

# DISCOVERING THE WORLD THROUGH GIS

Join in the worldwide celebration of GIS Day, the annual salute to geospatial technology and its power to transform and better our lives.

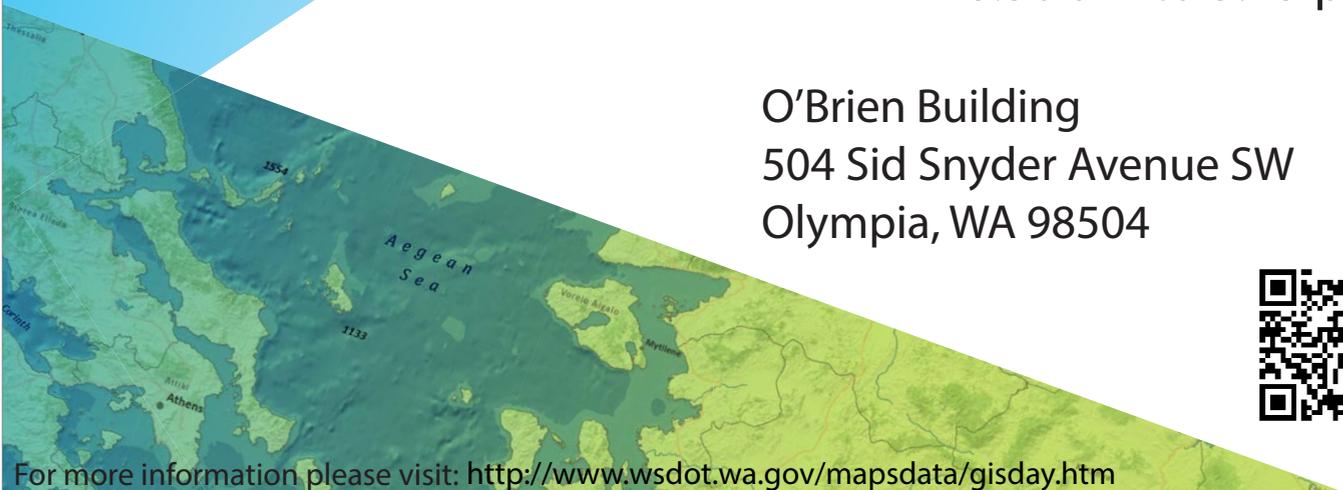
## GISday

Wednesday, November 19th 2014  
8:30 am to 3:45 pm

O'Brien Building  
504 Sid Snyder Avenue SW  
Olympia, WA 98504



For more information please visit: <http://www.wsdot.wa.gov/mapsdata/gisday.htm>





## GIS Day Schedule of Events

GIS Poster Gallery in Hearing Room E	8:30 am – 9:00 am	Networking & time for posters
	9:00 am – 9:45 am	Welcome & Keynote Address
	9:45 – 10:00	Break
	10:00 – 12:00	GIS Presentations:  Hearing Room B Hearing Room C Hearing Room D
	12:00 – 1:00	Lunch
	1:00 – 2:30	GIS Presentations:  Hearing Room B Hearing Room C Hearing Room D
	2:30 – 2:45	Break
	2:45 – 3:45	GIS Presentations:  Hearing Room B Hearing Room C Hearing Room D

Presentation rooms and Poster display areas are located at the end of this document.

2014 GIS Day Presentations – O’Brien Building, Capitol Campus, Olympia, Washington

Track	Time	Hearing Room B
	8:30	Poster Gallery in Hearing Room E
	9:00	Keynote by Colonel Gent Welsh
	9:45	Break
Web Mapping	10:00	<i>WSDOT Fish Passage Map Application</i> – Kathy Prosser & Jon Peterson, Department of Transportation
	10:30	<i>Water Quality Atlas, a New Tool to Learn About Our State's Waters</i> – Sharon O’Connor, Department of Ecology
	11:00	<i>WDFW's Private Lands Hunting Opportunities Framework Overview</i> – Jeff Foisy, Department of Fish and Wildlife
	11:30	<i>WSDOT's New Bridge Vertical Clearance Trip Planner</i> – George Comstock & Michael Heath Bright, Department of Transportation
	12:00	Lunch
Mobile	1:00	<i>Mapping Ambient Pollution Gradients Using Mobile Air Quality Data</i> – Jill Schulte, Department of Ecology
	1:30	<i>Crews with iPads - Lessons in Field Collection at WSDOT</i> – Reed Hunter & Joe Schmit, Department of Transportation
	2:00	<i>Cone Surveys: An Example of How ESRI Collector Can Shine!</i> – Kirk Davis & Lucy Winter, Department of Natural Resources
	2:30	Break
Mobile	2:45	<i>Science to the Masses: Environmental Monitoring Using Smartphones</i> – Rich Daniels, Department of Transportation
	3:15	<i>Using ESRI Collector for Field Data Collection</i> – Jeff Holden, Department of Natural Resources
	3:45	Presentations End

