



**Expanding Regional Freight Information Resources
for the Upper Midwest
Phase VI:**

**The Great Lakes Maritime Information Delivery System:
A Resource for the Regional Analysis of Intermodal Freight Flows in the
Great Lakes Region**

Final Report

PI: Dr. Peter Lindquist The University of Toledo
Associate Professor peter.lindquist@utoledo.edu
Geography and Planning (419) 530-2545

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The University of Toledo
Department of Geography and Planning, MS 932
2801 W. Bancroft
Toledo, OH 43606



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Introduction

The project reported here is the sixth phase of a long-term effort to develop and manage the Great Lakes Maritime Information Delivery System (GLMIDS). This web-based data repository, information clearinghouse and online geographic information system (GIS) is designed to serve as a comprehensive data resource linking maritime freight transportation in the Great Lakes to the wider regional economy (see <http://www.maritime.utoledo.edu>). Users can take advantage of the GIS location-based query and selection capabilities as well as mapping functions to report data concerning transportation networks, ports, economic activities and commodity flows in the region. This project collectively contains the following functions and data sets in its current state:

- An information clearinghouse and centralized data facility furnishing links to other sites, private vendors furnishing commercial products, and government agencies, *etc.*;
- A data delivery system that includes detailed regional economic data, weather and climatic data, dock and terminal facilities, commodity movements, intermodal connectivity, lock data and navigation facilities, movements, intermodal transportation networks (including rail, highway and air);
- Preferred access to AIS data for tracking vessel movements in the Great Lakes;
- An interconnected intermodal network (water, rail, highway) that will enable analysts to incorporate transshipment costs and characteristics at terminals;
- An online *Atlas of Great Lakes Maritime Commerce* that includes maps for download in *.pdf* format;
- A data delivery function in the form of a secured FTP site at the project web page for approved users;
- A customized GIS data viewer in the form of *Midwest FreightView*;

This phase of the project has been devoted in large part to continued efforts in data collection and management, with an emphasis toward automated data collection and in the collection of newly discovered sources of data. In addition, the project team collaborated with researchers in GLMRI partner institutions through data sharing and providing access to the online GIS. This phase of the project concentrated on phasing out the current version of *Midwest FreightView* in favor of a newer, more user-friendly online GIS data viewer that will include the same data viewing features of the old system, but with improved data download capabilities and a new set of analytical tools (see Figure 1). The project team has programmed modules for seamless incorporation into the new MWFV for the routing of cargoes, definition of market and port catchment areas, and intermodal connectivity on the data delivery site. In a number of parallel projects, the project team has also devoted attention to technology transfer activities, including workshops, online documentation, and publications.

Cooperative Work and Data Sharing with GLMRI Partner Institutions.

If the data products and online data delivery tools are to be useful to the maritime community, it is essential that the members of the project team find ways to put them to work in the hands of analysts with the skills to optimize their use. The project team has continued involvement in disseminating and sharing data with our GLMRI partners and a wider community of partners. Selected cooperative ventures are summarized as follows:

- **Workshop: *Freight Data Resources for the Great Lakes Region***, Highway H20, Toledo, Ohio, September 19, 2011

- ***A GIS Connection between Brownfield Sites, Transportation and Economic Development*** (Joint project between the University of Toledo GISAG Center and the University of Toledo University Transportation Center)
- ***Multimodal Freight Transportation within the Great Lakes-Saint Lawrence Basin TRB National Cooperative Freight Research Program-35*** (Joint project between CPCS Transcom Limited, GLMRI, University of Toledo GISAG Center, Economic Development Research Group, Prime Focus LLC, and Sustainable Ports)
- ***Data Acquisition, Management and Delivery Functions in Support of U.S. Flag – Great Lakes Shipping Revitalization Study*** (Joint project between the University of Toledo GISAG Center and GLMRI)
- ***FINDE: Federal integrated Navigation Data Enhancement*** (Joint automated data acquisition project between University of Toledo GISAG Center, USACE, IRS, US Customs, and Coast Guard)

In addition to these projects, the project team is also involved with a number of other joint projects with researchers at UW-Madison, UW-Milwaukee, and The University of Illinois-Chicago. The project team will continue to solicit opportunities for joint work with our affiliate universities and outside contractors.

