GENERAL DYNAMICS
Information Technology

UTILIZING QLIK TO VISUALIZE THE MULTIAGENCY SPATIOTEMPORAL DATA DRIVING EFFECTS-BASED MONITORING

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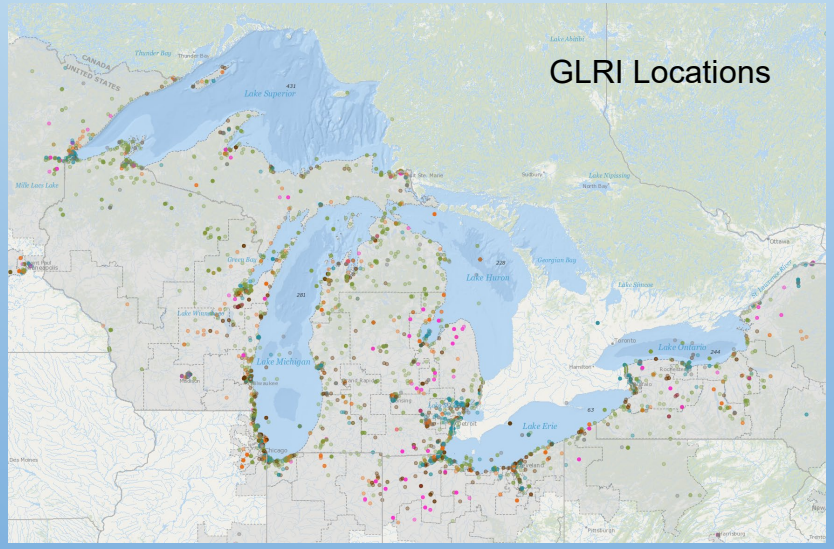
BACKGROUND

- The Great Lakes Restoration Initiative (GLRI) is a white house driven enterprise that began in 2010.
- Its main goals are the protection and restoration of the Great Lakes.
- One of the components of GLRI is the Effects-based Monitoring (EBM) program whose aim consists of the following goals:
    1. Identify Contaminants of Emerging Concern (CEC).
    2. Assess the adverse impact of legacy contaminants and CECs on great lakes fish and wildlife.
    3. Establish spatial and temporal monitoring of CECs.



https://www.glri.us/

RESEARCH GROUPS

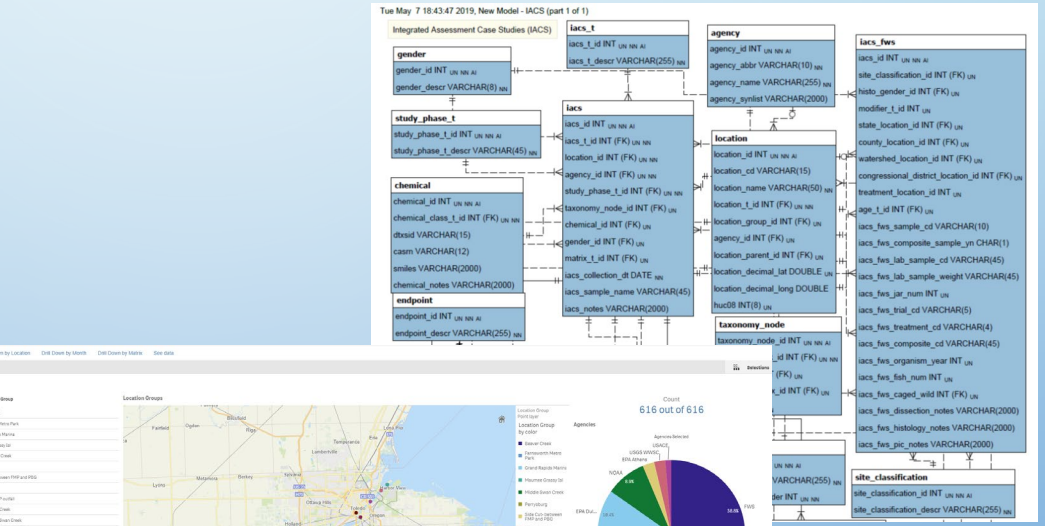
- To address these issues, a research group with technical expertise in different areas of monitoring/surveillance and assessing contaminant mixtures was assembled.
- This research group includes federal agencies and universities:
  1. USEPA
  2. NOAA
  3. USGS
  4. USFWS
  5. USACE
  6. Clarkson University
  7. St.Thomas University
  8. St. Cloud State University

https://communities.geoplatform.gov/glri/

GDIT SUPPORT TO EBM GROUP

GDIT was contracted to support the EBM group. Support involves tasks such as:

