GWF
GEOSPATIAL WORLD FORUM
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GeoSolutions
your one-stop-shop for geospatial open source software

Leveraging Open-Source Software for Local Gov Management

Ryan Burley | GeoSolutions USA
Ryan.Burley@GeoSolutionsGroup.com
www.geosolutionsgroup.com

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Introduction – About Us

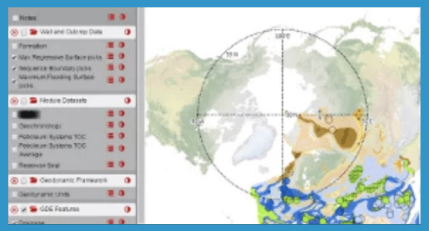
GeoSolutions
your one-stop-shop for geospatial open source software

- Founded in 2006, offices in Italy & US
- Our core FOSS4G products

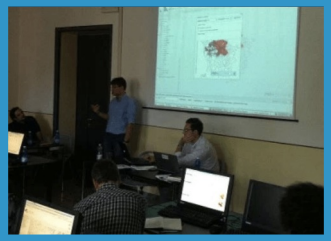
- Services

Enterprise Support Services

Deployment Subscription



Customized Solutions



Professional Training

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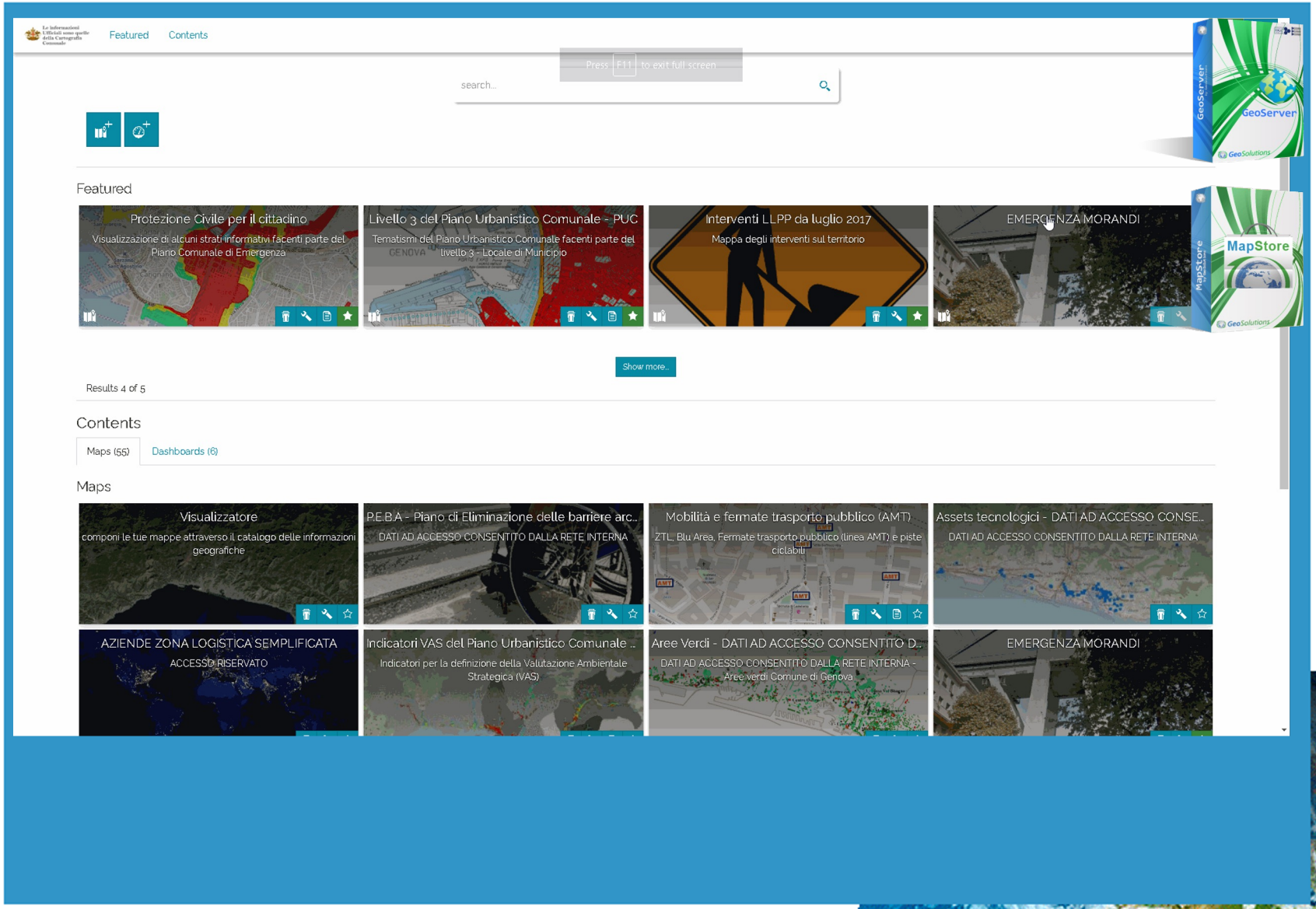
Digital Twin Use Case: City of Genoa

City of Genoa Geoportal and SDI



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City of Genoa Geoportal and SDI

- **Complemented Legacy Proprietary Software**
  - Oracle
  - ArcGIS
- **Maps + Dashboards**
- **MapStore 2 + GeoServer Cluster**
- **Multilevel - Enterprise security**
  - SPID
  - Active Directory
  - DBMS
- **Integration with third party software**
  - Map Embedding
  - Integration with Civil Works

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City of Genoa Geoportal

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City-wide GeoPortal

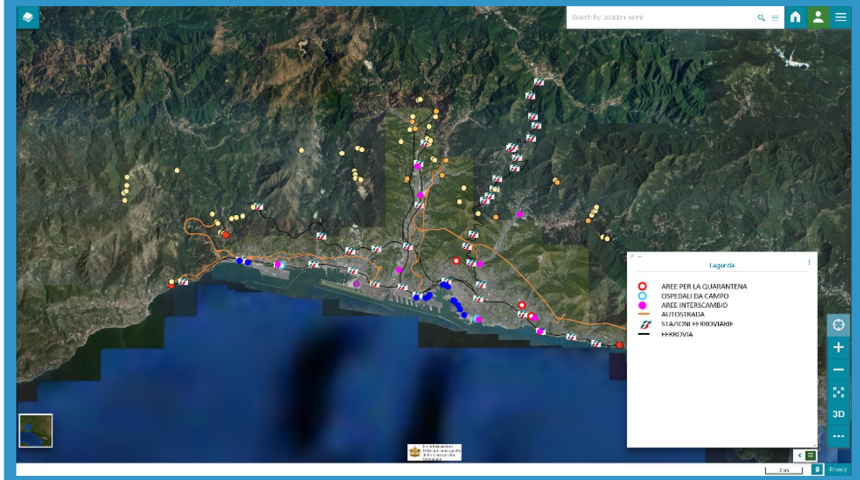
Smart City dashboards

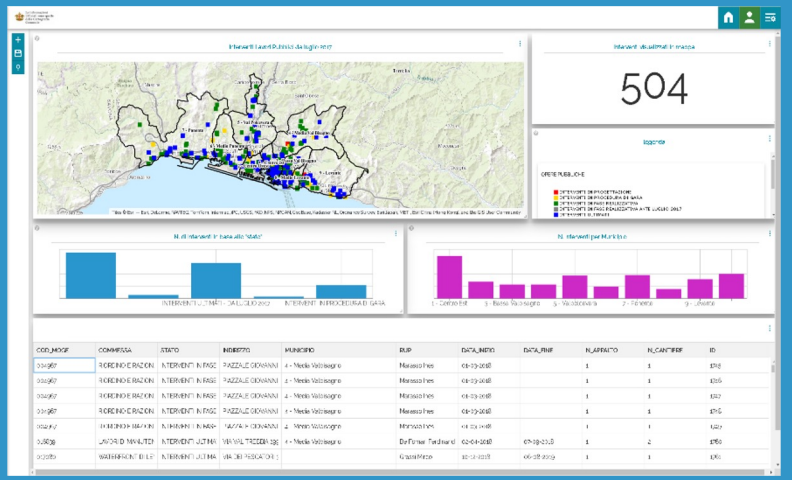
Indexes, maps and charts

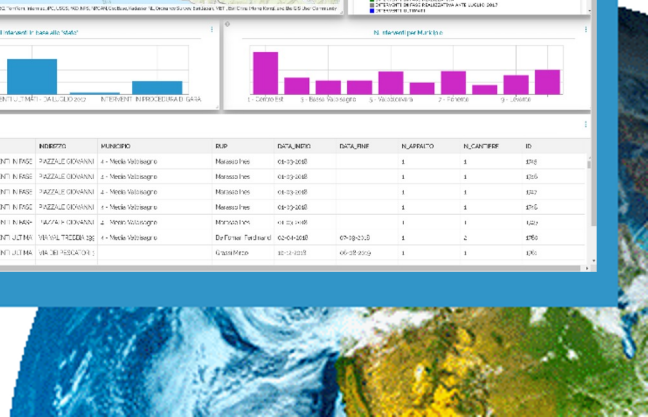
Internal + Citizens

Assets + Civil Works + Energy Data +

everything!







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City of Genoa - Video

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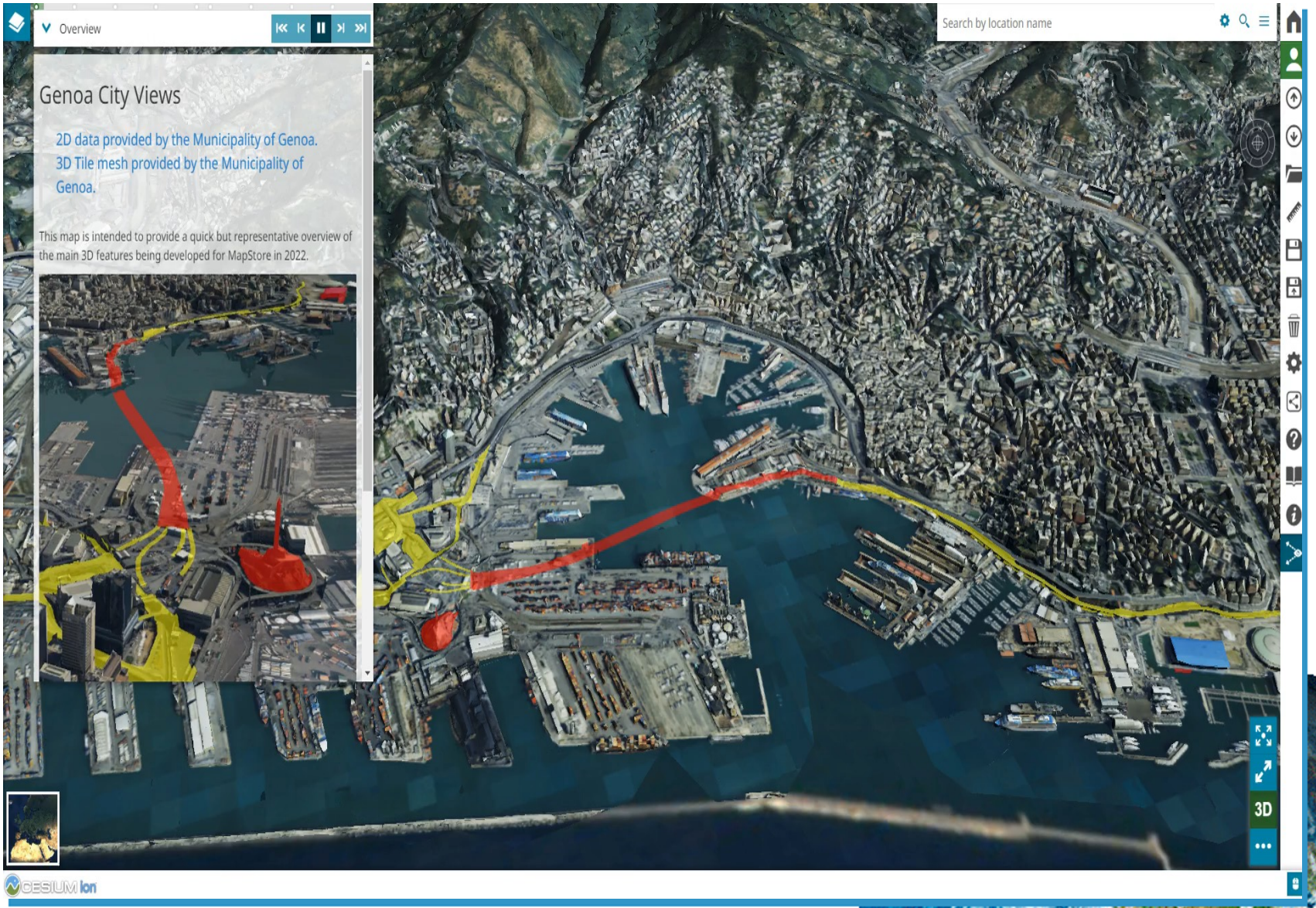

