet of our nation's infrastructure, from underground to airborne, are absolutely critical to this effort. Fortunately, tremendous advances in geospatial technologies, many driven in the commercial sector, have made these tools far more powerful, accessible, and useable. Knowing where things are and how they relate to one another, including critical dependencies, is a required first step to making good decisions about infrastructure investment.

All Roads Transportation Safety Program - Project Explorer
Jennifer Lanzarotta, Oregon Department of Transportation
Kristie Gladhill, Oregon Department of Transportation

The All Roads Transportation Safety Program (ARTS) within the Oregon Department of Transportation is designed to address safety needs and reduce fatal and serious injury crashes on all public roads in Oregon. The program is data-driven and based on benefit cost analysis of key factors including the amount of crashes, network screening layers and project costs. The program prioritizes hotspot and systemic projects based on benefit cost ratios - which locations will get the most crash reduction for the cost of the project. One of the intended goals is to improve the quality and effectiveness of safety related transportation infrastructure.

GIS support for the ARTS Program to develop this application started with a request to the ODOT GIS Unit for data layers for distribution between the ARTS Program analysts through map documents in a desktop GIS environment. We agreed that this was not an ideal workflow as analysts have varying levels of skill with GIS desktop software and often deal with broken paths, inconsistent data sources and the inefficiencies involved when creating and distributing copies of data.

We agreed upon the goal to develop a web-based GIS application that delivered consistent, current data in a common-operating platform available to the ARTS program. A future goal is to extend the ARTS Project Explorer to local jurisdictions, consultants and others important to this program.

We decided to develop a Web Application in ArcGIS Online using Web App Builder, while leveraging the Screening Widget as an important tool that allows the user the ability to screen public roads for such factors as crashes, network screening layers, existing projects and other relevant data while providing an output that is easy to blend into existing workflows and decision-making.

Bringing the Power of GeoSpatial with Careful Curation of Quality GIS Data
Christian Schumann-Curtis, Portland General Electric & Potelco Inc.

GIS implementation has been shown to deliver a 10-fold return on investment [citation]. Through Geo-CEG we've helped communities dramatically speed up access to infrastructure data and expend the view of the systems that keep the cities running. At Potelco we've delivered faster design capabilities to infrastructure maintenance projects. Careful curation of quality GIS data remains key to bringing to bear the power of geospatial tools.

WORKSHOP: Developing ArcGIS Pro Python Tools & Processes   Room 296/298
David Howes, David Howes, LLC

The goal of this workshop is to teach attendees how to extend ArcGIS Pro by using Python to create functionality that can run as standalone programs or operate inside the software as geoprocessing tools. Four topics will be covered: (1) ArcGIS Pro Python overview and setup; (2) Upgrading ArcGIS for Desktop tools for use in ArcGIS Pro; (3) Running Python scripts; and (4) Creating geoprocessing tools (script tools and Python Toolboxes). JetBrains PyCharm (Community Edition) will be used for coding demonstrations and a brief introduction to its features and capabilities will be provided.

The workshop will consist of a balance between lecture material and hands-on exercises. Those who wish to complete the exercises during the workshop will need to bring a laptop with ArcGIS Pro (latest version) and JetBrains PyCharm (Community Edition) installed. Anyone unfamiliar with PyCharm is advised to work through the introductory materials available from the JetBrains website (https://www.jetbrains.com/pycharm/) before arriving at the workshop.

Duration: Half-day (3.5 hours)

Max class size: Approximately 25

Special instructions for students: Those who wish to complete the hands-on exercises during the workshop must bring a laptop with ArcGIS Pro (latest version) and JetBrains PyCharm (Community Edition) installed. Anyone unfamiliar with Pycharm is advised to work through the introductory materials available from the JetBrains website before arriving at the workshop.

WORKSHOP: GISCorps Mapathon 1: Supporting Humanitarian Projects with OpenStreetMap (OSM)   Room 333
Emmor Nile, URISA GISCorps

The workshop will have have a brief overview of OpenStreetMap (OSM), the Humanitarian OSM Team (HOT), and the use of JOSM to contribute to the worldwide OSM database. The majority of the time will be spent in a mapathon format with participants using their own computer.