1. Cleaning (account for missing data, outliers, data quality codes, etc.)
2. Assembling
3. Merging
4. Extracting
5. Synthesizing
6. Interpreting/Visualizing



CHEMICALS OF INTEREST

- Legacy chemicals:
  1. Polychlorinated Biphenyls (PCBs)
  2. Polycyclic Aromatic Hydrocarbons (PAHs)
  3. Metals
- CECs:
  1. Pesticides
  2. Brominated flame retardants
  3. Biogenic hormones
  4. Pharmaceuticals
  5. Personal care products
  6. Plasticizers
  7. Detergents

https://www.safetyemporium.com/12342

INFORMATION IN DATASETS

Information in submitted datasets include:

a) Various metadata

b) Instrumental measurements of concentrations of parameters such as:

   I. Contaminants in surface water

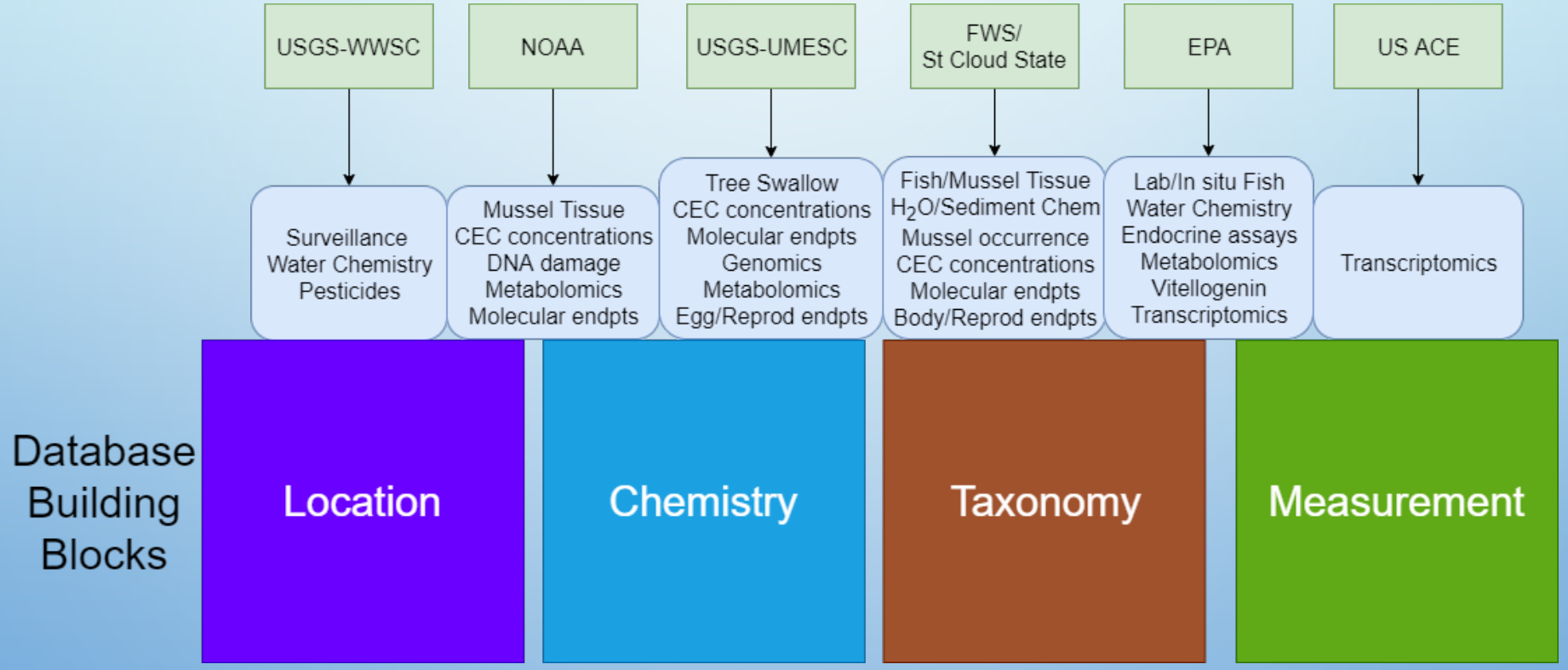
   II. Passive samplers

   III. Sediments collected using different analytical schedules that, in total, may detect several hundred chemicals in each sample.

c) Chemical residue concentrations in tissues of mussels and birds.

d) In vitro targeted (single assay), or non-targeted high-throughput (HTP) data capturing 50-100 measures of bioactivity (per sample) associated with different biological pathways (e.g., Estrogens).