https://youtu.be/M5uCoS-lLbY

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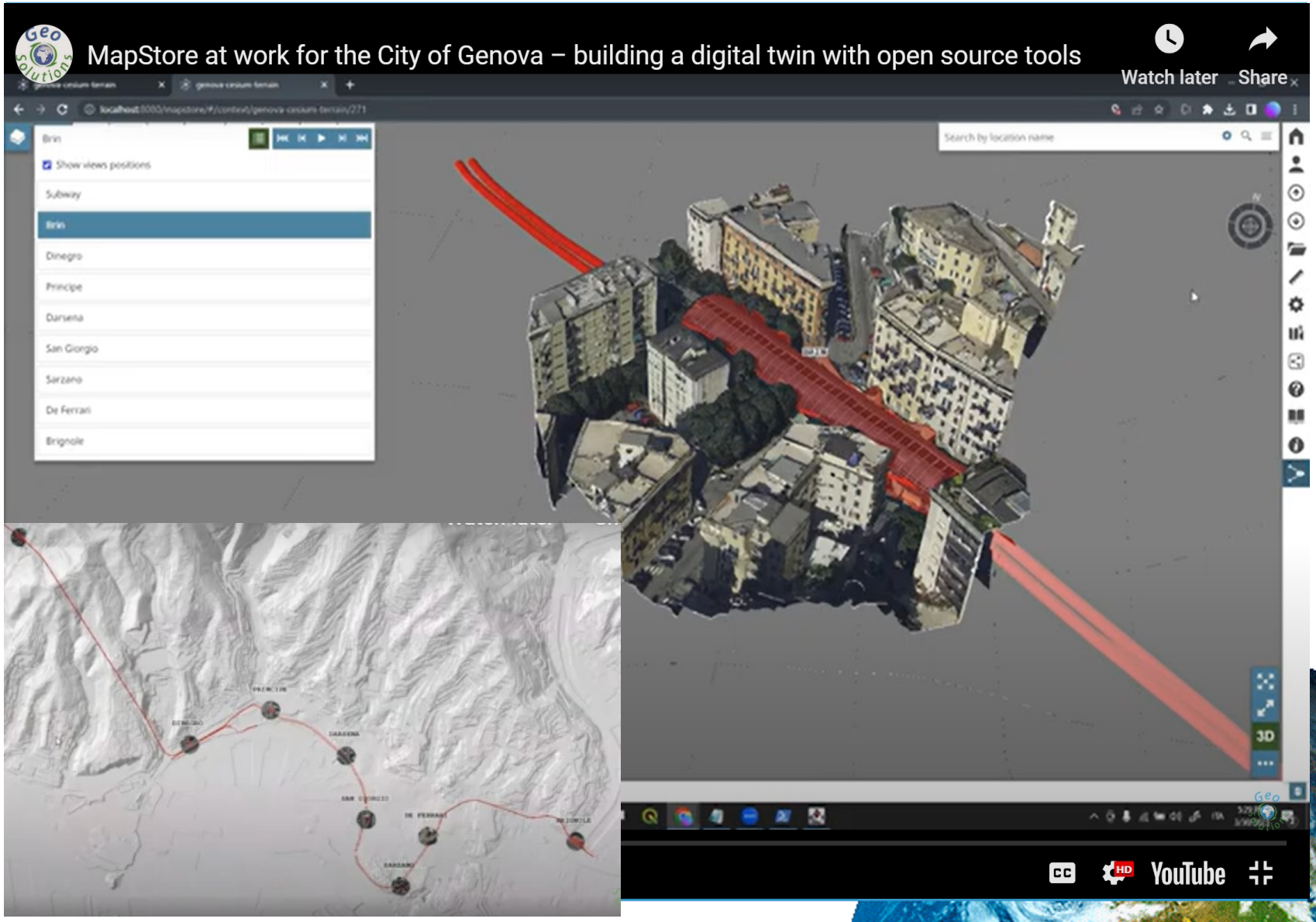
City of Genoa - Stations



https://youtu.be/M5uCoS-lLbY

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City of Genoa – Stations

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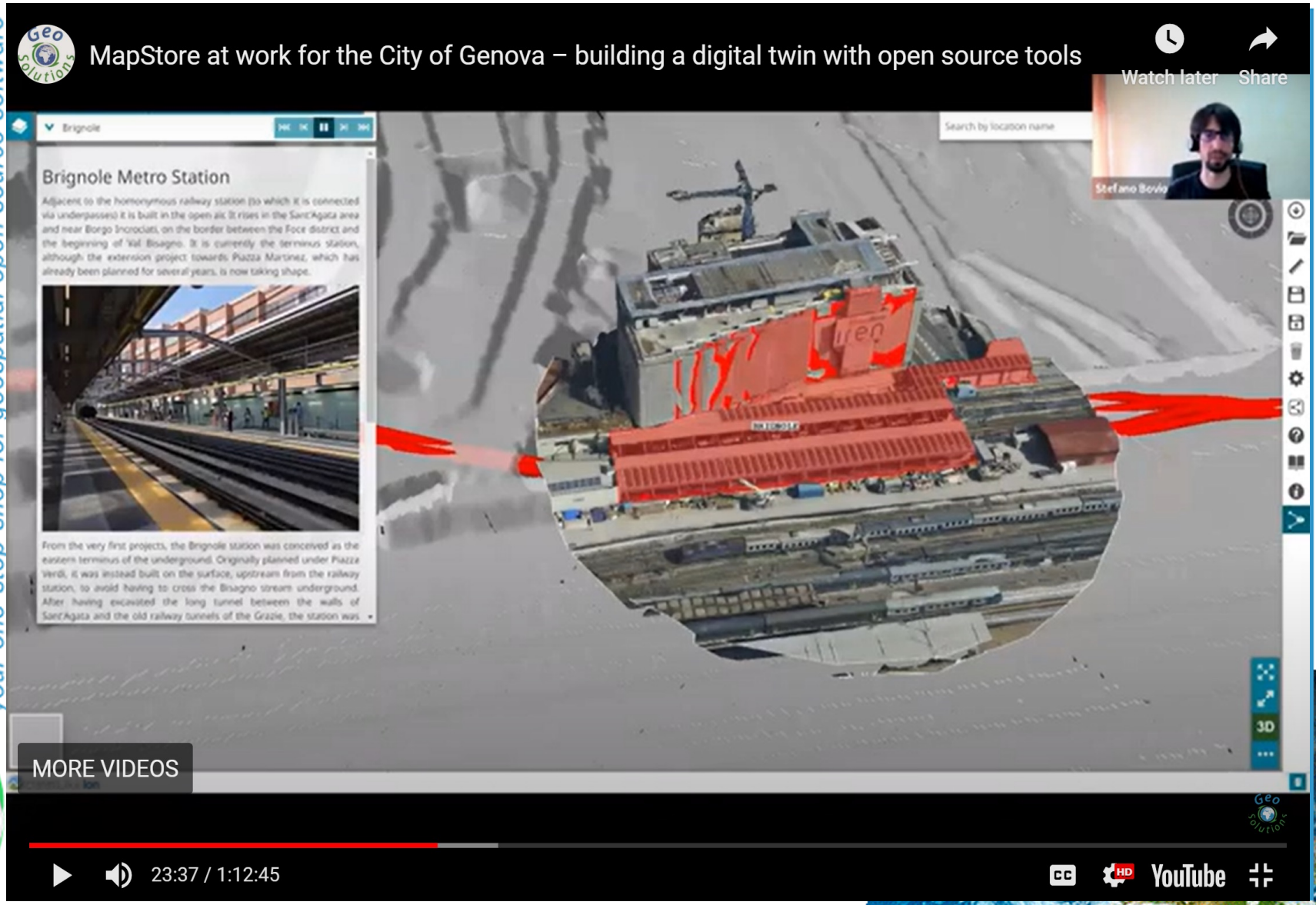

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From Open Data to Digital Models/Twins

From Open Data to Digital Models/Twins

digital-twin-toolbox is a collection of Open Source softwares and processes to generate 3DTiles

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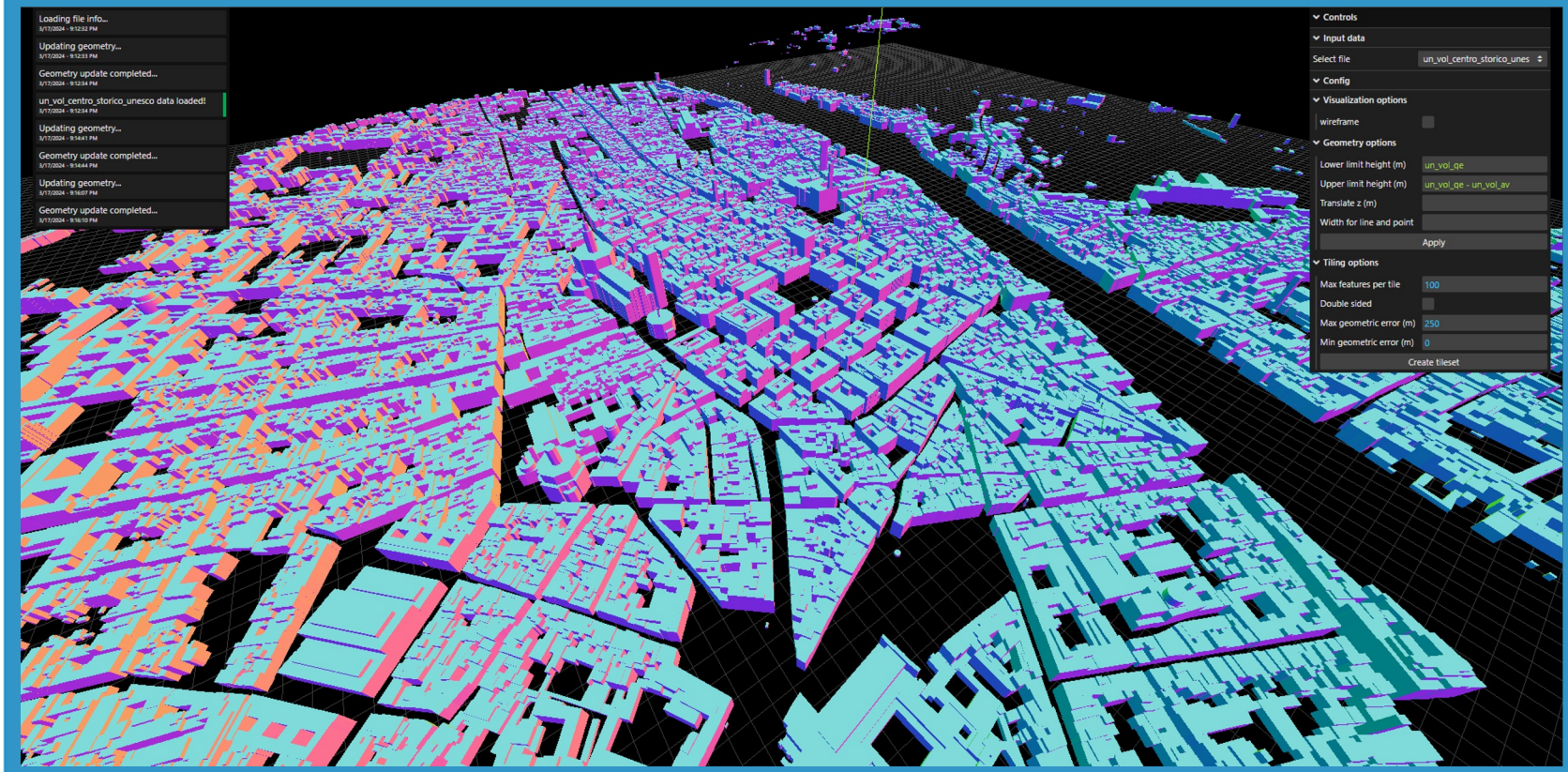
From Open Data to Digital Models/Twins

