# Enterprise GIS with QGIS & PostGIS

*Jessica Kane | IMAGIN Conference 2022*
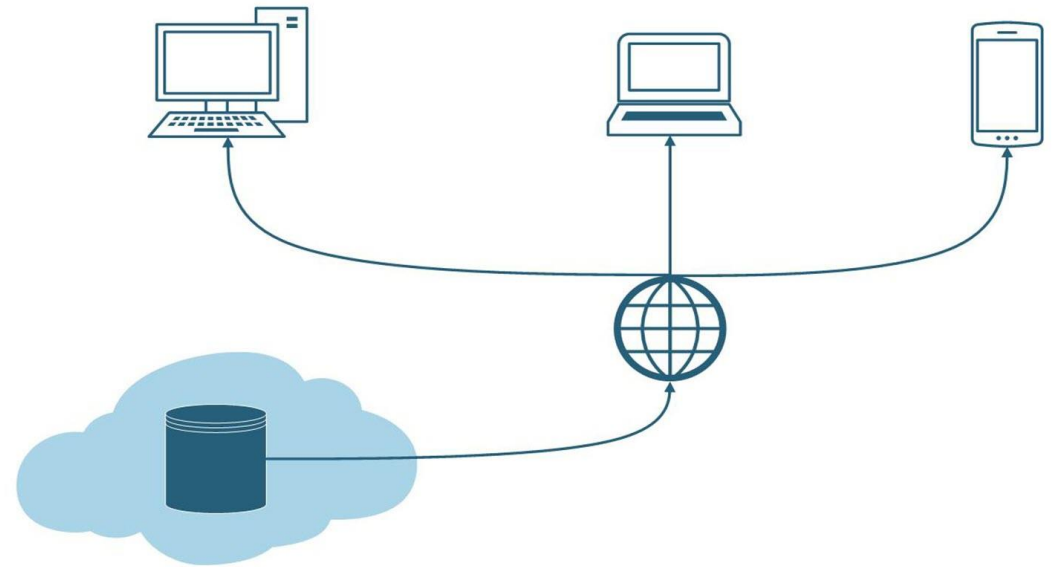
LINE 45

# Agenda

1. What is Enterprise GIS?
2. GIS&T BoK – Capabilities
3. Foundation: QGIS & PostGIS
4. Demonstration
5. Other Tools
6. Resources

# What is **Enterprise GIS**?

## Enterprise GIS

> GIS for an organization (not just one person)

> A system for managing geospatial data long-term (not just a single project)

# **Functional Capabilities** of Enterprise GIS



> **Centralized Storage of Geospatial Data**

> **Securing Sharing and Dissemination of geospatial data, maps, apps and tools**