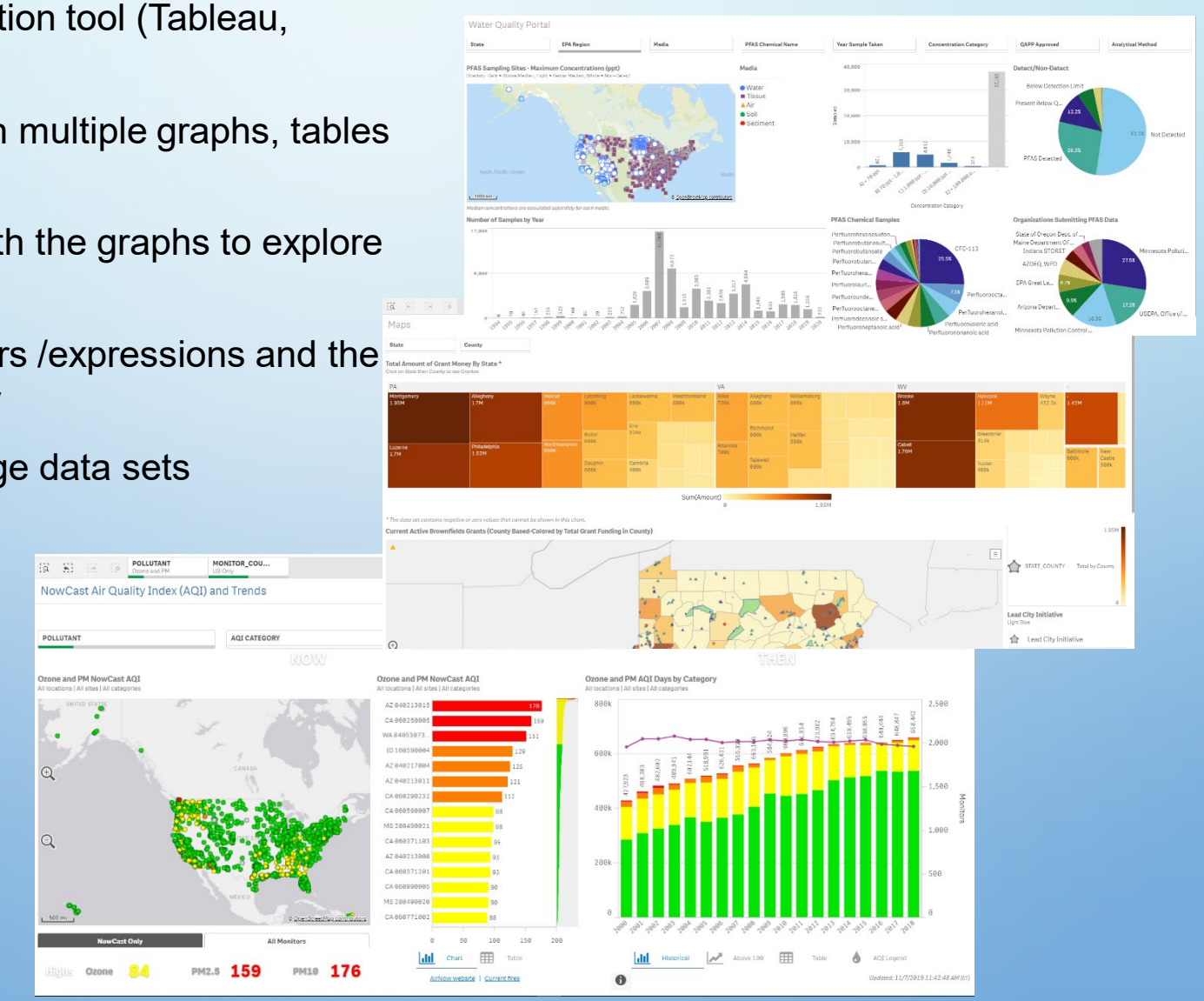
DATABASE CONSTRUCTION



WHAT IS QLIK?