Documentation:

https://github.com/geosolutions-it/digital-twin-toolbox/blob/main/README.md

Repository:

https://github.com/geosolutions-it/digital-twin-toolbox



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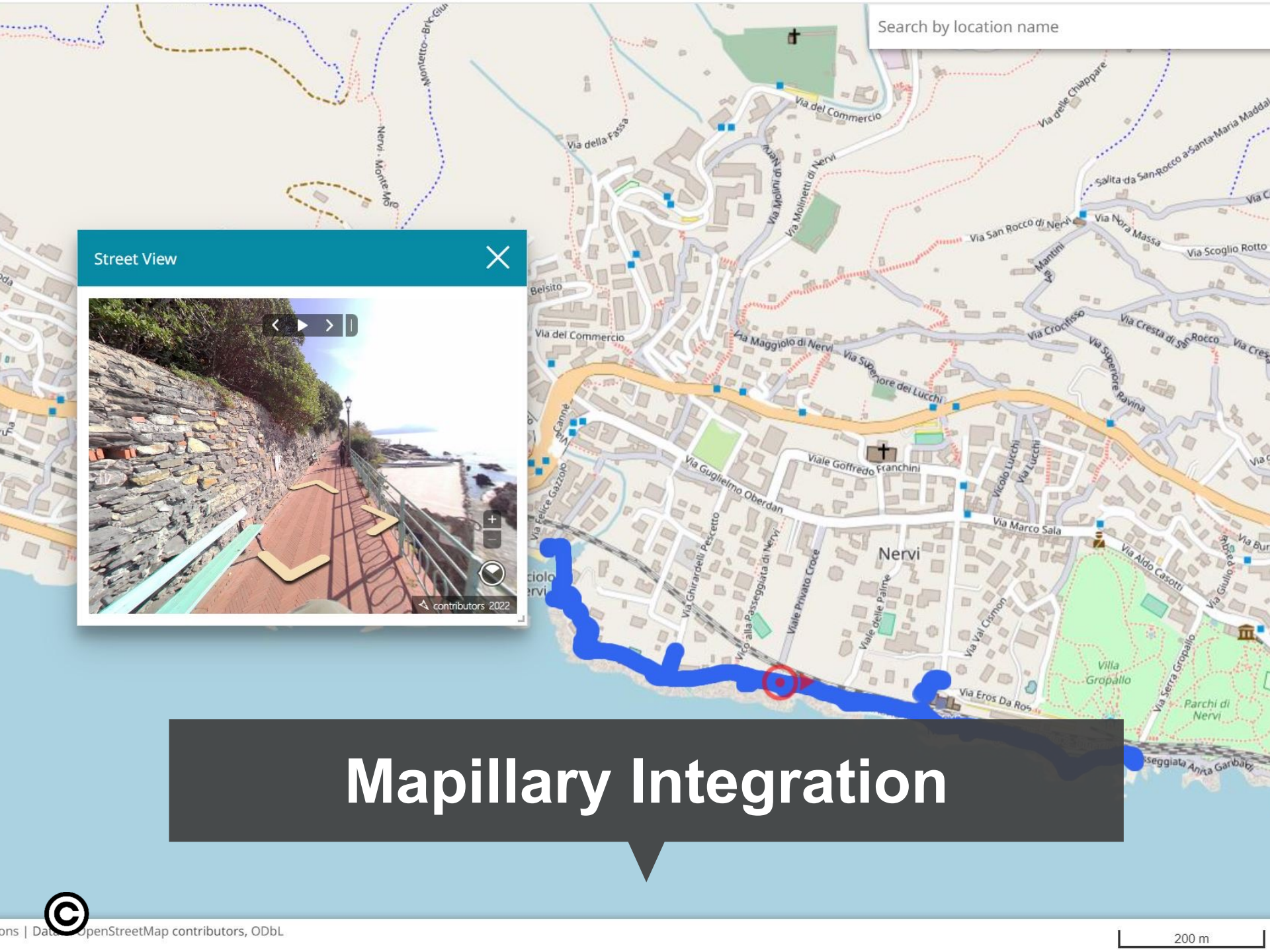

Mapillary Integration

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ons | Data © OpenStreetMap contributors, ODbL

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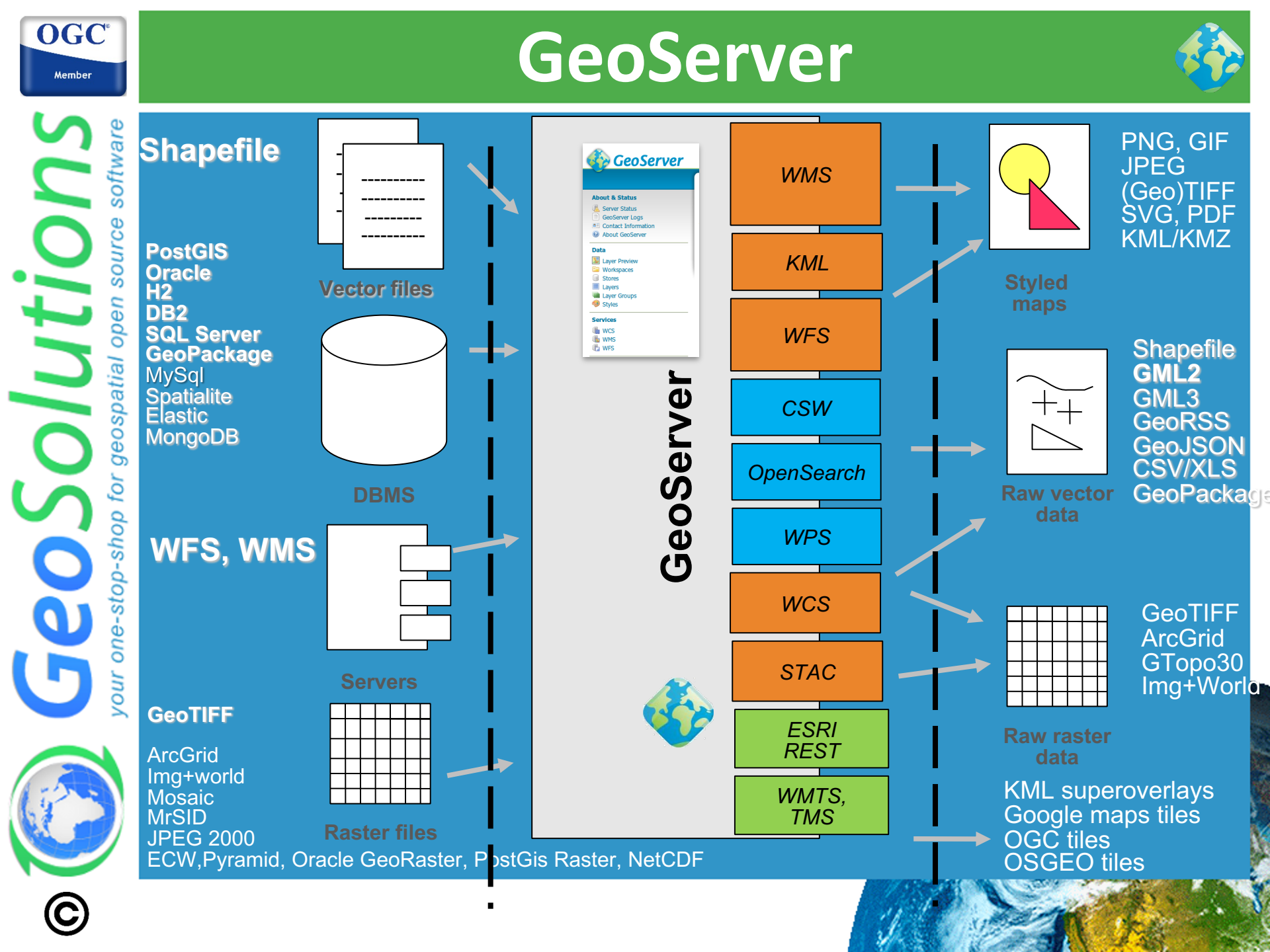
Open Source WebGIS Software: GeoServer, GeoNode, and MapStore

GeoServer



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GeoServer

- GeoSpatial enterprise gateway
  - Modular & extensible
  - Management & dissemination of raster and vector data
- Cloud/ Big Data friendly
  - Cluster deployments in AWS, Azure, On Premise
  - Powering petabytes-size data (EO, MetOcean, etc.)
  - Serving up to 10k+ requests per second
- Standards compliant
  - OGC WCS 1.0, 1.1.1 (RI), 2.0.1
  - OGC WFS 1.0, 1.1 (RI), 2.0
  - OGC WMS 1.1.1, 1.3
  - OGC WPS 1.0.0
  - OGC CSW 2.0.2
- Google Earth/Maps support
- License is GPL v2.0

More Information

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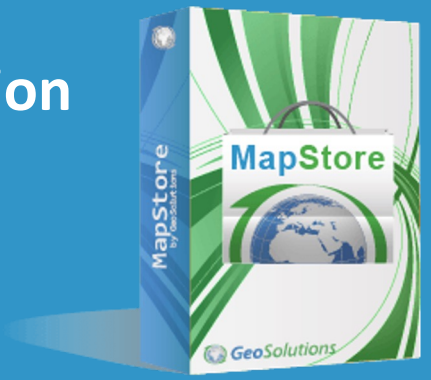
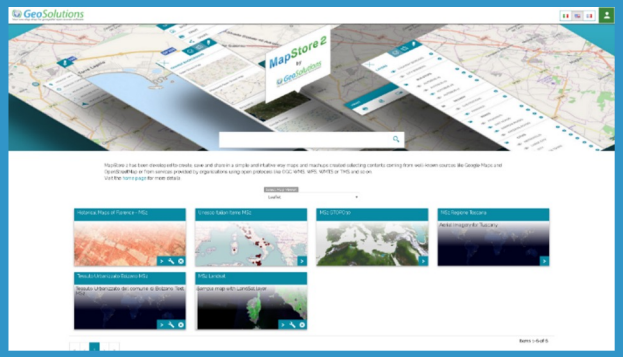
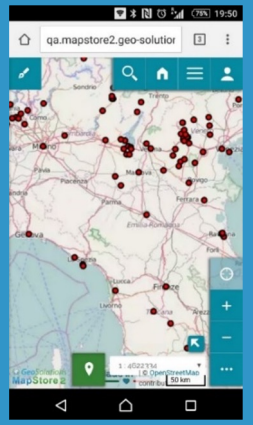
MapStore

- Create, manage, share maps, dashboards and stories
- Integrate, visualize & exploit 3D Tiles
- Embed in portals or use as complete solution
- Mobile first & responsive
- OpenLayers, Leaflet or Cesium
- ReactJS + Bootstrap + Redux
- Pluggable Look & Feel
- Supports various sources
  - Maps, OpenStreetMap, Bing, WFS, CSW, WMS, WMTS, 3D Tiles and TMS…
- License is Simplified BSD
  - Commercial friendly!