> System Integration

> Web GIS / Internet GIS Capability

> Democratization

> Consolidation of the Enterprise GIS Function within the Organization

From the GIS&T Body of Knowledge

# Overview

**QGIS** *20 yrs old!*

- Open source desktop GIS
- View and edit vector and raster data in a variety of file formats and databases
- Tools include geoprocessing functions, spatial analyses, styling/cartography
- PyQGIS allows for scripting of geospatial processes
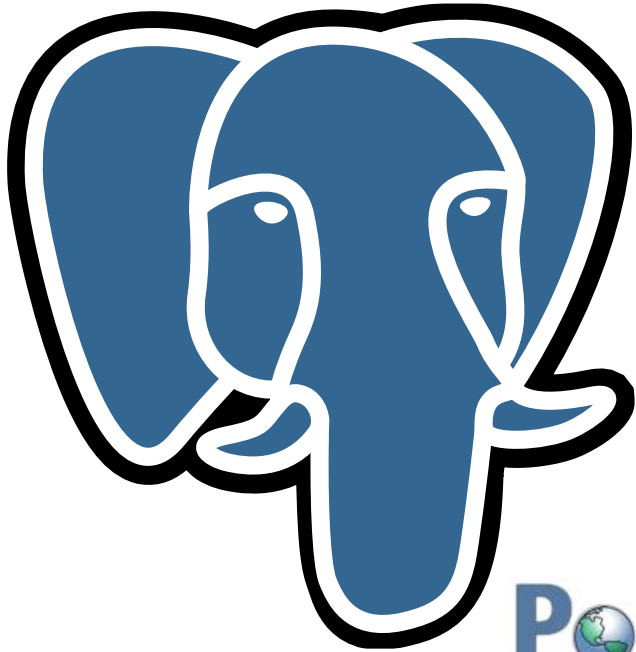- Works with other open source tools and plugins
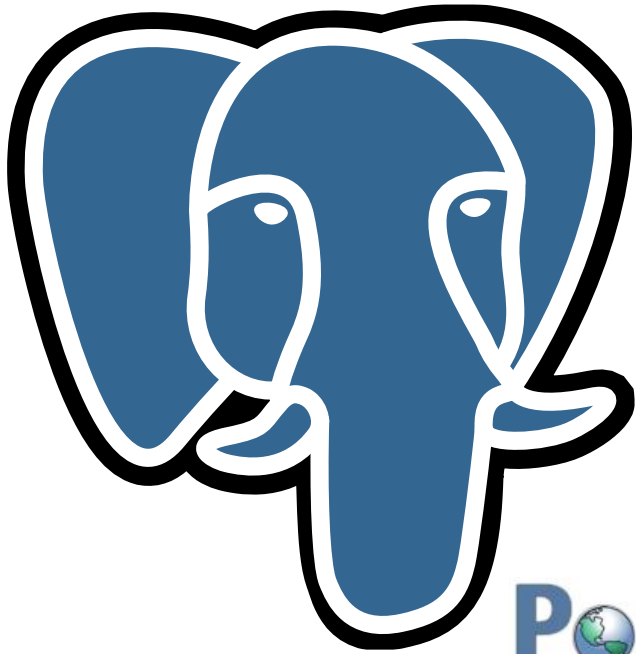
**PostGIS** *21 yrs old!*

- Spatial extension for PostgreSQL, an open source relational database system
- Supports location queries in SQL (buffer, intersects, etc)
- Supports vector & raster data
- Number of features makes PostgreSQL the most fully-featured spatial database
  - 3D objects, spatial temporal, network topology, vector tiles
  - ArcGIS Enterprise Data Store built on PostgreSQL

# **Centralized Storage** of Geospatial Data



- Easy to organize/maintain
- Multi-user, concurrent access
- System of record
- Track edit history

- Spatial analysis
- Spatial indexing
- Trigger functions
- Store rasters
- Integrates seamlessly with QGIS