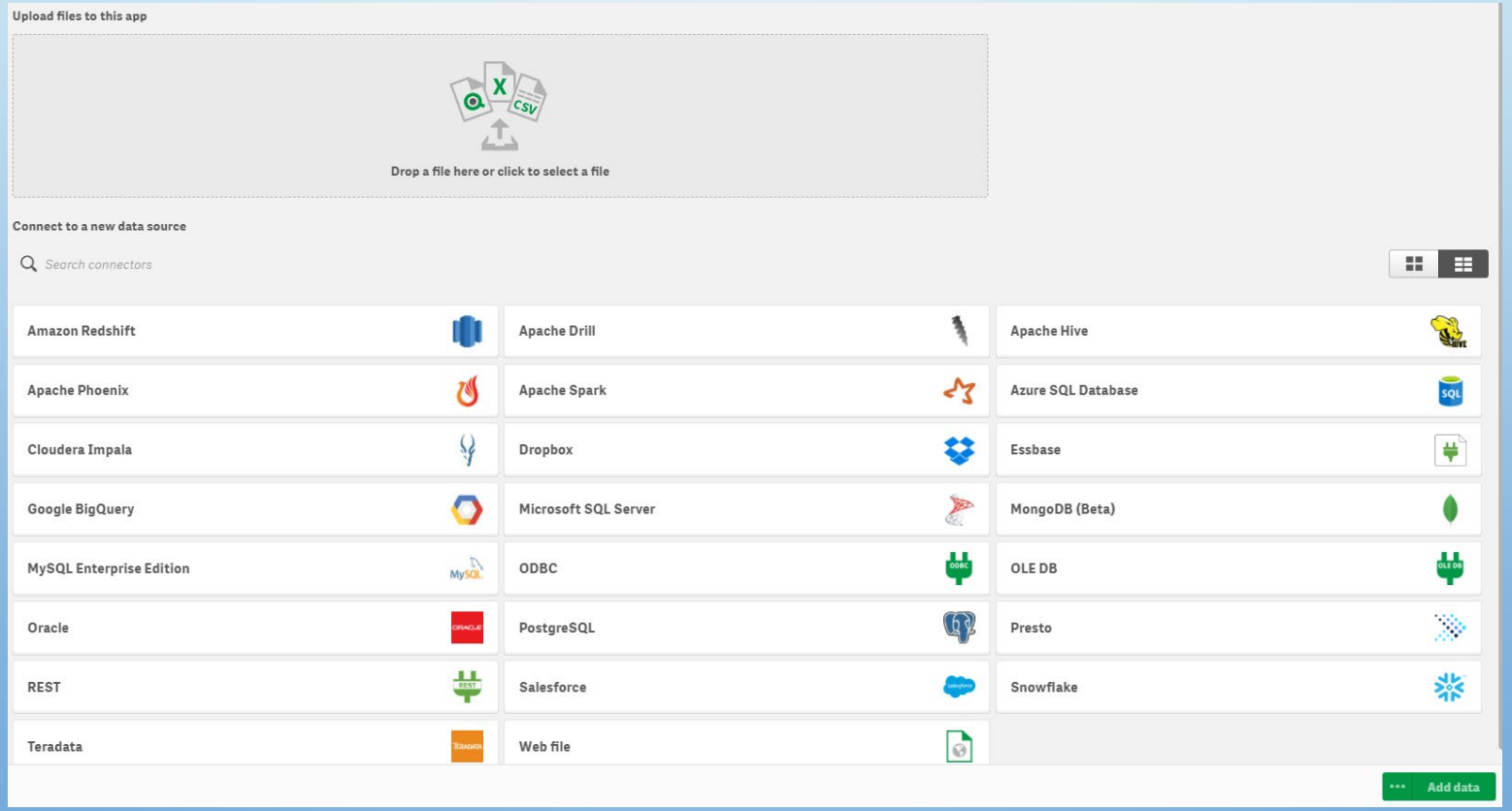
https://www.qlik.com/us/

- Powerful data visualization tool (Tableau, Power BI, SAS)
- Create dashboards with multiple graphs, tables and maps
- Dynamically interact with the graphs to explore your data
- Apply selections or filters /expressions and the graphs update instantly
- Useful for exploring large data sets