More Information







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MapStore

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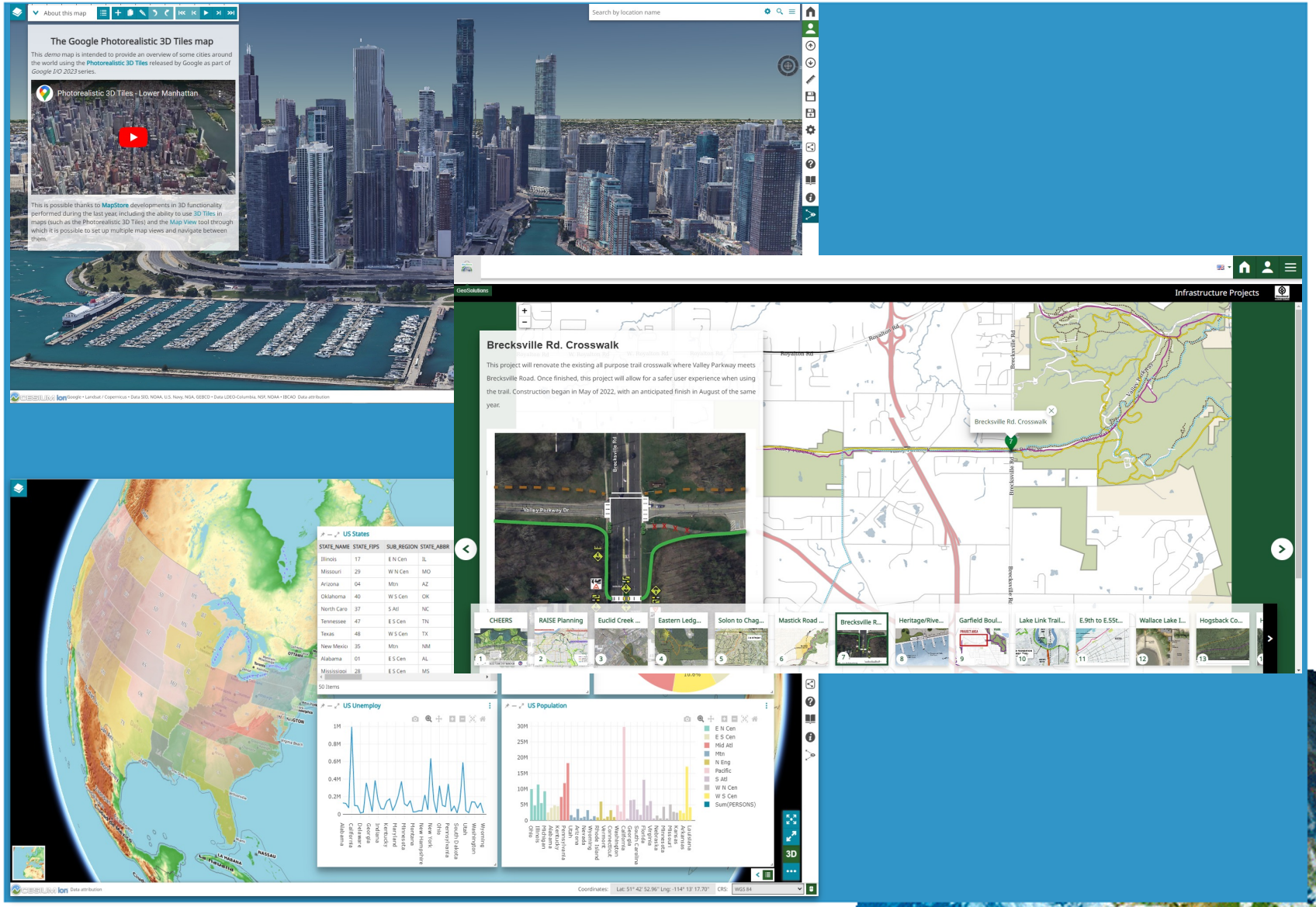

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Open Source WebGIS Software: MapStore and GeoNode

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Training Documentation:

https://training.mapstore.geosolutionsgroup.com/

Latest Release:

https://github.com/geosolutions-it/MapStore2/releases/tag/v2023.02.02

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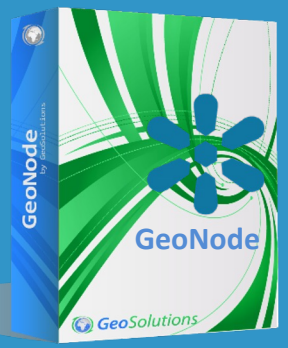
GeoNode

GeoSpatial Content Management System

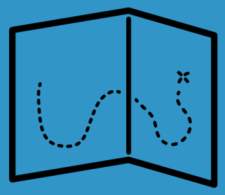
Spatial Data Discovery

- Powerful Search Engine
- Federated OGC Services
- Metadata Catalogue



Import and Manage

- Publish raster, vector, and tabular data
  Manage metadata and related documents
- Securely or publicly share data



Interactive Mapping

- Integrated GIS client
- Graphical style editor
- Create multi-layer interactive maps
- Share and embed maps in web pages
- Create and share Dashboards and stories

- License is GPL v2.0

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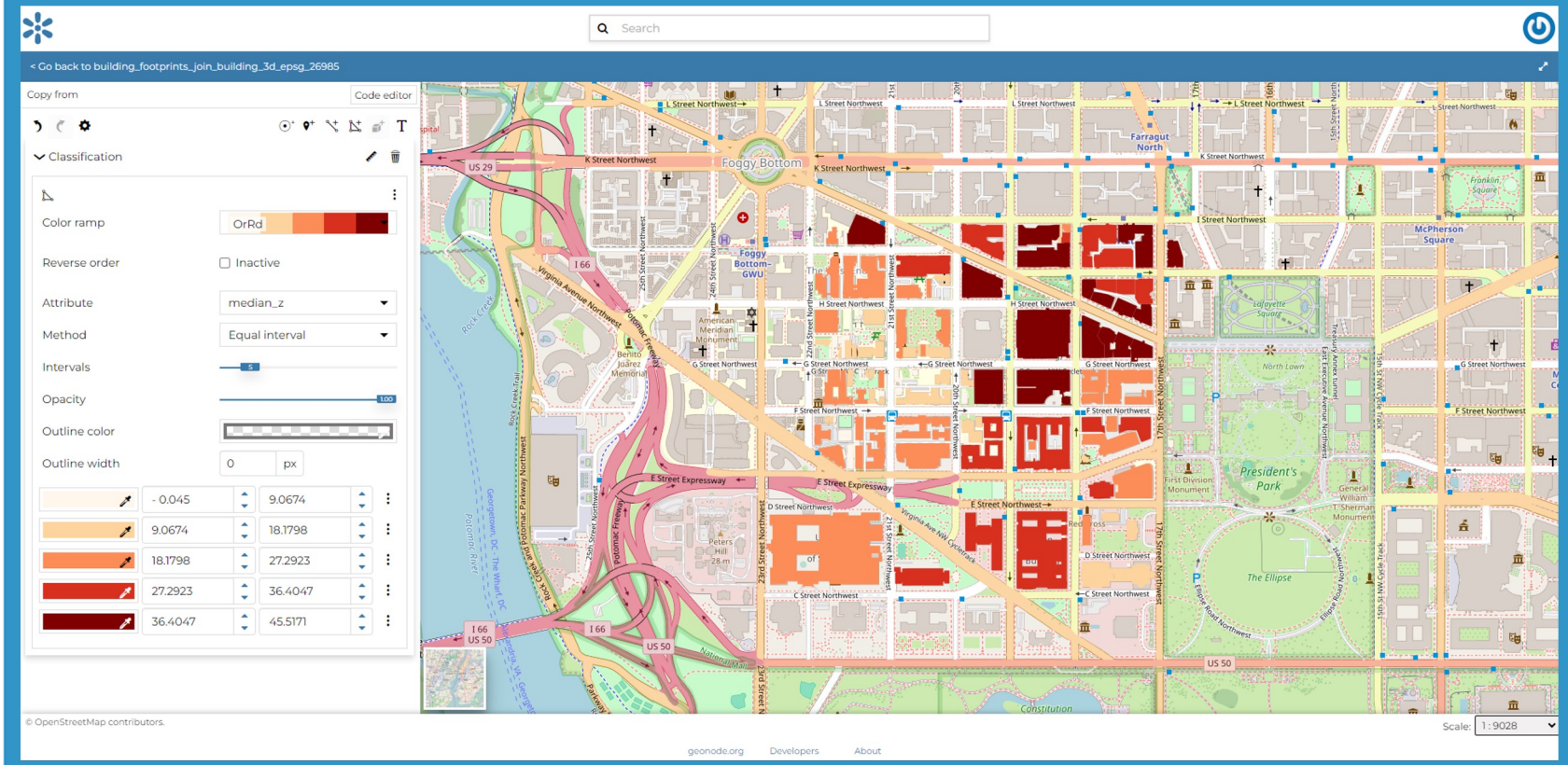
Open Source WebGIS Software: MapStore and GeoNode

Training Documentation:

https://training.geonode.geosolutionsgroup.com/master/

Latest Release:

https://github.com/GeoNode/geonode/releases/tag/4.2.3



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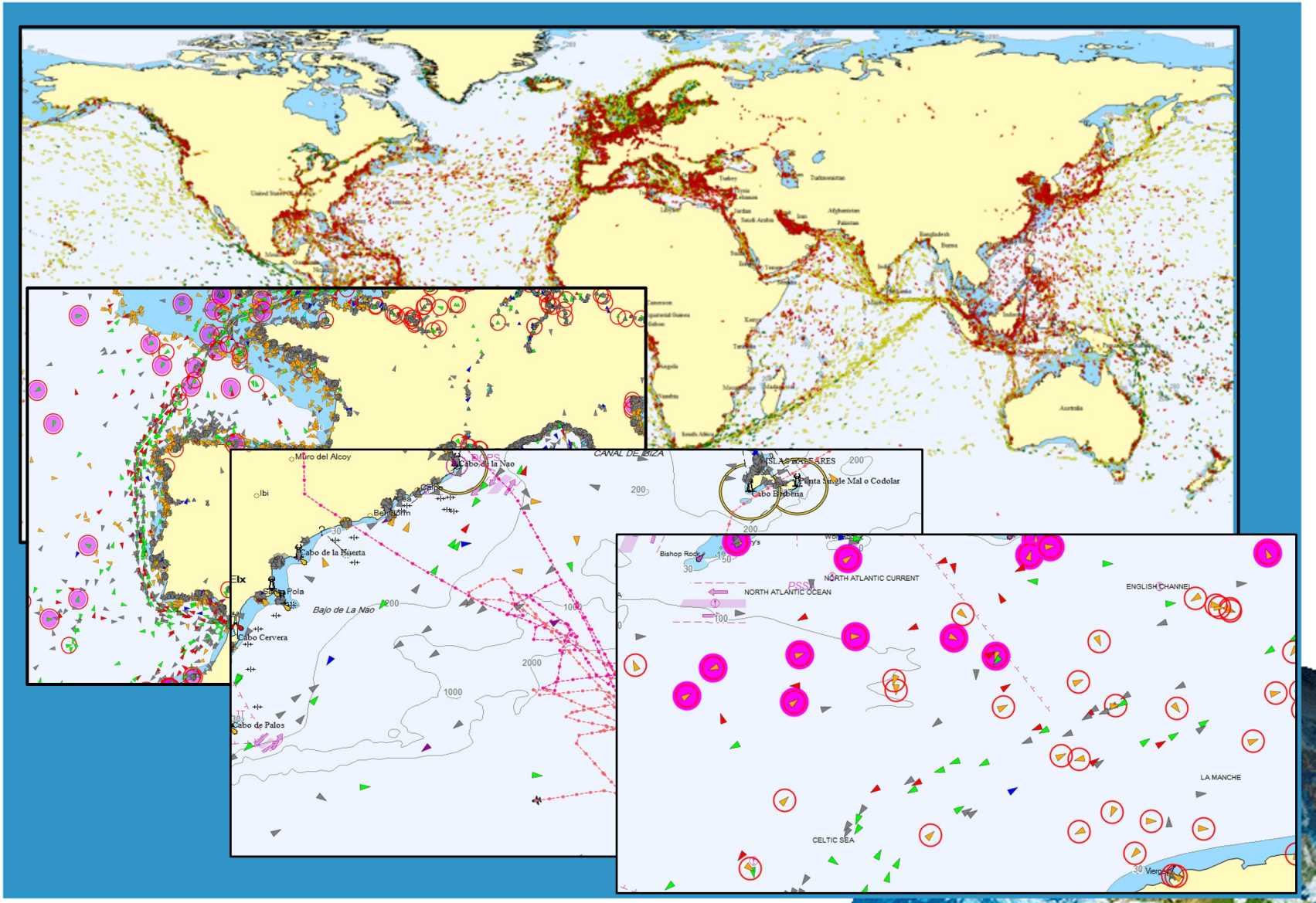
Additional Examples