Duration: 90 minutes

Max class size: 20 people

Special instructions for students: Bring a laptop with mouse to contribute to humanitarian projects. A tablet or computer without a mouse is not adequate. It is best to create an OSM user name and download JOSM prior to the workshop (openstreetmap.org).

Emergency III: Response and Recovery Planning   Room 327/328

The Role of GIS in Emergency Response
David Allen, Texas Emergency GIS Response Team

The "emergency response world" has gotten along for many years without GIS, but suddenly the question "WHERE" is taking on new meaning. I'll talk about how GIS is being recognized as having an important role in emergency response and how we're meeting that need in Texas.

Operation Blue Roof: Natural Disaster Recovery Support
Douglas Swanson, US Army Corp

Operation Blue Roof is a program for homeowners who have damaged roofs caused by a natural disaster. The program sends contractors to primary residences to cover the damage with blue sheeting until homeowners can arrange repairs. This free government service allows residents to stay in their homes instead of paying for temporary housing and protects property while homeowners recover from the storm.

Immediately after Hurricane Irma swept across Florida, the US Army Corps of Engineers, in cooperation with the Federal Emergency Management Agency, moved into action. Part of that movement included sending several GIS analysts to various field offices to support each mission. Operation Blue Roof, managed by the Corps, was one of those missions and utilized GIS from beginning to end with several cartographic, analytical and database products generated as a result.

With a map's ability to communicate complex information in an uncomplicated and familiar format, hundreds of map products were generated for all facets of the Blue Roof mission, including daily map updates to the governor of Florida. Daily updates were also crucial to the Blue Roof Team. With 13,374 eligible roofs over 31 counties, the tabular data associated with each home was turned into on-line and hard copy GIS products to help track and convey progress. GIS analysis was also important to the mission, helping identify locations for the public to request assistance. Daily products, analysis and unique requests, coupled with the need for rapid results, make GIS a critical part to disaster response and recovery.

Natural Hazard Risk Assessment in Tillamook County, OR
Matt Williams, DOGAMI

Tillamook County, Oregon is a rural county located on the Pacific Coast. The area is populated with small coastal communities and is subject to several natural hazards. The Oregon Department of Geology and Mineral Industries (DOGAMI) has conducted a building-level natural hazard risk assessment of flood, earthquake, tsunami, landslides, wildfire,

and coastal erosion within Tillamook County. The hazard layers utilized in the analysis were obtained from published sources of geologic related hazards from DOGAMI; wildfire risk data was provided by the Oregon Department of Forestry. Building level information was created by marrying county-provided assessor data with a 2D rendering of building footprints. DOGAMI staff examined the level of risk to buildings, residents, and critical facilities within communities from natural hazards using two different techniques including: 1) loss estimation 2) and exposure analysis. Loss estimations were calculated using FEMA's Hazus software, a nationally recognized GIS methodology for estimating physical, economic, and social impacts from disasters. Exposure analysis, which is a GIS intersect between buildings and hazards, was used where Hazus damage models are not available. Loss estimation and exposure analysis results were summarized on a jurisdictional basis.

GIS for Decision Support III: Smart Communities   Room 238

Smart City PDX
Christine Kendrick, City of Portland

The City of Portland's approach to "smart cities" has been evolving quickly over the past three years. The City is developing a Priorities Framework to help identify Smart City and Open Data projects and policies that use data and technology to address inequities and invest in projects that improve people's lives. A unique governance structure that spans across the City's bureaus has allowed for improved collaboration across the City and with university researchers, the public, the Oregon tech community and other private enterprises. Under the smart cities umbrella, the City of Portland is exploring how distributed "Internet of Things" (IoT) sensor systems can be used to improve the available data that is useable by the City and the public to help inform traffic safety, enable assessments of public health and equity, advance Portland's Climate Action Plan goals, and create opportunities for economic development and civic engagement. To support such goals with data and technology, the City of Portland is developing policies and methods to protect privacy, improve management of existing data, and allow for efficient data integration. This talk will provide an overview of Portland's definition of and approach to smart cities and the work to build out a comprehensive, long-term strategic plan for the City. Key projects to support this work such as the Priorities Framework, Portland Smart Cities Steering Committee and Open Data Policy and Program will be discussed.