Track	Time	Hearing Room C
	8:30	Poster Gallery in Hearing Room E
	9:00	Keynote Address (Hearing Room B)
	9:45	Break
Land Use	10:00	<i>HRCD: A Pilot Study for a New land Use Management Decision Tool</i> – Matt Muller, Department of Fish and Wildlife
	11:00	<i>Statewide Trails Database Project Update</i> – Jenny Konwinski, Office of Financial Management
	11:30	<i>Building the First GIS-Based Public Lands Inventory for Washington</i> – Greg Tudor, Recreation and Conservation Office, Luke Rogers & Scot McQueen
	12:00	Lunch
Python	1:00	<i>Building Reports for a Web Application</i> – Christina Heimburg, Department of Ecology
Lightning Talks	2:00	<i>A Few Simple Python Tricks to Automate Map Production in ArcGIS</i> – Parker Wittman, Aspect ----- <i>Building an Editable Feature Service from a Query Layer</i> – Dan Saul, Dept. of Ecology
	2:30	Break
Emergency Response	2:45	<i>Washington Incident Management Team GIS – Situation Mapping</i> – Greg Tudor, Recreation & Conservation Office
	3:15	<i>Disaster Response Lessons Learned from a GIS Aspect</i> – Rick Geittmann, Washington Military Department
	3:45	Presentations End

Track	Time	Hearing Room D
	8:30	Poster Gallery in Hearing Room E
	9:00	Keynote Address (Hearing Room B)
	9:45	Break
Open Source	10:00	<i>Explorations into Open Source GIS</i> – David A. Howes, David Howes, LLC & Matt Stevenson, CORE GIS
Decision Making	11:00	<i>Better Questions Mean Better Maps</i> – Parker Wittman, Aspect Consulting
	11:30	<i>Data Without Borders - Standards for Washington State</i> – Joanne Markert, Leon Environmental
	12:00	Lunch
Modeling	1:00	<i>Geomorphic Mapping the Chehalis River Floodplain - Cosmopolis to Pe El</i> – Stephen Slaughter, Department of Natural Resources
	1:30	<i>Using Enhanced GIS to Administer Property Tax</i> – Scott Sampson, Department of Revenue
	2:00	<i>Producing a Depth-to-Bedrock Surface Using an Iterative Interpolation</i> – Daniel Eungard, Department of Natural Resources
	2:30	Break
ArcGIS Online	2:45	<i>Five Observations from Administering ArcGIS Online for Organizations</i> – Heath Brackett, Department of Transportation
	3:15	<i>Adapting ArcGIS Online to Your Need: A Case Study from WSDOT's GNB</i> – Bradley Bobbitt, Department of Transportation
	3:45	Presentations End

Animation of Migratory Movements of a Black-tailed Deer Doe	Cliff Rice	Washington State Department of Fish and Wildlife
Carlton Complex Fire Animated Progression Map	Nicki Eisfeldt	Washington State Department of Natural Resources
Cascading Response Equipment in Washington	Conor Keeney	Washington State Department of Ecology
Comparison of a Java and Trimble GNSS Receiver and Processing SystemKa	Karis Tenneson	Washington State Department of Natural Resources
Level 1 Ecological Integrity Assessments In Washignton State	Jeff Foisy	Washington State Department of Fish and Wildlife
Mapping Aquatic Vegetation and Habitat Using Single-beam Sonar	Andrew Ryan	Washington State Department of Natural Resources
Marine Spatial Planning Mapping Application	Libby Whiting	Washington State Department of Natural Resources
Nuisance pest defence using a Lidar controlled water jet	Eric Jackson	Washington State Department of Transportation
The Washington State Bathymetry Project	Meredith Payne	Washington State Department of Natural Resources
Tracking Proprietary Road Management Activities with ArcGIS	Don Hiller	Washington State Department of Natural Resources
WA DNR Route Events Tool	Jeffrey Holden	Washington State Department of Natural Resources
Washington Statewide Trails Database Project	Jenny Konwinski	State of Washington - OFM/OCIO
WSDA Agricultural Land Use	Perry Beale	Washington State Department of Agriculture
WSDOT Fish Passage Projects 2014	Kathy Prosser	Washington State Department of Transportation

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### Keynote Address – Colonel Gent Welsh



Colonel Gent Welsh is the Chief of Staff for the Washington Military Department and Washington National Guard, Camp Murray, Washington. In his position, Col Welsh leads an incredibly diverse workforce of both State and Federal employees supporting 7500 personnel involved in the Department's Domestic Operations, Homeland Defense missions, and joint initiatives.