Other examples: EMSA Use Case



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EMSA Real Time Maritime Picture

- **Maritime Data is produced by a variety of sources:**
  - Ships positions ➡ **AIS**, SAR, VMS, …
  - Maritime assets ➡ ports, **navigational aid systems**, …

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EMSA Real Time Maritime Picture

- **The maritime data is provided as:**
  - Streams of data, landing on Kafka topics
  - Enrichment data files, pushed in the system
- **In 24 hours:**
  - We receive up to 50 million ship positions
  - We handle up to 500K different ships
- **Peak activity during daytime:**
  - Up to 2500 messages per second!

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MassGIS – Infrastructure Mapping

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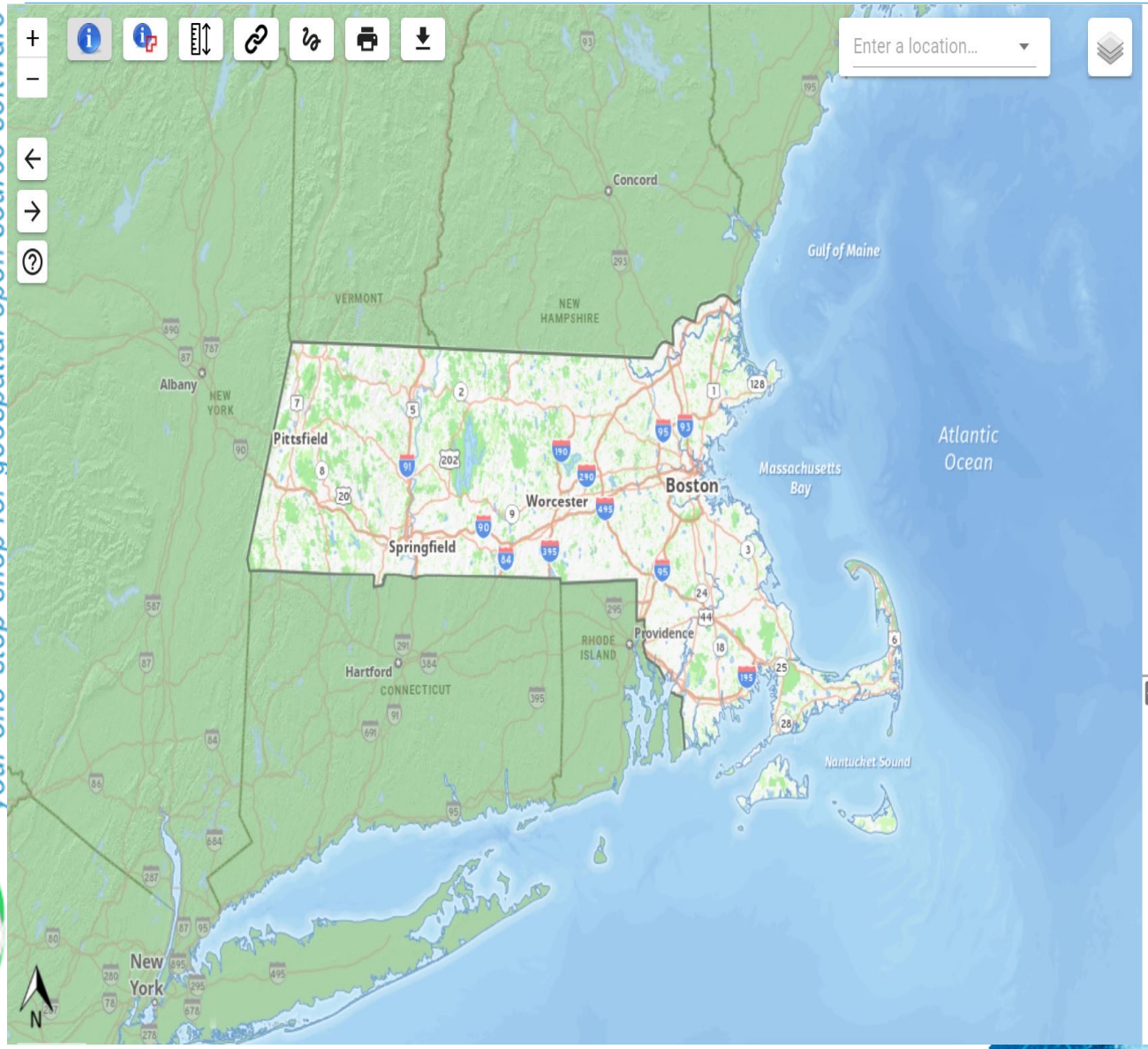
MassMapper - MassGIS



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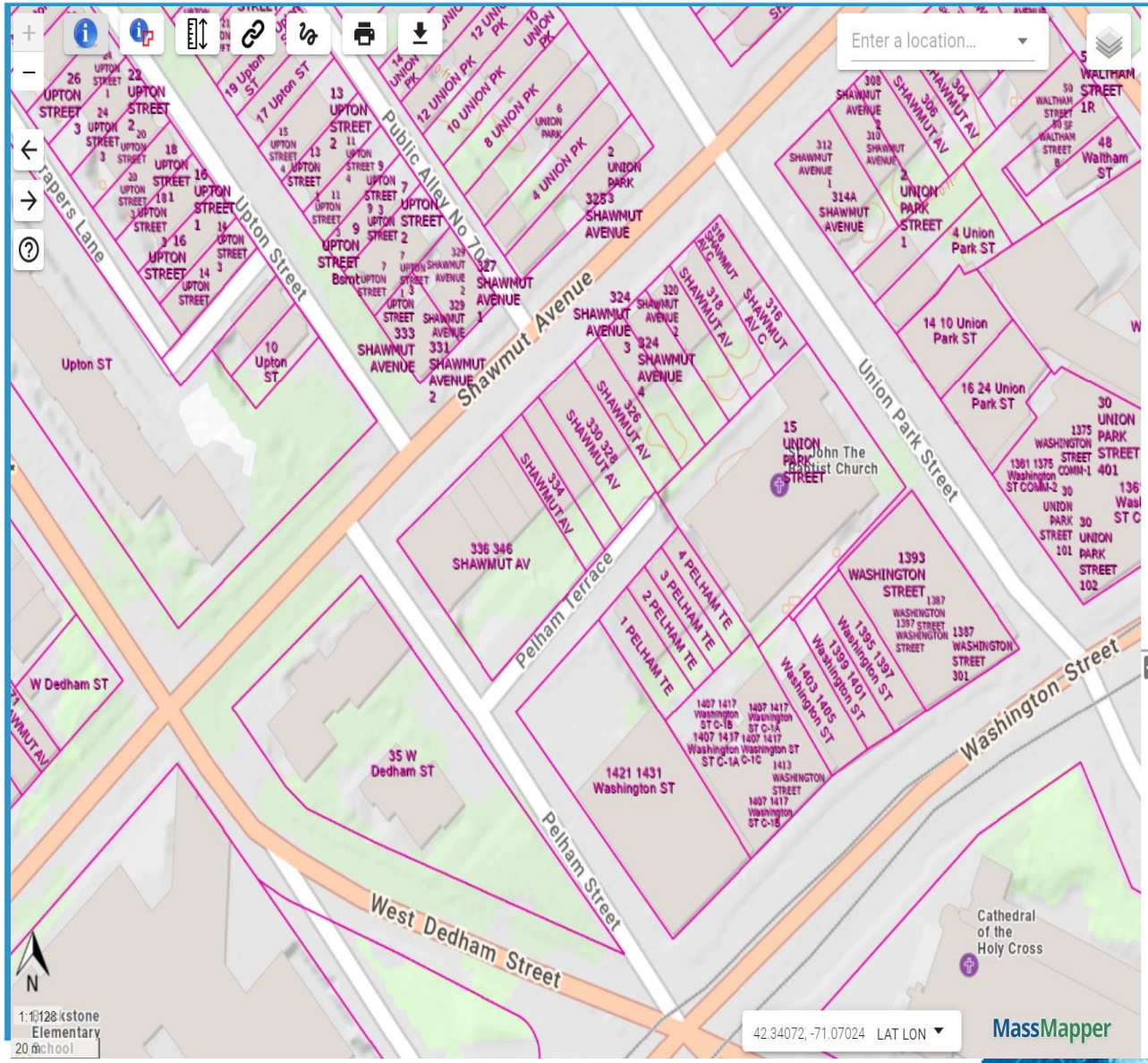
Infrastructure Mapping - Parcels



- Courthouses
- Dams
- DCR Pools
- Farmers Markets
- Ferry Routes
- Fire Stations
- Highway Exits and Interchanges
- Highway Mile Markers
- Hospitals
- Ice Rinks
- Libraries
- Lighthouses
- Long Term Care Residences
- Massachusetts Address Points
- MassGIS-MassDOT Roads
- MBTA Bus Routes and Stops
- MWRA Towns With Water or Sewer
- Park and Ride Lots
- Places of Worship
- Police Stations
- Prisons

☑ Property Tax Parcels

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Data Consuption - Instructions

TABLE OF CONTENTS

- Downloads
- View the data
- Overview
- Digital Parcel Standard
- Complying with the Standard
- Production
- Attributes
- Maintenance
- Updates

Downloads

By city or town from a map →

By city or town from an Excel file of links →

Download most current Statewide data →

Download a FGDB with all vintages for every municipality (5.92GB zip) →

Download a SHP with all vintages for every municipality (5.37GB zip) →

Twice per year (Jan 1 and July 1), we create a zip file that has all vintages of parcel data for every municipality available as shapefiles or FGDB. The current files were created on January 2, 2024. We're always interested in how this aggregate data is used. Please share any studies or research results with us at massgismail@mass.gov

RELATED

Browse all MassGIS data layers →

MassGIS home →

Bureau of Local Assessment →

Division of Local Services →

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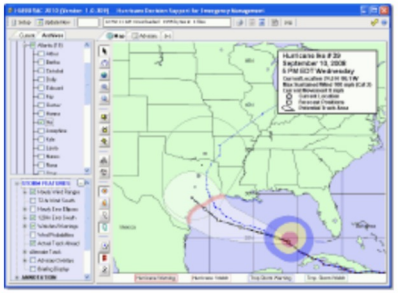
Emergency Management Example: HURREVAC

Sea Island Software, Inc. is the developer of the **HURREVAC program**, used by government emergency managers around the world to track and analyze the threat for hurricanes in the Atlantic, East and Central Pacific, typhoons in the West Pacific, and cyclones in the South Pacific.