The King County Region Pursues a Collaborative Approach to GIS
Greg Babinski, King County

King County and local agencies are working to plan, develop, and operate a collaborative regional GIS. The goal is to maximize benefits and minimize costs for GIS for all regional agencies into the future. A key outcome will be an optimally sustainable GIS that reduces costs for all and enables low-cost entry for medium and small agencies for state-of-the-art GIS applications for all public agency business needs. This presentation provides a status report on this multi-year effort.

In Washington public agencies face a budget challenge every year by a hard 1% limit in state law on the increase in property tax revenue. At the same time there is significant duplication of effort and expense in local GIS operations. A collaborative regional approach to GIS would help ensure sustainable GIS for all agencies.

More than 150 GIS FTEs work for public agencies in King County. If only five (~3%) could be repurposed from duplicative data maintenance and non-value added back-office administrative functions, and applied to developing direct service GIS applications and end-user support, GIS would become more affordable, sustainable, and deliver increased ROI for King County, Seattle, and agencies across the region.

How Smart Cities and Utilities use Analytics to Drive Decision Making for Asset Management and Maintenance
Matt Harmon, Cityworks

GIS has long been a mission-critical system of record for local government and providing safe and sustainable infrastructure is a critical priority for community leaders, utility managers and a reasonable expectation of citizens. Many cities and utilities still rely on paper, silos of conflicting information and even staff memories to prioritize maintenance

dollars and activities. A Smart City or Utility uses analytics to determine maintenance activities forecast replacement strategies and identify risk. This session will discuss best business practices for using analytics to calculate risk to prioritize decision making within your asset management program.

 The session will include case studies of cities within the United States using Cityworks© GIS-Centric Public Asset Management software as their asset and work management system. Topics includes Cityworks Operational Insights as Esri ArcGIS Insights.

Tuesday, April 24   8:30 AM

WORKSHOP: Machine Learning and Raster Maps in R   Room 333
Emilie Henderson, Institute for Natural Resources

In this workshop, we will learn to build a basic species distribution model using the random forest machine learning algorithm, and the raster package within R. The tools that we will use are a solid foundation for further raster analysis within R (not just species distributions).

The topics that we will cover include methods of data management and integration for external databases, raster data within R, the random forest algorithm as it is implemented in R, and some functionality for assessing model accuracy. We will also learn about how to efficiently build large raster model predictions within R.

Duration: Half-day (3.5 hours)

Max class size: Approximately 12

Special instructions for students: Students should bring a laptop with R, and RStudio installed. Ideally, they should also have the following packages installed within their version of R: randomForest, raster, sp, rgdal, RSQLite

Web Applications 1   Room 327-328

Guidance for Web AppBuilder Widget Development
David Howes, David Howes, LLC

Esri's Web AppBuilder supports the creation of web applications that can be extended using JavaScript widgets. In this rich instructional session, targeted at the beginner and intermediate level, guidance will be offered with respect to the creation, implementation and deployment of widgets, using as examples simple widgets, created from scratch during the session, and more complex examples developed for Polk County GIS and the City of Seattle Department of Transportation's Bike and Pedestrian Safety Analysis project. Following an introduction to core widget concepts, further considerations will be addressed, including development and deployment strategies, useful tools and the direction of the Esri Web AppBuilder program. In keeping with the GISPD.com goal of supporting GIS professionals at all levels, the presentation is designed to be as helpful as possible while striking a balance between specific details and general concepts.