Col Welsh began his military career by enlisting in the United States Air Force in 1988. He transferred to the Air National Guard in 1992 and was later commissioned as a Second Lieutenant in 1994. He has served in command roles at the Flight, Squadron and Group levels in Communications and Cyber organizations from 1994-2011. In 2011, Col Welsh was appointed as the Chief Information Officer/J6 for the Washington National Guard, specifically focusing on domestic cyber security issues. In 2013, Col Welsh attended the USAF Air War College residence course in Montgomery, AL. Col Welsh assumed his current position upon graduation in June 2014.

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Web Mapping

### **WSDOT Fish Passage Map Application – *Kathy Prosser & Jon Peterson (DOT)***

Presentation of the history, purpose, highlights, and the challenges of WSDOT’s new Fish Passage Map Application.

Web Mapping

### **Water Quality Atlas, a New Tool to Learn About Our State’s Waters – *Sharon O’Connor (DOE)***

Demonstration of a simple prototype of the Water Quality Atlas and power point slide show of what's to come in the future robust application.

Web Mapping

### **WDFW’s Private Lands Hunting Opportunities Framework Overview – *Jeff Foisy (DFW)***

An Overview of and lessons learned from the development of WDFW's Private Lands Hunting Opportunities (PLHO) Framework. The PLHO Framework is an integrated series of web-based services and applications used to manage Private Lands Hunting Access and Enrollment Program. The PLHO Framework includes REST services and custom API’s that pull data out of a cloud Contract Management System and collect hunting and hunter data, provide an administrative QC environment, and feed public facing web applications like WDFW’s GoHunt and ArcGIS Online Hunting Access Web Maps as well as provide internal reporting tools.

Web Mapping

### **WSDOT’s New Bridge Vertical Clearance Trip Planner – *George Comstock & Michael Heath Bright (DOT)***

Provides a brief background on updating bridge vertical clearance data to GIS format, followed by demonstration of application. Presentation will finish with overview of challenges - mostly data challenges - that had to be overcome to complete this project.

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Mobile Track

### **Mapping Ambient Pollution Gradients Using Mobile Air Quality Data – *Jill Schulte (DOE)***

Mobile air monitoring can be a fast and economical way to measure and map the gradient of ambient pollution levels across a community. In this case study, the Washington Department of Ecology's Air Quality Program used a mobile nephelometer and GPS to assess spatial variation in fine particulate matter (PM<sub>2.5</sub>) across Vancouver, WA. We explored different strategies for route planning, data management, spatial aggregation and mapping in order to improve data accuracy and minimize temporal bias.

Mobile Track

### **Crews With iPads – Lessons in Field Collection at WSDOT – *Reed Hunter & Joe Schmit (DOT)***

WSDOT successfully employs field collection devices for hundreds of maintenance crew members, saving millions in dollars to the agency. Yet the deployed technology is aging, and a better solution with even more potential is under development for 2015 using iPads and ArcGIS. This brief presentation will outline how "HATS" has been a game changer for documenting highway maintenance activities, and how making a new collector in iOS will be head and shoulders better than the current solution.

Mobile Track

### **Cone Surveys: An Example of How ESRI Collector Can Shine – *Kirk Davis & Lucy Winter (DNR)***

ESRI's fairly-new Collector App can prove to be a useful tool for tablet-based (iOS or Android) mobile data collection. This talk will present a concrete example of how the WA-DNR's Seed Plant has applied the Collector App to address their Cone Survey program's mobile data collection needs. Come prepared to hear about the journey of creating a successful Collector App with topics including: Collector 'friendly' file geo-database design, disconnected editing, and leveraging field user knowledge.

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Mobile Track

### **Science to the Masses: Environmental Monitoring Using Smartphones – *Rich Daniels (DOT)***

With the advent of the “smartphone”, we are now being encouraged to replace our phones every two years or less. These phones contain GPS chip that can track over 20 satellites and achieve position accuracy of about 5 meters, have built in cameras with GeoTagging capability, and have CPU speeds and memory sizes that equate to desktop systems just 10 years ago. As a result, with some planning it may now be possible to crowd source many data collection and environmental monitoring efforts.

Mobile Track

### **Using ESRI Collector to Field Data Collection – *Jeff Holden (DNR)***

With and iOS or Android mobile devices, Collector enables field workers to gather data in the field and store it immediately on ArcGIS Online. This presentation will demonstrate how to set up services for editing, and use new caching tools to enable storage of maps and gathering of data without an internet connection.