The HURREVAC program is funded by FEMA, and the US Army Corps of Engineers, and also supported by NOAA. HURREVAC is free to qualified government emergency managers. See our HURREVAC support site for details.

We realize that there are services desired by Hurrevac program users which do not have a likelihood of being funded by the government. Therefore, we have developed **this Sea Island Software site** to offer products and services related to the Hurrevac program, which are ***not funded by*, or normally available from, government agencies.**



News

We also offer hurricane tracking services for users of ESRI's ArcGIS and Google Earth.

www.hurricanemapping.com

Direct, realtime feeds of critical hurricane tracking data in KML and Shapefile format

The products/services we offer include:

- On-site Hurrevac training tailored to your needs.
- Hurricane Exercise Services (3 levels depending on need)
- State Specific Risk Profile Add-Ins for the Hurrevac program
- Other programming services related to the display and management of hurricane related information.

Our mission is to help you prepare for the hurricane threat in your community. Let us know if we can be of assistance!

!!!!!Free to most .gov, .edu, .mil – All levels of government and supporting contractors!!!!!

Cluster of GeoServers supporting complex multidimensional data

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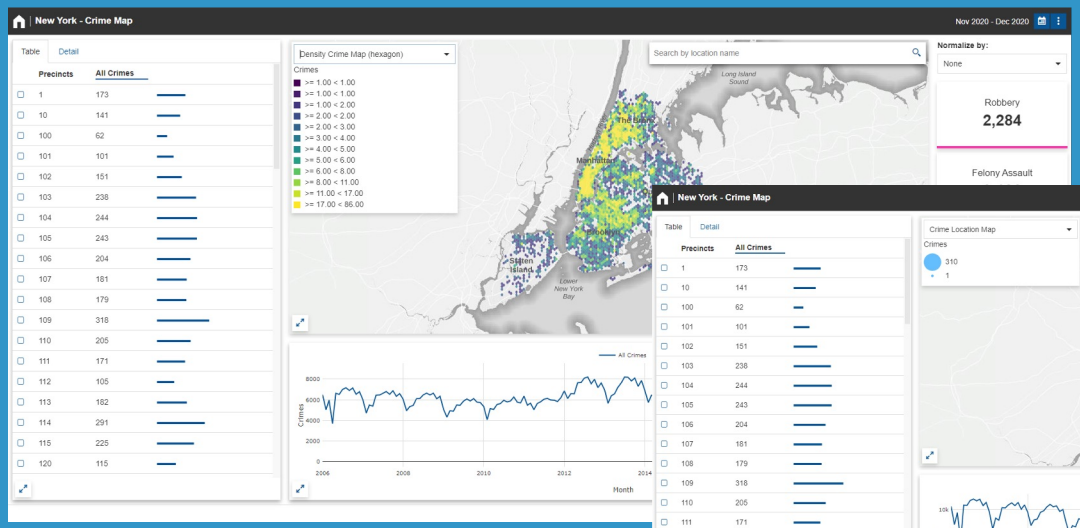
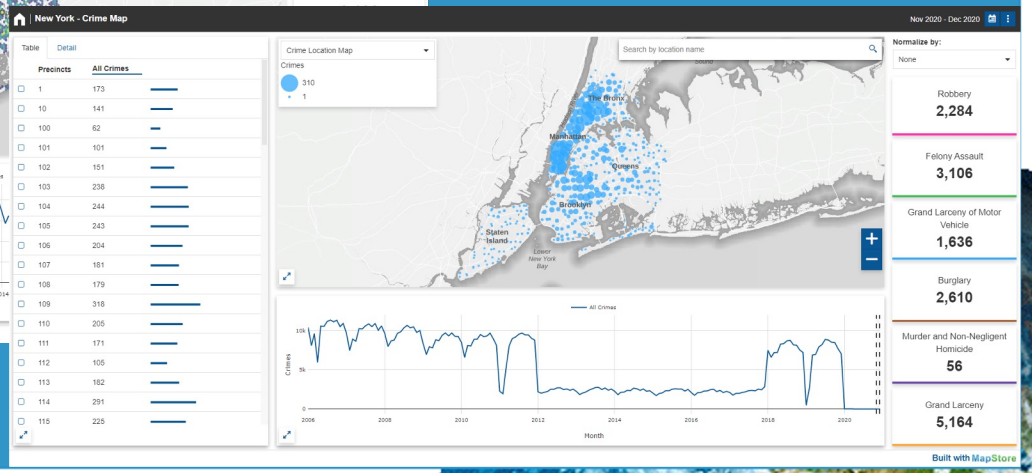
NYC - DOITT

- GeoServer Support
- MapStore Support & Development
  - Empowering DOITT team on Web GIS Development
  - Developing a simple platform for crime data visualization





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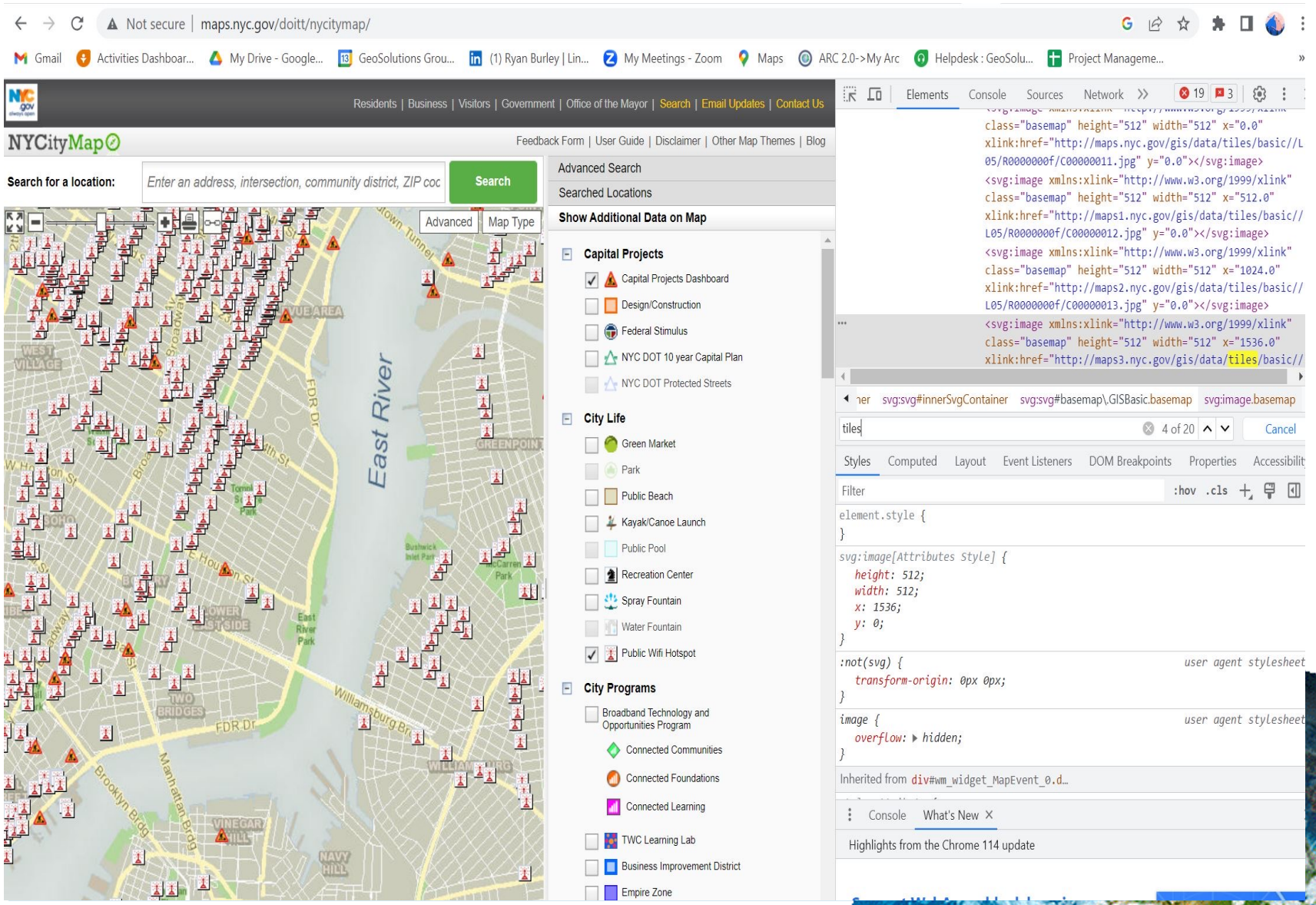

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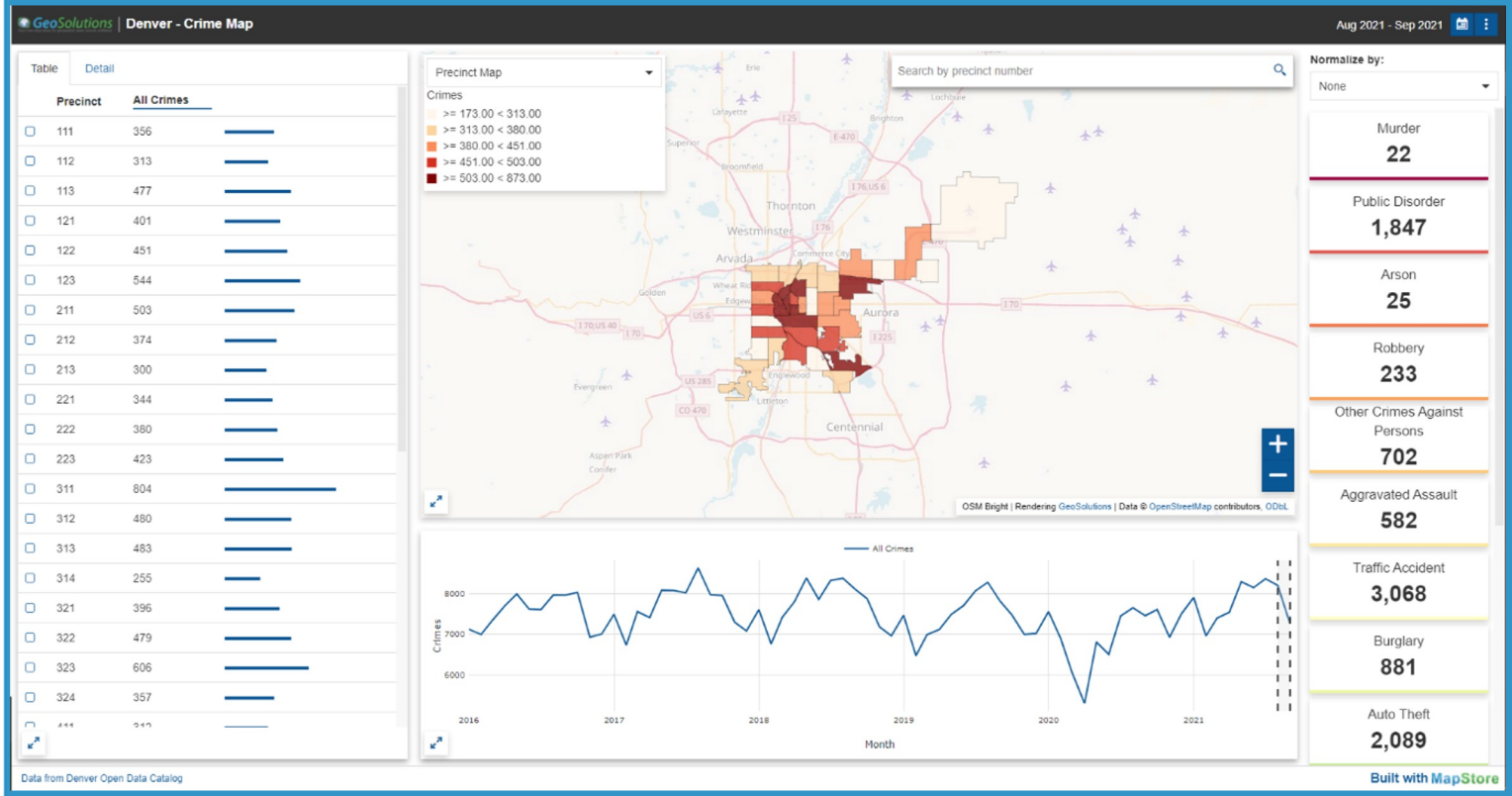
City of Denver – Crime Mapping