Open Source Organizational Web Apps
Chad Dettlaff, Port of Portland

Initially, the Port of Portland deployed map applications using Geocortex and other Esri resources, which are proprietary code, CPU intensive, overbuilt UI, and sluggish on mobile devices. To overcome these issues, the Port's GIS team set out to build a light-weight app using Mapbox GL JS and other open source libraries. Since the app's release, user interaction has increased substantially, especially in the mobile realm. This talk will demo the Port's development, the open sourced technology that runs it, and how to get the code via GitHub so you can start building super-fast, fully responsive organizational apps with an intuitive design…in just minutes.

Data Science II: Databases   Room 238

SQL Server Spatial Data Types and ArcGIS
Richard L'Esperance, Campbell Global, LLC

Relational Database Management Systems have long recognized the need to discover relationships between records in a spatial context. Oracle, IBM and Postgres have been developing spatial data types since the 80s, but until recently mass adoption by the GIS community has been sparse. Microsoft was a late comer to the party and introduced spatial data types in 2008. ESRI recently shifted its enterprise spatial database storage to support the native spatial types of modern RDBM systems by default, retiring their own spatial storage types.

This presentation aims to give the audience an introduction into what spatial data types are, Microsoft's implementation of spatial types and how they can be integrated into a GIS database application or reporting and dashboards. The presenter will introduce SQL queries that interact with SQL spatial data, and python and Dot Net code that calls SQL databases and SQL reports.

Using Spatial Tables as Query Layers in ArcGIS
Thomas Elder, Department of Human Services

This presentation will focus on how to use spatial tables in SQL Server, introduced in the previous presentation, with ArcGIS as Query Layers. Query Layers are a good way to store spatial data together with business data in same database and use it throughout your organization. The similarities and differences between spatial tables, and ESRI Query Layers and Feature Classes will be presented. Examples of creating, using and editing Query Layers will also be presented.

Custom Geospatial Stack
Dana Maher, Skyward

Abstract coming soon!

WORKSHOP: Introduction to Survey123 for ArcGIS   Room 296/298
Shane Clarke, ESRI

The presentation will show how to how to use Survey123 for ArcGIS to optimize form-centric data collection workflows. Examples will be provided of real-life use of Survey123 in multiple organizations.

This presentation will cover the following topics:
* How to design effective smart forms
* How to make these smart forms available for data capture from web browsers, smartphones and tablets
* How to easily analyze and shard the data collected from the smart forms.

Duration: 90 minutes

Max class size: 45

Special instructions for students: None

Remote Sensing II: UAS   Room 327/328

Seeing the Forest for the Trees (400 ft. in the Air): UAS Innovations for Natural Resource Managers
Erik Strandhagen, Flo Analytics

Natural resource managers are increasingly utilizing Unmanned Aerial Systems (UAS) for data collection and analysis. This presentation will explore how UAS can be an integral natural resource management tool for capturing high-definition site photos and videos of a site; aerial mapping; terrain modeling; volumetric analysis; and vegetation mapping.

We will take a deep-dive into UAS in the wood products industry, exploring how environmental consultant Maul Foster & Alongi developed a custom desktop GIS tool that automates complex and time-intensive measurements for counting log decks using volumetric analysis. We'll demonstrate how the Python pandas-based tool runs in Esri ArcGIS desktop software and can be used to calculate cross section area based on the digital surface model and digital terrain model surfaces derived from structure from motion (SFM) software. We'll showcase a real-world example of where the tool made a big difference for a wood products producer and demonstrate how the tool can measure log yard cross-sectional area calculations in a matter of minutes.

Water Conservation Using UAS
Javier Blackmore, EYEON18

Abstract coming soon!

Using Unmanned Aircraft Systems to Manage Federal Lands
Corey Plank, Bureau of Land Management

The U.S. Bureau of Land Management uses small Unmanned Aircraft Systems (sUAS) to assist in its mission to administer more than 247 million acres of public lands in the United States. From mapping vegetation and assessing habitat to fighting wildland fires, sensors aboard sUAS provide necessary information to managers and personnel on the ground.