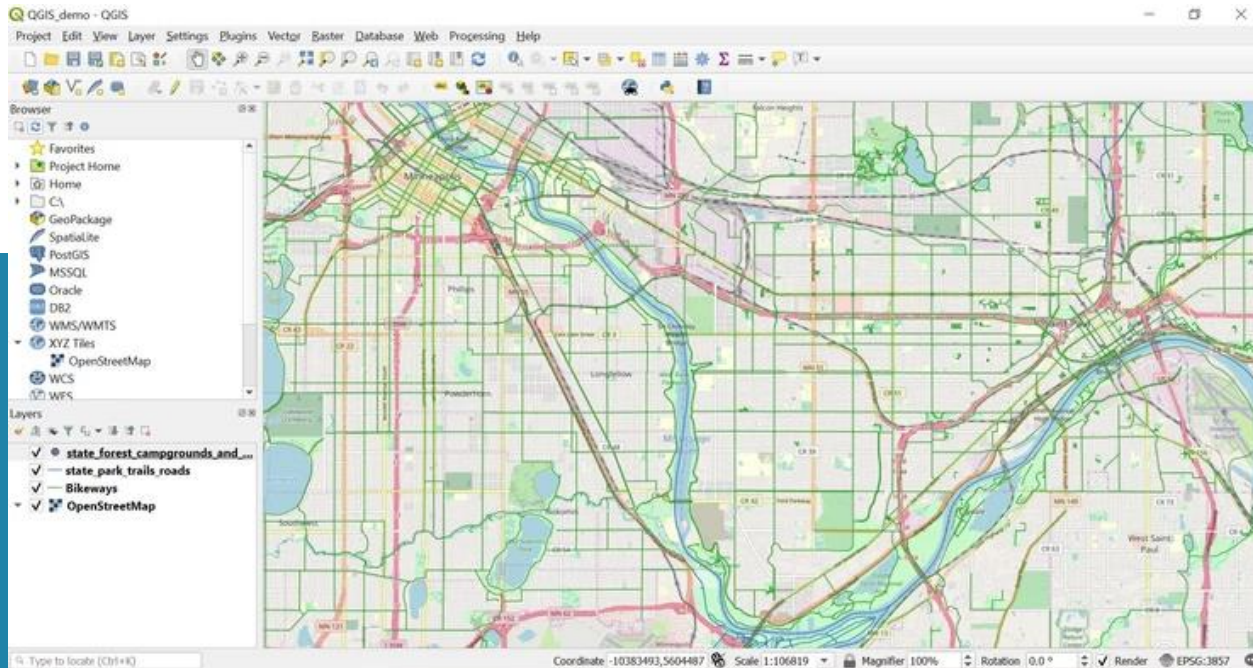PostGIS

# **Securing** Sharing and Dissemination



- > Permissions & security
- > User roles and groups
- > Schema, row & feature level security
- > Single sign-on

- > SQL constraints
- > Versioning
- > Data back-ups
- > Point in time recovery

# **Sharing** and Dissemination



> View/edit layers: permissions controlled by PostgreSQL

> Save QGIS styles & projects in PostGIS

> Soft deletions

> Form data input

> Mobile: QField, Input

> Offline projects

> DB Manager
>> Import layers to PostGIS
>> Edit schema
>> SQL Query Builder: view results on the map

**Demonstration**

Nasa Earth Ob

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QGIS Consumes Web Services
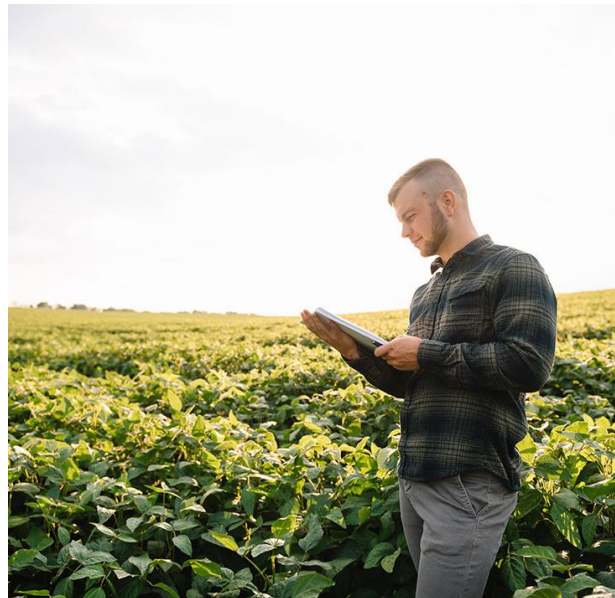
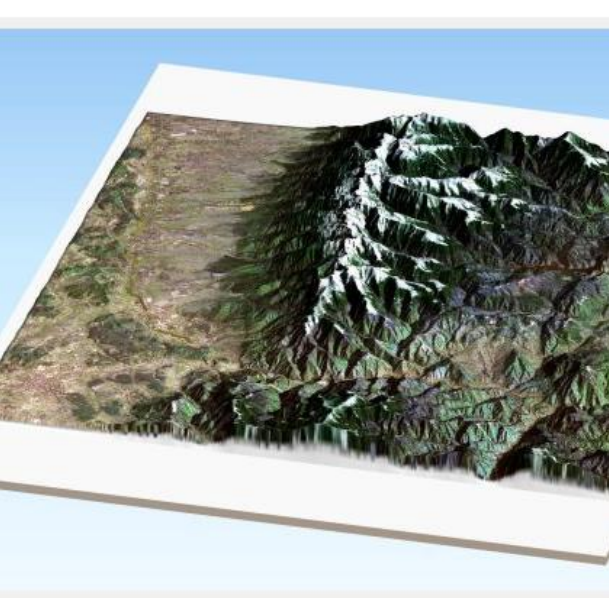Open Geospatial Consortium
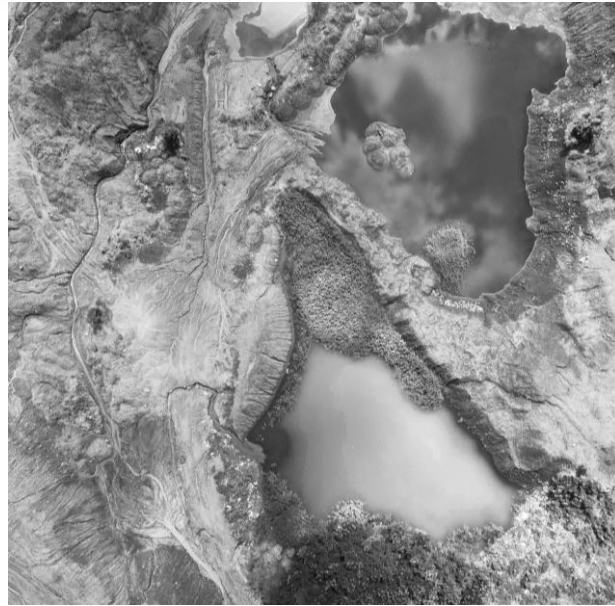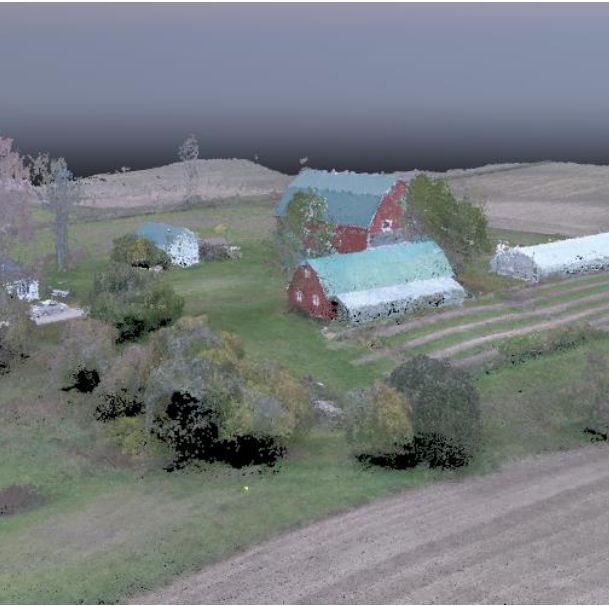
ArcGIS

