Democratizing GIS
Open Source Tools for
Everyday Mapping and Analysis

SUN-DD2   Sunday, November 21   2:00 - 5:00 PM

GIS platforms are powerful tools, but they can be expensive and unwieldy. Open-source GIS tools help navigate these concerns and expand access to geospatial data and analysis. In this session, learn about open-source GIS tools and how to integrate them into an office workflow.

Learning Objectives

1.   Understand the value open-source GIS tools can bring to the design process.

2.   Develop familiarity with open-source GIS tools and data.

3.   Explore how open-source GIS tools compare with proprietary GIS platforms.

4.   Learn how to integrate open-source GIS tools into an office workflow.

5.   Gain hands-on experience using open-source GIS tools to view, edit, analyze, and style spatial data.

6.   Learn how open-source GIS tools can be used with other technologies to develop site-scale datasets and analysis products.

Session Outline

1. **Democratizing GIS with Open-Source Tools**

   i. GIS is often synonymous with ArcGIS. While ArcGIS is a powerful tool and an industry leader, it is also expensive and can be difficult to use, creating barriers to use of GIS in the design process.

   ii. There are multiple open-source alternatives ArcGIS that are free to download and use. These platforms are built and maintained by a dedicated group of volunteer developers in academia, government, and the private sector.

   iii. Free open-source tools unlock access to publicly available datasets and sophisticated analysis products.

2. **Hands on with QGIS**

   i. Downloading and installing QGIS

   ii. Tour of the QGIS interface

   iii. Cartography 101 – Map projections, units, and file types

3. **Vector and Raster Analysis**

   i. Vector Analysis: filtering and selecting using geometry attributes, creating heatmaps, creating new vector data, creating editable maps for presentations.

   ii. Raster Analysis: elevation, contours, slope, hillshade, viewsheds, and landforms

4. **Next Steps: Advanced Applications and Technologies**

   i. Integration with CAD software for site design

   ii. Geospatial modeling and simulation for advanced site analysis

   iii. Digital fabrication and modeling

   iv. High-resolution aerial surveys and photogrammetry point clouds

5. **Conclusion**

   i. GIS is an important tool for translating global and regional issues to the site scale. Open-source tools allow design teams to fluidly integrate GIS tools and data into the design process across scales.

6. **Q&A**

Notes

Resources

OSGEO4W https://www.osgeo.org/projects/osgeo4w/

QGIS https://www.qgis.org/en/site/

GRASS GIS https://grass.osgeo.org/

GIS YouTube Tutorials by Brendan Harmon https://www.youtube.com/c/BrendanHarmon

Discover QGIS 3.x: A Workbook for Classroom or Independent Study by Kurt Menke

QGIS Map Design, Second Edition by Anita Graser

Brendan Harmon
Assistant Professor, Robert Reich School of Landscape Architecture
Louisiana State University, Baton Rouge, LA

Brendan Harmon is an assistant professor of landscape architecture at LSU's Robert Reich School of Landscape Architecture. He received a Master of Landscape Architecture from the Harvard Graduate School of Design, a Master of Philosophy in Geography and the Environment from the University of Oxford, and a PhD in Design from North Carolina State University. Brendan's research interests include drone data analytics, ecological robotics, and tangible modeling.

Tanvi Shah
Designer, Royston Hanamoto Alley & Abey | San Francisco, CA

Tanvi Shah is a Designer at Royston Hanamoto Alley & Abey and a graduate of Louisiana State University (LSU), where she earned her Master of Landscape Architecture and Graduate Certificate in Geographic Information Science in 2020. Her previous experiences include assisting in coastal policy and planning research at the LSU Coastal Sustainability Studio and serving as a Water & Wetlands Fellow with Healthy Gulf, an environmental and social justice advocacy non–profit. She also holds a BA in French, International Development, and Business from Tulane University and a MS in Hospitality and Tourism Management from the University of New Orleans.

Andrew Wright
Designer, SCAPE Landscape Architecture DPC | New Orleans, LA

Andrew Wright is a Designer at SCAPE and graduate of Louisiana State University, where he earned his Master of Landscape Architecture with a minor in Wetland Science and Management in 2020. His graduate thesis on the use of hydrodynamic modeling for the design of evolutionary coastal infrastructure in Lake Pontchartrain was recognized with an ASLA National Student Honor Award in the General Design category. Andrew also holds a BFA in Music Performance from The New School and a Graduate Certificate in Geographic Information Science from LSU. He is a 2019 LAF Olmsted Scholar.