Data Science III: Business Intelligence   Room 238

Bitcoin, the Gold Mine for GIS
Josh Tanner, State of Oregon Geospatial Enterprise Office

Abstract coming soon!

Using Power BI for Geospatial Visualization
William Bezick, State of Oregon - State CIO's Office

The combination of Power BI and ArcGIS map controls gives anyone the ability to add multiple layers using existing geo location information. This is a workaround to solve single reference layer selections using ArcGIS Maps for Power BI controls in Power BI Desktop.

Alteryx and ArcGIS: How Two Invaluable Tools Work Together for Data Analysis and Visualization
Alex Brasch, Flo Analytics

Oregon Department of Environmental Quality (DEQ) and Oregon Health Authority (OHA) are undertaking an effort to redevelop and improve rules that govern air quality standards to better protect Oregon's communities from air toxics. To better understand emission sources and identify particularly at-risk populations, the DEQ and OHA employed a health risk based approach and requested air contaminant discharge permit holders to submit emission estimates for 633 air toxics. The result was a massive inventory of nearly 1,000 Excel files containing emission data calculations for each permitted industrial facility in Oregon. Compiling and analyzing the data for future facility comparisons was no small feat.

This presentation will explore how Alteryx and ArcGIS were employed to overcome the data complexities and provide a clearer path forward for protecting public health. Examples will be discussed concerning how the data blending and analytics capabilities of Alteryx were leveraged to process the tabular data, perform calculations, and incorporate social justice analysis, while ArcGIS was used to map facility locations and visualize the ranked results in an interactive web map. Insights from the results include a general understanding of at-risk populations in relation to emissions and the identification of industrial activity areas for focused improvement efforts.

WORKSHOP: Deep Dive Survey123 for ArcGIS   Room 296/298
Shane Clarke, ESRI

The presentation will discuss advanced capabilities of Survey123 for ArcGIS. This presentation will cover the following topics:

- Advanced XLSForms techniques for creating more complex forms
- Creating forms for sketching and annotating diagrams or photos
- Extracting and using location and photo EXIF information
- Creating print templates
- Creating surveys from existing feature services
- Editing of exiting features
- Integration of Survey123 with other ArcGIS apps, such as Collector for ArcGIS and Explor for ArcGIS

Duration: 90 ;minutes

Max class size: 45

Special instructions for students: None

Tuesday, April 24   1:30 PM

WORKSHOP: Spatial Analysis and Visualization with R and Leaflet   Room 333
Aaron Cochran, Oregon Department of Human Services

This workshop is intended to introduce users to spatial data analysis and data visualization using the R language for statistical computing. The end product will be an interactive map, designed in R using the Leaflet.js JavaScript library, and using data pulled from publicly available sources. Data acquisition, transformation, analysis, and visualization will all be done using only R and RStudio, providing a free and open source tool for spatial data analysis. Class materials will be made available online prior to the workshop. Workshop participants will need to supply a computer with R and RStudio installed on it, and will need an internet connection.

Duration: Half-day (3.5 hours)

Max class size: 10-12

Special instructions for students: Bring a laptop with R and RStudio installed on it. Instructor will help everyone download the course materials once they are in class.

WORKSHOP: GISCorps Mapathon 2: Supporting Humanitarian Projects with OpenStreetMap (OSM)   Room 327/328
Emmor Nile, URISA GISCorps

The workshop will have have a brief overview of OpenStreetMap (OSM), the Humanitarian OSM Team (HOT), and the use of JOSM to contribute to the worldwide OSM database. The majority of the time will be spent in a mapathon format with participants using their own computer.

Duration: 90 minutes

Max class size: 20 people

Special instructions for students: Bring a laptop with mouse to contribute to humanitarian projects. A tablet or computer without a mouse is not adequate. It is best to create an OSM user name and download JOSM prior to the workshop (openstreetmap.org).