- **Online POC with Denver OpenData**



https://www.crime-map.info/

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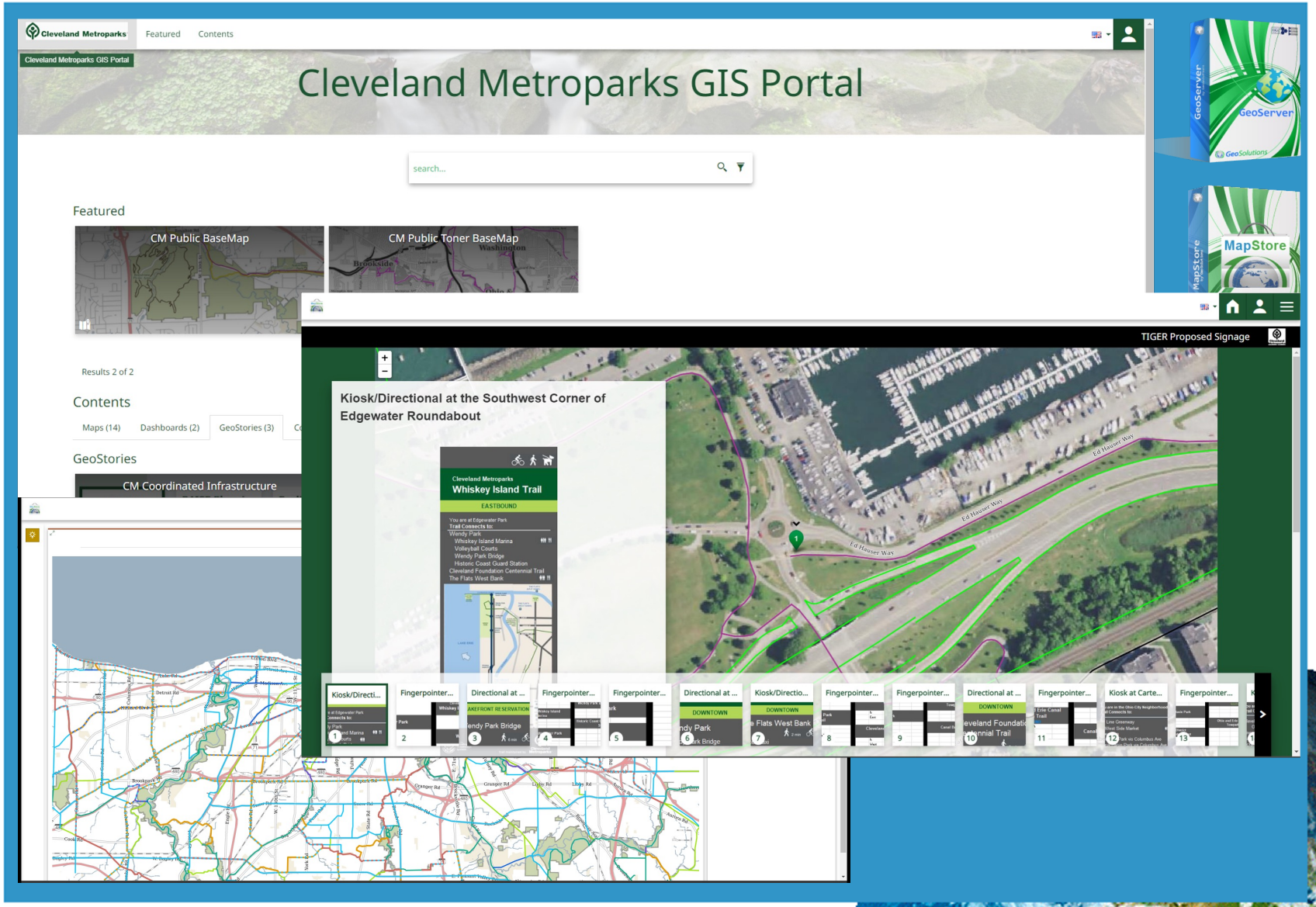
Cleveland Metroparks SDI



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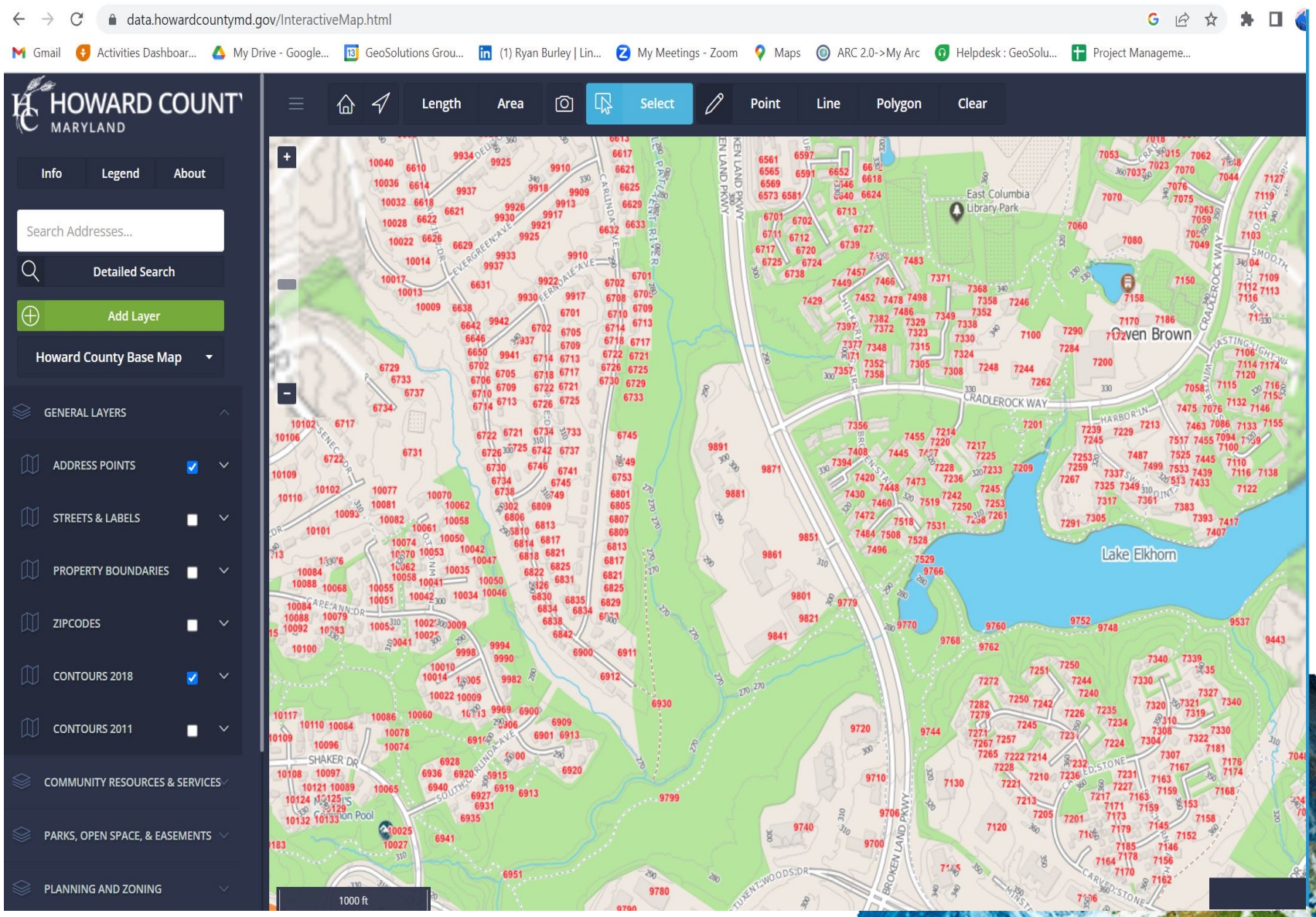
Howard County, MD



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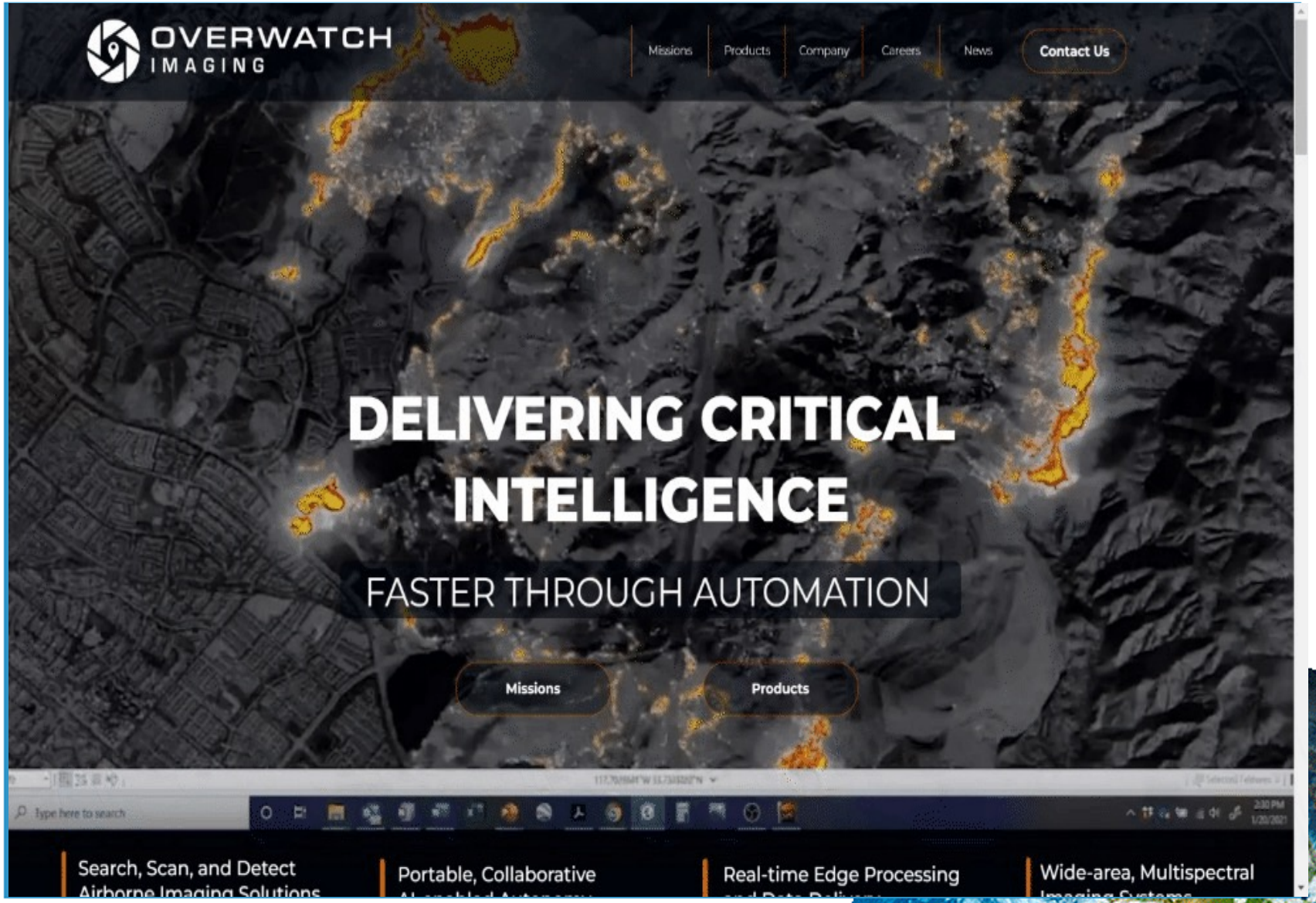
EM/ER – Wildfire – Overwatch Imaging