Land Use Track

### **HRCD: A Pilot Study for a New Land Use Management Decision Tool – *Matt Muller (DFW)***

Developed through WDFW by comparing NAIP ortho photography from different time periods, High Resolution Change Detection (HRCD) quantifies land cover change across the entire Puget Sound watershed. Not to be confused with wall-to-wall land cover, the HRCD project reliably quantifies canopy loss and impervious surface increase between 2006 to 2009 and 2009 to 2011. As a narrow, yet deep and robust dataset, the HRCD has potential to have profound impacts on land use management decision making.

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Land Use Track

### **Statewide Trails Database Project Update – *Jenny Konwinski (OFM)***

Washington is missing a statewide trails database. Some state and federal hiking, biking, horse, and rail trails have been compiled into a simple GIS dataset, but valuable local and regional data are still needed. This project is the first iteration of building a suitable spatial data structure that can be improved over time. Using online collaboration tools, interested parties will be able to contribute to a single source of best compiled data from all levels of government.

Land Use Track

### **Building the First GIS-Based Public Lands Inventory for Washington – *Greg Tudor (RCO), Luke Rogers (UofW) & Scot McQueen (GeoEngineers)***

In 2013, the Legislature directed the Recreation and Conservation Office to build a GIS-based public lands inventory. The inventory included all federal, state, local government, and tribal ownership, land uses, and recent state acquisitions funding and sources. The Legislature gave RCO just one year and \$200,000 to compile the data, build a web mapping application to provide public access, and provide the data to the Joint Legislative Audit and Review Committee for analysis.

Python Track

### **Building Reports for a Web Application – *Christina Heimborg (DOE)***

The Spills Program with WA Dept. of Ecology has an ArcSDE SQL geodatabase to store Spill Response Plan information for the State of Washington. Their team needs a way to produce on-the-fly reports with the most current information. Part 1 will present the conceptual design of developing online reports. Part 2 will dig into the code and explain some hurdles and possible solutions to integrating multiple technologies to give the user a simple interface and clean consistent reports.

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### Lightning Talks Track

#### **A Few Simple Python Tricks to Automate Map Production in ArcGIS – *Parker Wittman (Aspect)***

It is fairly common (and easy) for map makers to use “Data Driven Pages” in ArcGIS to produce map books that iterate through a number of map extents, displaying the same data on each. But what if you need to iterate through \*different data\* over the same map extent? This presentation outlines a few simple tricks involving map templating, Python scripting, and data preparation that can enable automated production of maps in ArcGIS.

### Lightning Talks Track

#### **Building an Editable Feature Service from a Query Layer – *Dan Saul (DOE)***

At 10.2, Esri has enabled editing a query layer through a feature enabled map service. This talk will lead you through the steps necessary to setup an editable feature service on top of a query layer against a spatially enabled SQL/Server table.

### Emergency Response Track

#### **Washington Incident Management Team GIS – Situation Mapping – *Greg Tudor (RCO)***

This year, disaster response has received a lot of attention through the Oso landslide and Carlton Complex and other wildfires. State and national level incident management teams include a Geographic Information System Specialist. The team GISS collects, manages, maps, and distributes incident information to responders for planning and coordinating operations and to the team Public Information Officer for informing the local community and media.

### Emergency Response Track

#### **Disaster Response Lessons Learned from a GIS Aspect – *Rick Geittmann (Military)***

Provide information relating to data needs as they relate to Disaster Response employing a web based situational viewer and how spatial data provided decision makers and Emergency Support Function divisions in the State Emergency Operations Center with critical information to provide support to the local jurisdictions.

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### Open Source Track

#### **Explorations into Open Source GIS – *David Howes (David Howes LLC) & Matt Stevenson (CORE GIS)***

The purpose of this presentation is to support GIS decision-making, communication and technological innovation through an exploration of the individual, organizational and cultural facets related to open source GIS and proprietary GIS. The presenters will relate their findings and experiences with respect to each domain and convey their observations from individual conversations, local user group meetings and international conferences.

### Decision Making Track

#### **Better Questions Mean Better Maps – *Parker Wittman (Aspect)***

Whether part of large organizations, small consulting firms, government departments, or as single-shingles, GIS professionals are almost always working in highly-collaborative environments. But among the litany of skills we imagine as drivers of GIS project (and career) success, it is too common to undervalue our competence in asking questions and making something of the answers. This presentation discusses strategies and approaches for asking better questions at all stages of a GIS project.