Web Application II   Room 238

Real-time Transit Trip Data Visualization and Analysis with Python, SQLAlchemy and Leaflet – A Case Study of TriMet
Baofeng Dong, Trimet

Origin-Destination (O-D) data is critical to transit agencies for service planning and equity analysis. Traditionally, O-D data has been collected using the paper and pencil survey method, which makes real-time data analysis and visualization all but impossible. To circumvent some of the pitfalls of paper surveys, TriMet has been using tablets to collect O-D trip data since 2014. In this talk, I am going to introduce to you an innovative approach that we developed to visualize and analyze O-D trip data in real-time using TriMet as a case study. In particular, I will show how we use Python and SQLAlchemy to build server-side trip data RESTful web services API that are consumed by the front-end Leaflet map. I will also walk you through various PostGIS SQL tools and shell scripts that we use to store and analyze spatial data.

TNExT Tool Use Case Demonstration
Phillip Paulson, Trillium Transit and Oregon Department of Transportation

Participants will be introduced to the open-source TNExT web application developed by Oregon State University for the Rail and Public Transit Division(RPTD) of the Oregon Department of Transportation to track the impact of different investments and policy decisions on the statewide transit network and inform future decisions. This will include a brief introduction to the general transit feed specification and demographic data used by the tool. The web-mapping capabilities of the tool will be introduced, followed by an exploration of a sample of the tabular reports that the tool produces, with a focus on reports that RPTD has used to gain greater insight about the transit network, including spatial connection opportunities between services, reducing out-of-direction travel, and assessing the transit needs of towns throughout Oregon, and assessing the level of transit service to communities of interest.

Realizing the Full Potential of Web GIS: A Case-study with Dynamic Labeling and Electric Networks
River Taig, Resource Data, Inc.

Web-based mapping has evolved tremendously over the last two decades. Gone are the days where browser-based maps were only for simple tasks. Today, complex algorithms and GPU enhanced visual processing are routinely executed on client browsers. Web apps take volumes of data offline and through well-engineered tooling, synthesize and beautifully present that data.

This presentation will look at analytic and visually intensive examples where web-based GIS surpasses the capabilities of desktop GIS.

A particularly good example is in the area of generating dynamic annotation and labels on a web map. Resource Data, Inc. has created a prototype widget using Esri's Web Application Builder which enables users to generate label expressions dynamically based on both feature attributes and related data. By taking advantage of a modern browser's capabilities to use local storage, text on map generation is highly performant and provides exciting in-depth insights into what is otherwise a sea of meaningless data.

Traditionally analysis of electric networks is performed through server-side geoprocessing functions, with the aid of desktop GIS. In this second example, we'll illustrate a more modern way to conduct upstream and downstream analysis that improves performance and grants the ability to take tools offline.

It's an exciting time to be a GIS web developer; this session is designed to get you—whether you are a developer or not—thinking about creative ways to leverage the capabilities of web GIS.

Student Session   Room 296/298

The Shape of Voter Turnout in Portland City Council Elections
Matthew Gregg, Portland Community College

This presentation begins the process of taking a phenomenon as complex as voter turnout and examining some of the many factors which increase or decrease it, specifically focusing on Portland City Council elections. The question "Do contentious city council elections energize parts of the city which normally don't vote?" begins a line of inquiry which includes maps of precinct level voter data and census tract level demographic data, focusing primarily on their spatial relationships. The turnout percentages show us that, aside from a very small group of outliers, precincts share large and contiguous geographies with precincts of similar turnout numbers. Once we place these geographies over maps of demographic data we find that the areas of Portland which are least represented are also the areas with the lowest income, the highest diversity and the least opportunity. These conclusions raise questions of their own which will require further inquiry and research but it is the hopes of the presenter that they will also spark an incredibly vital part of any representative system of governance: discussion.

Research, Evaluation and Monitoring of Urban Active Transport Safety in Klamath Falls
William Natividad, Oregon Institute of Technology

Klamath Falls is a small city in south central Oregon that is in the process of a downtown revitalization project. This project is a collaboration between a state Regional Solutions Team, ODOT, the City of Klamath Falls engineering department and Blue Zones Project (BZP) members. The purpose of the project is to improve downtown foot and bike traffic (active transport) activity and safety as well as citizen health. The scope of the GIS products for this project have expanded to include all active transport routes within the urban growth boundary of Klamath Falls.