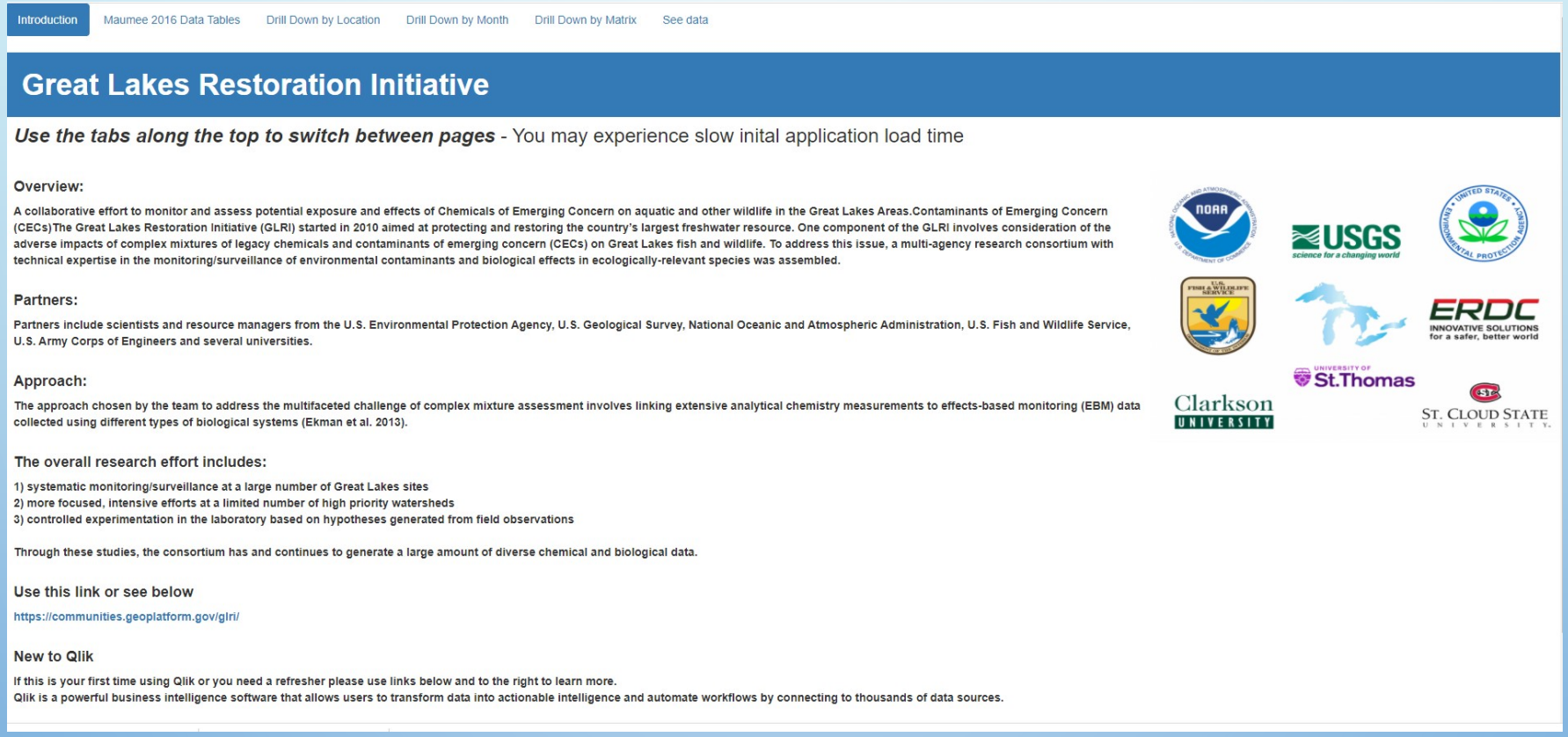


WHAT IS QLIK?(CONTINUED)

- Can connect directly to a variety of data sources and can also connect to multiple data sources at one time.
- Can be manually updated when new data is loaded or recurring updates (e.g. every 30 minutes, 6 hours).
- Export to table or image.



DEMO



https://awsedap.epa.gov/glri/extensions/GLRI/GLRI.html

QUESTIONS?

RESOURCES

- More about our project - https://communities.geoplatform.gov/glri/
- More about Qlik - https://www.qlik.com/us/

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