Publish Web Services

QGIS Server

GeoServer

# Plugins & Integrations

- Open source: easy to build upon

- QGIS plugin ecosystem

- Easily view free and proprietary data in QGIS: HERE, Google Street View, Planet, OpenStreetMap

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QGIS Plugins

> qgis2Web, qgis2threejs

> GIS Cloud Publisher

> QGIS Cloud

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JavaScript Mapping Libraries

OpenLayers

MapLibre

Leaflet

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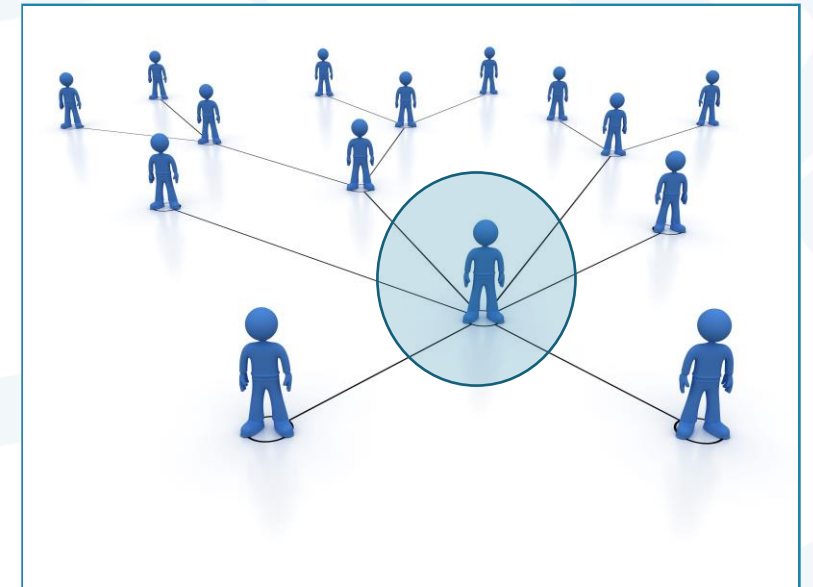
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# Resources

Articles:

- [Benefits of Using a Database to Manage Spatial Data](#)

- [Using QGIS with PostGIS: A Dynamic Duo](#)

- [Using QGIS and QField for Field Data Collection](#)

Tutorials:

- [Introduction to PostGIS](#)

- [QGIS Training Manual](#)



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