Data Collection

Data collection also continued in this phase through the acquisition of information relating to the regional economy, transportation networks, port and terminal facilities, and cargo movements. The project team will continue to maintain and improve the web site and our online GIS MWFV platform for data delivery purposes through parallel projects. In terms of continued data acquisition, preprocessing, and incorporation into MWFV, the following tasks (as outlined in the project proposal) are completed:

- ORNL CTA North American Rail Interlining Network
- Integrated Network—Great Lakes Waterway, Highway, Rail linked to Commercial Docks, Locks (Army Corps of Engineers)
- Updated US Highway Network Speed / Estimated Travel Times with ATRI Travel Time Data (by time of day, day of week)
- Add ESRI Traffic Counts to integrated highway network
- Link BEA Regions/BEA GDP Data to Public Rail Waybill Data
- Encode enhanced EPA eGRID Power Plant Database into MWFV and link to Rail and Waterway Networks
- Link USACE Foreign Traffic Vessel Entrances and Clearances to Ports
- Add legends, labels and text to “Last Mile” Connections on Satellite Imagery
- Input County-to-County Mileage and Impedance Tables into MWFV for analytical procedures (Useful for Analytical Tools—Accessibility, Location Analysis, *etc.*). The primary modes for these tables include: Highway, Rail, Water.

Summary

The vision for the Great Lakes Maritime Information Delivery System has evolved over the course of the project to produce a multidimensional system that can support a wide array of functions that include data storage, delivery of prepared documents, GIS functionality, and a

clearinghouse of information for maritime commerce. The main objective originally envisioned for the project remains the same: to maintain a long-term database and data distribution system that is available for port authorities, state transportation agencies, regional planning agencies and economic development organizations, as well as other interested decision makers and stakeholders within the region.

During phase six, the project team has continued its efforts in data collection, cooperative work and data sharing with GLMRI partner institutions and other partners. As the current phase of the project progresses, emphasis will shift to the implementation and application of a new MWFV data viewer, as shown in Figure 1. In addition, a new set of analytical tools will be implemented within the new viewer (see Figure 2). The new MWFV, as previously discussed, will be more dynamic and user-friendly than the current viewer. This new improved data display and delivery system will better serve the Great Lakes Maritime Community by providing easily downloadable data sets in the form of graphics, tables and maps from a more accessible platform serving a wider range of users.

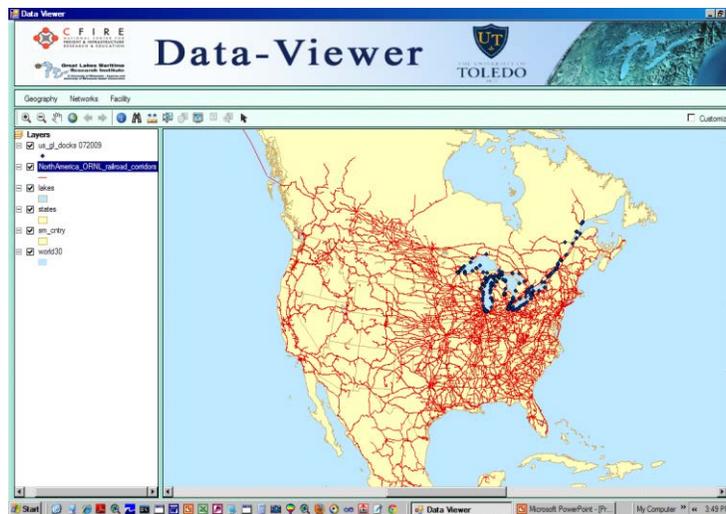


Figure 1. New Data Viewer to Replace *Midwest FreightView*

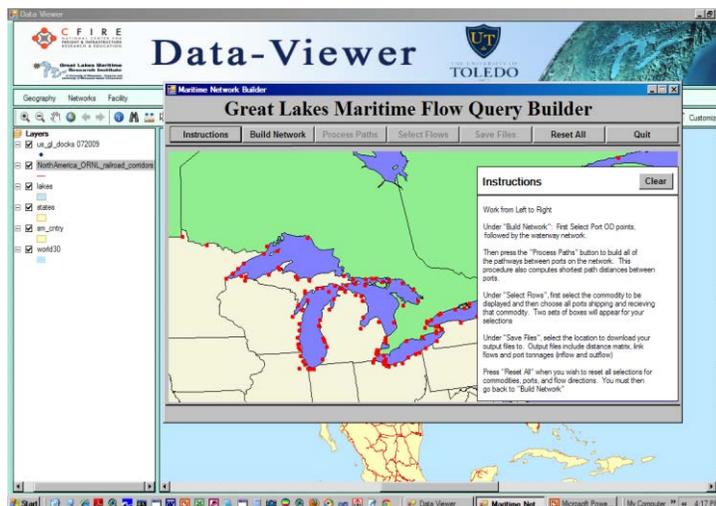


Figure 2. Tools Built into New Data Viewer – GL Maritime Query Builder