To evaluate how to best serve the community by improving active transport, BZP surveyed hundreds of members of the community to determine perceptions of individual route safety. The collected data was intended to inform policy makers about areas of citizen concern but difficult to grasp in a spreadsheet format. The data has now been digitized into a map product that will serve as a nexus for all community data regarding active transport safety. Data sources include ongoing BZP surveys, crime data pulled from published KFPD arrest logs and crowd sourced citizen reports via a mobile app.

An increasingly detailed picture will be created as data points are added over time, allowing policy makers improved decision making capabilities. When projects are completed, such as installation of new trails or safety features, the map will reflect changes in public perception of active transport safety over time and allow policy makers to evaluate the results of their efforts. Beyond simple data services, this map product will enable citizens to better inform their government and the government to better serve the citizens.

Areas of Blight along the Oregon Avenue Corridor - Klamath Falls, OR
Walker Woodman, Oregon Institute of Technology

This project uses GIS to define the various degrees of urban blight found along a heavily used corridor into Klamath Falls, OR. This area is a main travel corridor for both residential and non-residential traffic coming into Klamath Falls.

This study provides the basis for a longitudinal study on the status of blight along the corridor of Oregon Avenue and how this status may be impacted over time by the installation of a protected bike lane in the Spring/Summer of 2018. This project could therefore be used to help assess the transition in the overall attitudinal health/wellness of the community and could be objectively applied to other areas within the City of Klamath Falls.

A sheet with eight types of blight was used to determine the extent of blight in the proposed corridor. The source for the sheet was gathered from the Code Enforcement division in the City of Klamath. The blight status of a structure was characterized by boarded windows, broken windows, poor siding/peeling paint, poor roofing, fence in disrepair, weeds, junk/outdoor storage, rubbish, graffiti, junk cars/parts, broken sidewalk, and hazardous vegetation.

The above mentioned blight and sheet used will allow for future studies to be conducted in the same manner, increasing the reliability of the study.

This study shows that average 'blight' score for 154 properties along the proposed corridors. Out of the 154 properties only 26 had no sign of blight (17% of houses had zero evidence of blight). The most common incidence of blight was poor siding and or peeling paint.

Parks Within a 10-minute Walk in Klamath Falls, OR
Michael Ness, Oregon Institute of Technology

The City of Klamath Falls in southern Oregon would like to update its park system so that it reflects the growing national movement to make park systems easily accessible by foot. Parks that are within 10-minute walking distance from city residents are considered easily accessible by Barbara Tulipane, CEO of the National Recreation and Park Association. This GIS project is an effort to show the areas of Klamath Falls that do not have access to the park system within 10-minute walking distance. The resultant map will be used to show where new parks could be built so that every city resident is within a 10-minute walk to the park system. Network Analysis was the method that was used to create the resultant map, and it was found that 55% of the Klamath Falls area is over a 10-minute walking distance from the park system.

Additional Presentations
Ashley Smithers, Portland Community College
Liam Neeley-Brown, Portland Community College
Matthew Steiner, Portland Community College

Poster and Map Contest

GIS in Action 2018 Conference participants will have an opportunity to present a poster about map topics to engage in a completion, which includes prizes in poster categories.

Posters can be any size, but larger sizes are preferred. The maxim poster size is 4 ft x 6 ft, either in landscape or portrait layouts. For larger size landscape will fit better.

Maps will be judged by conference attendees according to the following categories:

Cartographic - The quality of the visual display

Analytic Presentation - Communication of meaningful patterns in data

Data Integration - Combining data from different sources

Public Service - Posters that display for the public

Student - Any enrolled in classes pursuing a degree or certificate

Awards will be divided amongst the winners of the categories after ballots are counted. The prize amount for the category will depend on how many are entered. The more entered the higher the overall prizes. There may be a second place prize if there are more than four

Registration has two cutoff dates:

April 13,2018 around 5:00 pm for getting the slide image to be projected on large screen and the abstracts published in the program

April 20,2018 around 5:00 for printing paper abstracts and to be on the ballot

Please pick up the poster after the conference to avoid loss of your creative efforts. Posters cannot be removed prior to closing Key Note.