### Decision Making Track

#### **Data Without Borders – Standards for Washington State – *Joanne Markert (Leon Environmental)***

Data sharing among agencies is critical for protecting the State investment in spatial data. This presentation will review recent updates to the standards and policies, requirements for agencies when developing or updating new datasets and how to keep your agencies in compliance. The updated standards and policies include: Spatial Data Management Policy; Spatial Metadata Standard; Spatial Data Standards; Spatial Application and Data Services Metadata; and, Web Mapping Publication Standard.

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Modeling Track

### **Geomorphic Mapping the Chehalis River Floodplain – Cosmopolis to Pe El – *Stephen Slaughter (DNR)***

Recent publication of a visualization tool is intended to assist in identification of geomorphic and anthropogenic landforms in the Chehalis River floodplain. The seamless dataset assists geologic interpretations of subtle landforms on the floodplain for a 110-mile reach of the Chehalis River. The visualization tool was developed from a relative elevation model created from a lidar DEM.

Modeling Track

### **Using Enhanced GIS to Administer Property Tax – *Scott Sampson (DOR)***

Process improvements are key to providing the highest level of customer-focused service while achieving increased efficiency and accuracy. The introduction of this new GIS application modernizes and streamlines our state's apportionment process for centrally-assessed utilities, benefiting our customers and our staff. In 2014, this application received international recognition and awards from the International Association of Assessing Officers and Federation of Tax Administrators.

Modeling Track

### **Producing a Depth-to-Bedrock Surface Using an Iterative Interpolation – *Daniel Eungard (DNR)***

This talk will briefly cover the geologic history of the Puget Sound region, previous work on depth to bedrock models, and the method and results of our model. I will cover the challenges and lessons learned with data collection and interpretation from a wide variety of sources in addition to various interpolation techniques utilized during the project. The presentation will close with a demonstration of a fully interactive 3D diagram of the Bedrock Elevation Model.

ArcGIS Online Track

### **Five Observations from Administering ArcGIS Online for Organizations – *Heath Brackett (DOT)***

WSDOT has been managing the WSDOT Online Map Center since August 2012. Partially due to the browser-based, rapidly evolving nature of ArcGIS Online, the WSDOT Online Map Center requires a different management strategy than those used to manage ArcGIS Desktop environments. This talk will highlight 5 things to consider when administering an Organization within ArcGIS Online based on our experiences implementing the WSDOT Online Map Center.

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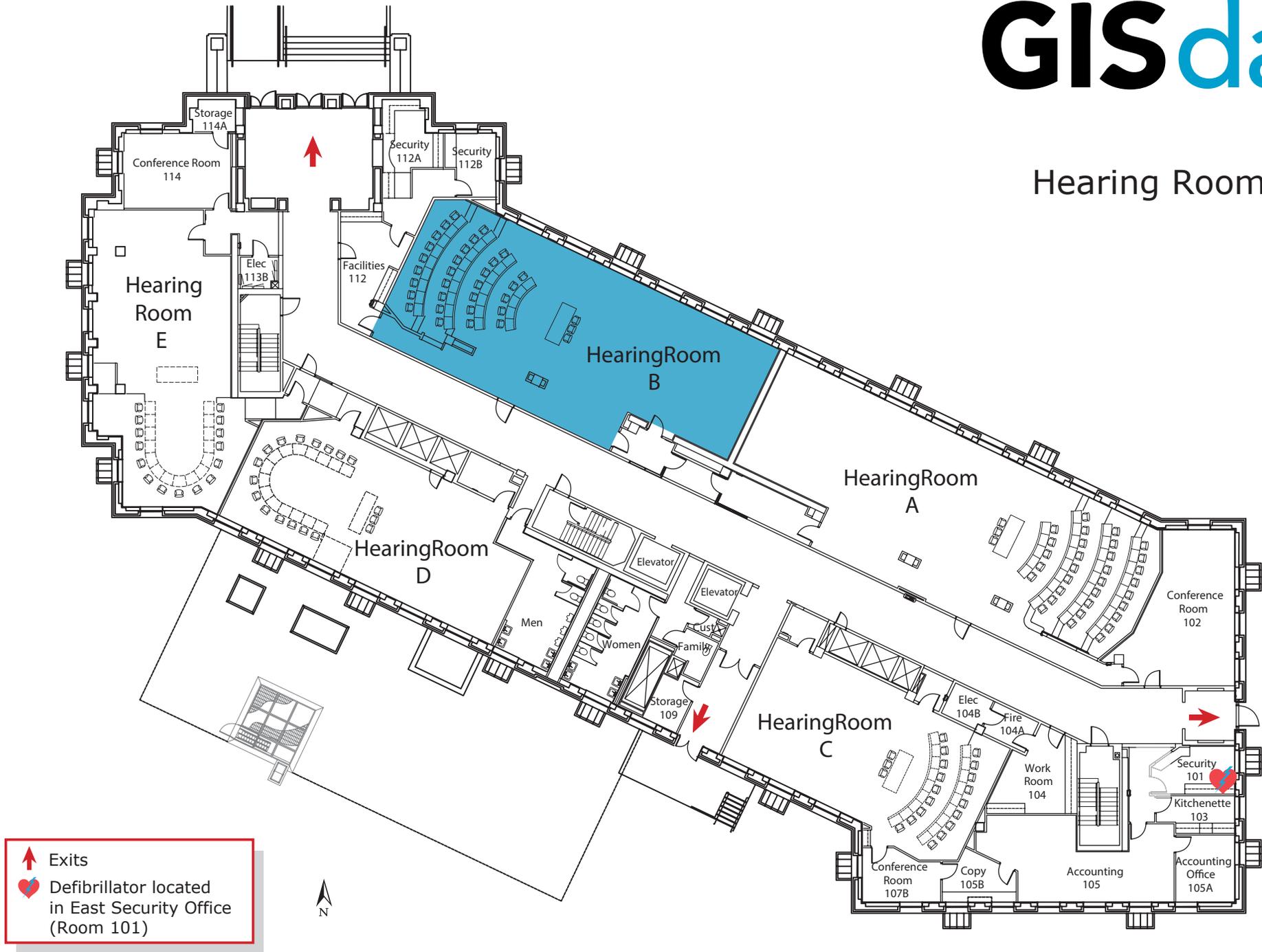
ArcGIS Online Track