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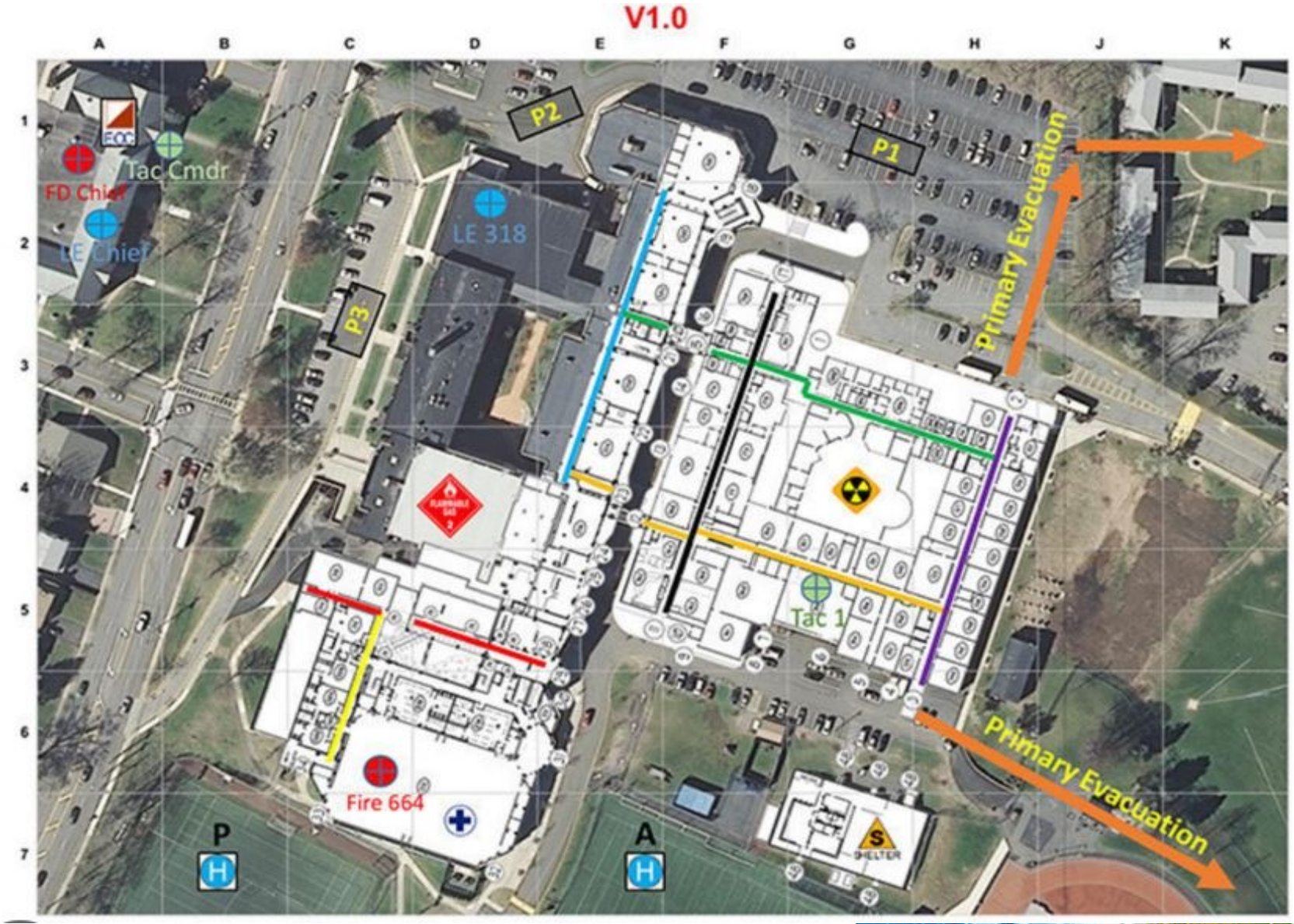
Critical Response Group - CRG



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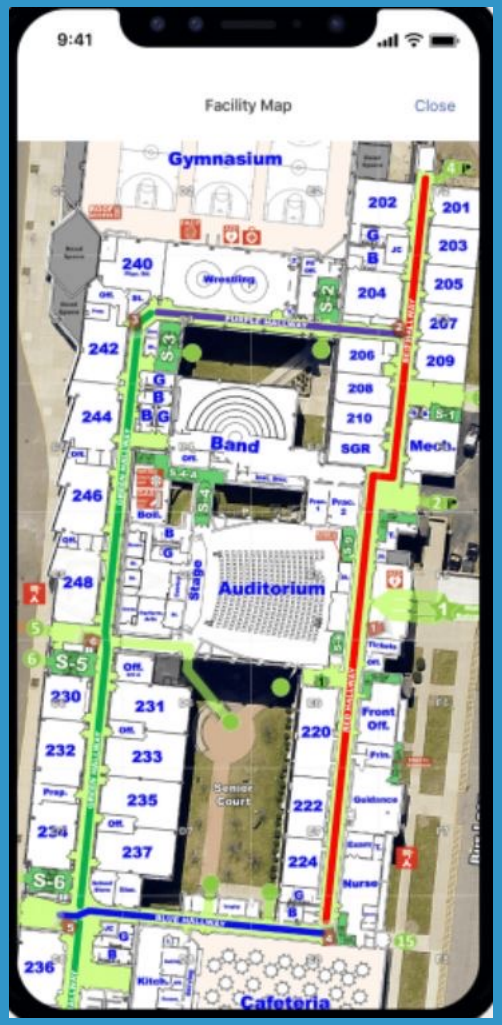
Critical Response Group - CRG



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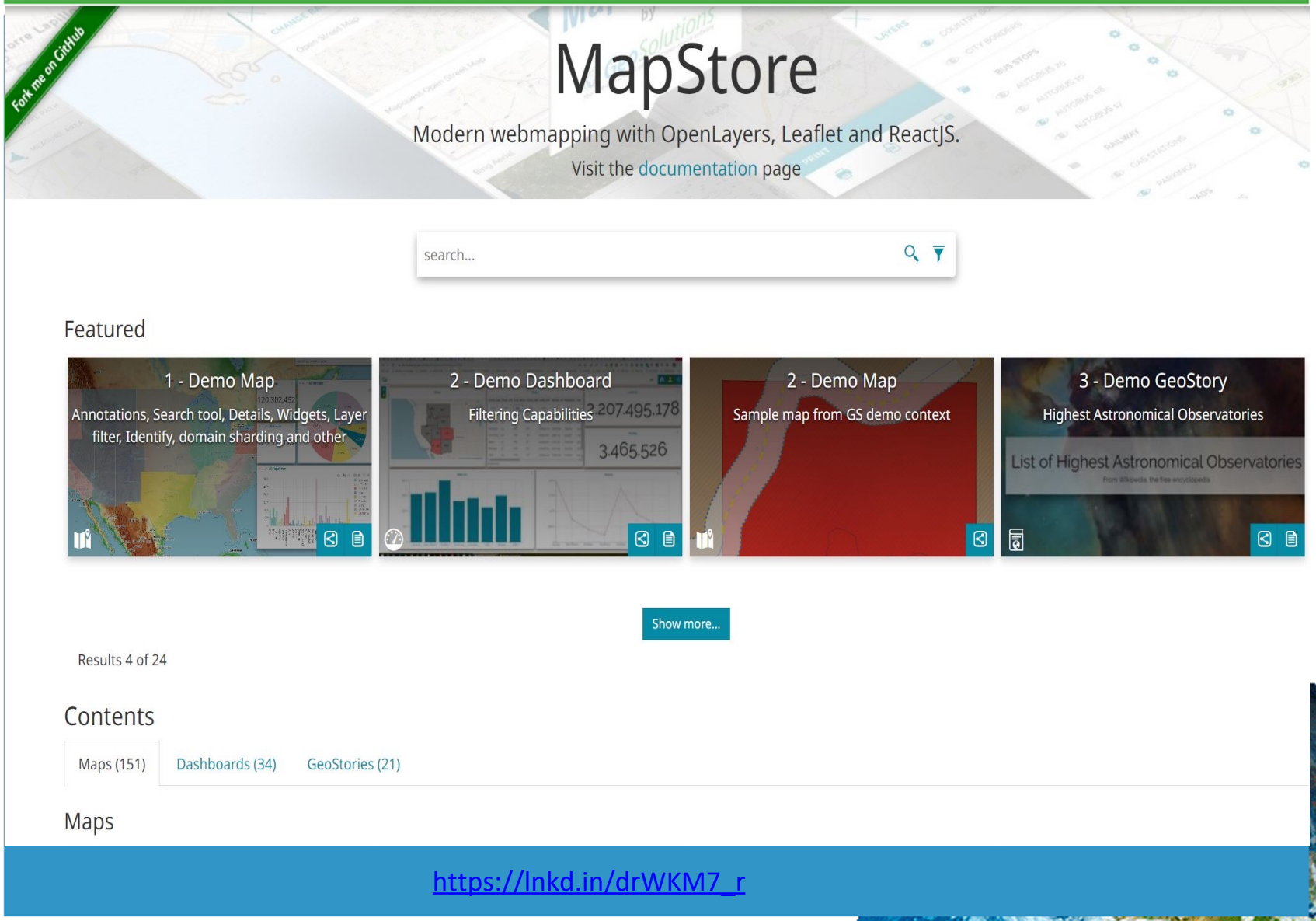
Live Demos



https://lnkd.in/drWKM7_r

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Resources for Learning More

YouTube Channel:
https://www.youtube.com/c/geosolutionsgroup
GeoServer Instructionals: https://youtu.be/Kqa_xBK5xXE
GeoNode Instructionals: https://youtu.be/orXUiYKrecc
MapStore Instructionals: https://youtu.be/o9EVnJyUfIM
Migration Instructionals: https://youtu.be/24e443PmwEs
(Specific How-to Videos, etc…)

Past Webinars:
FEMA TOP Demo: https://youtu.be/wjljUBO8LEA
City of Genova/3D Demo: https://youtu.be/M5uCoS-ILbY
GeoServer for Emergency Management Demo:
https://tinyurl.com/49z799mu
(Several other demos)

Continued…

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Additional Resources

Community Support:
GeoServer: https://geoserver.org/comm/
GeoNode: https://geonode.org/
MapStore: https://groups.google.com/g/mapstore-users

Documentation:
GeoServer: https://docs.geoserver.org/
GeoNode: https://docs.geonode.org/en/master/
MapStore:
https://docs.mapstore.geosolutionsgroup.com/en/latest/user-guide/home-page/

GeoSolutions Blog:
https://www.geosolutionsgroup.com/category/blog/

Events: FOSS4G North America: https://foss4gna.org/

Need Assistance finding OS support resources? Let me know!

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We want to hear from you!

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