URISA Business Meeting

Tuesday, April 24 at 1PM

Oregon URISA will hold a Chapter Business meeting open to all members of the public followed by a short Board meeting. Please join us to learn more about Oregon URISA, vote in the election for open positions, and find out what ORURISA can do to support you in your professional goals.

Post-conference Social

Tuesday, April 24 at 5:30PM

Please join us after the conclusion of the conference at Rogue Hall, 1717 SW Park Ave (across from PSU Smith Memorial Student Union) for a post-conference social.

Sponsored by URISA and ASPRS Young Professionals.
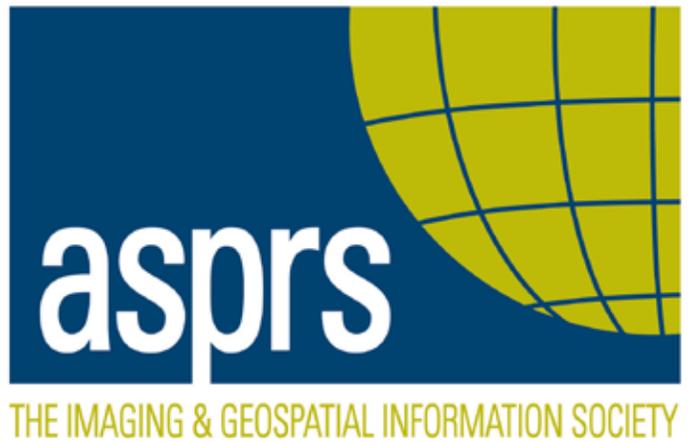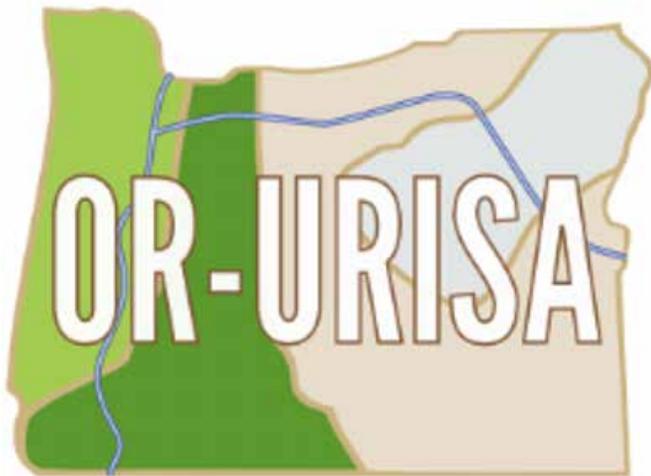
Vendors and Sponsors

Vendors and Sponsors

GIS in Action Committee Members

Chair/Program	Rich L'Esperance
Registration	Patty Morgan
Vendor Coordinators	Susan Otterson
Poster Session	Ben Brady
Volunteer Coordinator	Rebecca Tait
Workshop Coordinator	Theresa Burscu Oana Mckinney
Facilities Coordinator	David Percy
Audio Visual Coordinator	Neil Revello
Website	Joe Dully
Moderator Organizer	Matt Freid
Treasurer	Debbie Blackmore
Program Design	Shivon Van Allen
Members at Large	Cy Smith Alexa Todd Jamie Ludwig

Smith Memorial Student Union Maps

Second Floor

Smith Memorial Student Union

1825 SW Broadway

Room 296 / 298

Room 238

Men

Women

Stairs

Stairs

Third Floor

Smith Memorial Student Union

1825 SW Broadway

Main Ballroom

Keynote, Posters, Lunch and Exhibits

EXTERIOR BALCONY

Registration

Stairs

Women

Men

Room 323

Room 328

Room 333

Stairs