### **Adapting ArcGIS Online to Your Need: A Case Study from WSDOT’s GNB – *Bradley Bobbitt (DOT)***

This presentation will cover the challenges and opportunities encountered by WSDOT's Office of Strategic Assessment and Performance Analysis in attempting to use ArcGIS online to fit their business need: telling transportation performance stories. Topics covered will include some technical information but will mostly be geared toward navigating internal WSDOT processes for online content as well as long-term spatial data management considerations.

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## Hearing Room 'B'

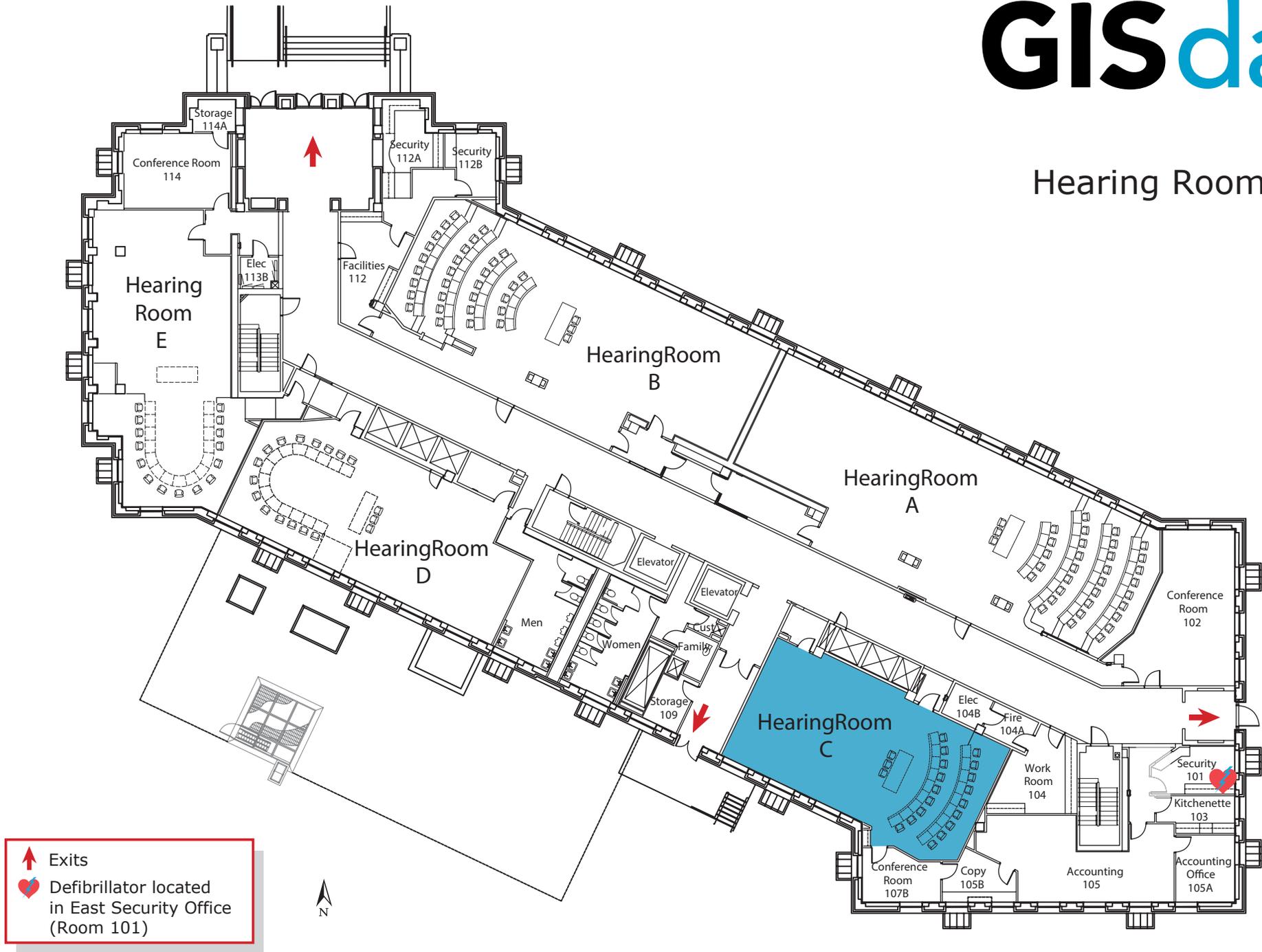


- ↑ Exits
- ❤ Defibrillator located in East Security Office (Room 101)



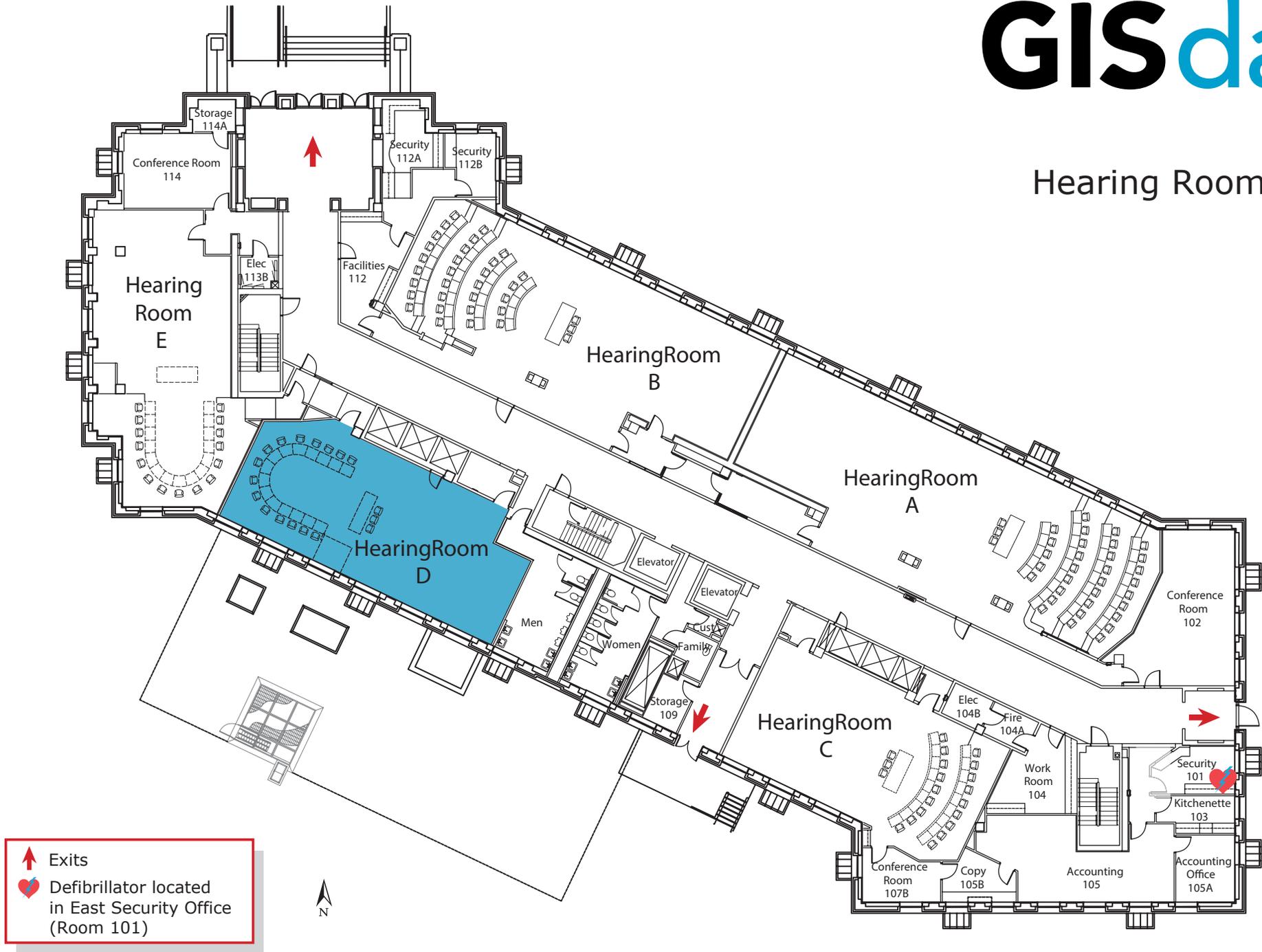
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## Hearing Room 'C'



