

# Internet-based interactive 3D visualization and monitoring of the great lakes region based on OpenGIS web services

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## York GeoICT Lab

- York Geospatial Information and Communication Technology (GeoICT) Lab, established in 2001
- One of the largest research settings in the GeoICT field in North America: over 30 researchers employed.
- Published over 250 papers, and developed dozen licensable technologies
- Spin-off company, GeoTango Int'l Corp.
- Received over 20 awards and distinctions.

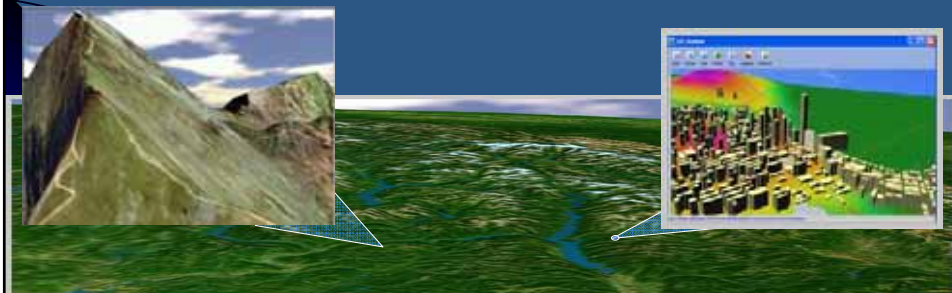


# Technical Challenges for GLR

- Data exchange standards and policies
- Visualization
- Distributed mapping applications
- Cross-border collaboration
- Integrated lake data (current and historical)
- Models and ecosystem forecasting tools
- New forums to promote collaboration between research, management and policy communities and the public (streaming, interactivity, web conferencing)

## GSN Globe Capabilities

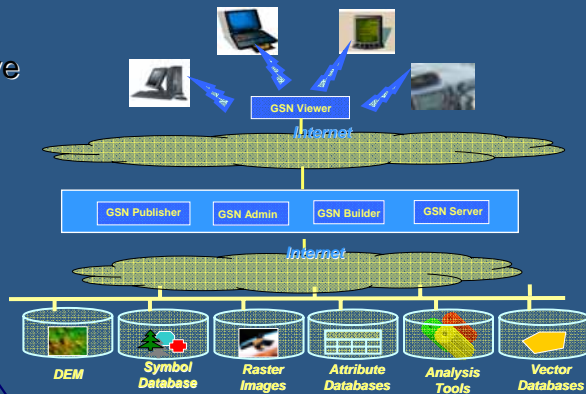
**GSN Globe** is a globe-based system for network-centric multi-dimensional visualization and interactive exploration and fusion of multiple data sources and sensors over Internet.



## GSN Globe Features (1)

- Network-centric

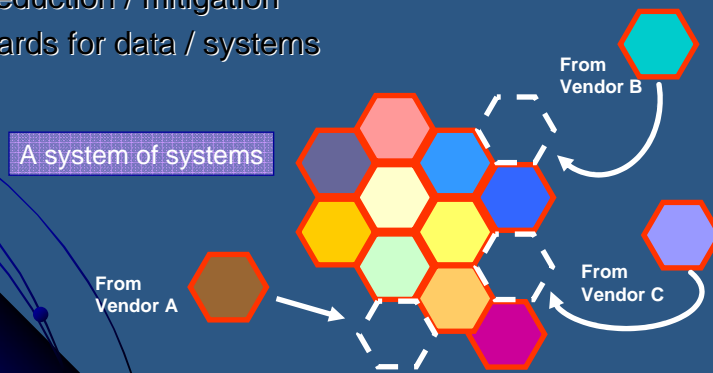
- Distributive
- Collaborative
- Mobile



## GSN Globe Features (2)

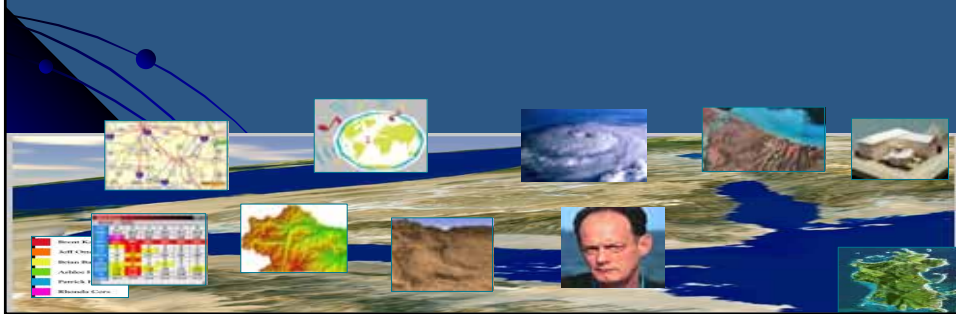
- Interoperable

- Scalable (data sources or systems)
- Rapid deployment
- Risk reduction / mitigation
- Standards for data / systems



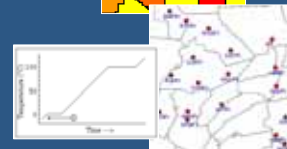
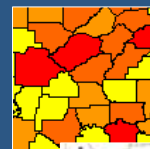
## GSN Globe Features (3)

- Multi-dimensional / -temporal / -resolution (3M)
  - 2D / 3D / 4D
  - Multi-media support (images, audio/video, text, etc.)
  - Database support



## GSN Globe Applications for the GLR

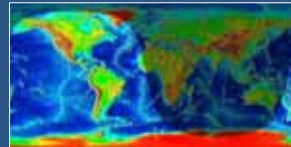
- Integrated Environmental research
  - Systems-based / multi-scale research
  - Collaborative information sharing
  - Integrated ecosystem monitoring / modeling (Air, land, water)
  - Hydrology, soil science, terrestrial / aquatic ecology, forestry, biodiversity mapping, wildlife ecology
  - Invasive species management



## GSN Globe Applications for the GLR

- Integrated Environment / Resource Management

- Multi-stakeholder, multi-user
- Remote collaboration / information sharing
- Multi-scale / multi-context visualization
- National parks planning
- Agriculture, forestry, fisheries, wildlife



## GSN Globe Applications for the GLR

- Emergency Management and Response

- Early warning (e.g. flood sensors)
- Time-critical data sharing
- Collaborative planning and response
- Personnel deployment and tracking



## GSN Globe Applications for the GLR

- Tactical Security Planning and Response

- Scenario development
- Time-critical cross-border data sharing
- Tactical planning and response
- Tactical deployment

## GSN Globe Applications for the GLR

- Tourism

- Multi-scale visualization
- Virtual tourist centers
- Virtual trip planning
- Collaborative, multi-stakeholder tourism planning and implementation
- Location-specific photo / multi-media sharing by / for tourists