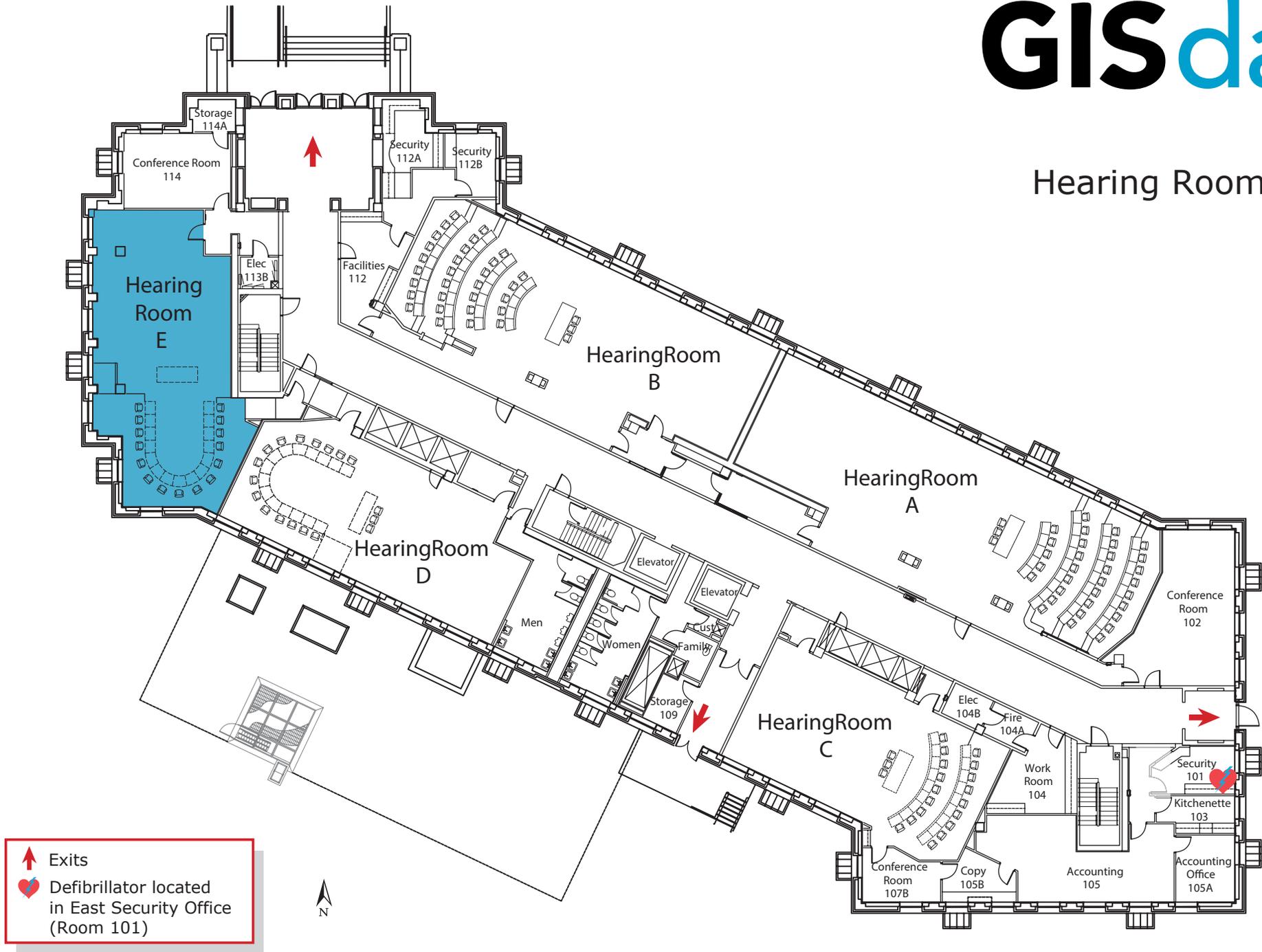
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## Hearing Room 'D'



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## Hearing Room 'E'



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