

Unleash Academia!

Presented at CMTS/TRB Meeting

**Transforming the Marine Transportation System:
A Vision for Research and Development**

June 29, 2010

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**Great Lakes Maritime
Research Institute**

*A University of Wisconsin - Superior and
University of Minnesota Duluth Consortium*

www.glmri.org

GLMRI Research Perspective

The Great Lakes is a Petri dish for MTS research

- Great Lakes shipping is 90% short sea shipping and intermodal with stiff modal competition
- Great Lakes shipping is Bi-national
 - 70 million US and Canadian citizens live within 50 miles of the Great Lakes – We must collaborate
- Great Lakes is an Emission Control Zone
- Great Lakes is changing – Global warming
 - Lower lake levels
 - Reduced ice cover = year round shipping
- The Great Lakes are a national treasure
 - We drink the water our vessels operate in



Great Lakes Maritime Research Institute

*A University of Wisconsin - Superior and
University of Minnesota Duluth Consortium*

**A National Maritime Enhancement Institute
Designated by the US Secretary of
Transportation in 2005**

Mission Statement

**The Great Lakes Maritime Research Institute is
dedicated to developing and improving
economically and environmentally sustainable
maritime commerce on the Great Lakes through
applied research.**



Great Lakes Maritime Research Institute

A University of Wisconsin - Superior and University of Minnesota Duluth Consortium

**GLMRI Co-Directors
UMD and UW-S
Dean Riehl and Dr. Stewart**

**Executive Director
Carol Wolosz**

**Advisory
Board**

**University of Minnesota
Duluth**

SCSE and LSBE

**Affiliate
Universities**

**UW-Superior
Transportation and
Logistics Research
Center**



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Advisory Board

- U.S. Coast Guard
- Lake Carriers Association
- American Great Lakes Ports Association
- U.S. DOT Maritime Administration
- US Army Corps of Engineers
- The Great Lakes Commission
- St. Lawrence Seaway Development Corp
- Society of Naval Architects and Marine Engineers



**Advice, funding, research ideas, collaboration,
Internships, grant reviewers, data, mutual support**



Great Lakes Maritime Research Institute

A University of Wisconsin - Superior and University of Minnesota Duluth Consortium

Michigan Technological University
Houghton, MI

University of Michigan
Ann Arbor, MI

Great Lakes Maritime Academy
Traverse City, MI

GLMRI

Rochester Institute of Technology
Rochester, NY

University of Wisconsin-Green Bay
Green Bay, WI

University of Toledo
Toledo, OH

University of Wisconsin-Madison
Madison, WI

University of Findlay
Findlay, OH

Purdue University North Central
Westville, IN

Purdue University
Lafayette, IN

John Carroll University,
Cleveland, Ohio May 2010

Affiliate Universities:

Provide Ideas for research topics and collaborate

Receive Funding for competitive research grant proposals



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GLMRI 2010 Grant Proposal Cycle



GLMRI Strategic Research Goals

1. More and Greener Great Lakes Maritime Traffic

- Short Sea Shipping, Ship Building Technologies
- Ballast-Free Ship design, Emission control technologies
- Expanded Operations Potential of the GLMTS
- Market Opportunities for the US-Flag vessels in Trade with Canada

2. Improved Marine Planning

- Improve integration of GLMTS into the National Transportation System

3. Increased Productivity through Technology and Management Innovations

- Vessel Operations, Port Operations
 - Intermodal Connectors,
- Aging Infrastructure and Port Corrosion Issues
 - Regulatory Changes,
 - Intelligent Transportation Systems Technologies

4. Easier and Better Access to Maritime Data/Information

- Support federal and state transportation planners

5. Create a Body of Coordinated Researchers on Great Lakes Maritime Issues

- State of the art research and teaching

H. Lee Scott, Jr. *President and CEO of Wal-Mart Stores, Inc.*

- **“All RFID and new technology are secondary to the people you hire to work with you.”**
- **“Learning about leading”**

Academic

– How do you think academia and professional societies can help prepare the next generation of maritime professionals?

- **Education – Creating new professionals**
- **Action – Access to information and sites, scholarships, internships, endowments**
 - **K-12**
 - MTS modules for K-12 classes - SOCP
 - Teaching teachers about MTS
 - **Community college and technical colleges**
 - Articulation agreements
 - MTS modules for classes
 - **BS –**
 - MTS modules for classes
 - Courses in Marine transportation mgt., engineering history
 - Integrating sustainability and intermodal concepts into all transportation related courses.

Academic

– What are the strengths and weaknesses in the current academic programs?

- **Strengths:**

- Excellent national educational and research system
- Inter-University collaboration
- Interest in being involved in MTS
- International connections
- Multi-disciplinary approach
- Political Power

Academic

- **Master – Action – Scholarships, Grants, Internships**
 - Transportation Management
 - Transportation Engineering
 - Transportation Economics
- **Ph.D. , JD–**
 - **Action - Scholarships and Grant support**
 - **Action – Access to data**
 - **Action- Post Doctorate fellowships in researching MTS**
 - » MARAD
 - » NOAA
 - » USACE
 - » DOT Secretary's office
 - Building a base of academics with an awareness of marine transportation and also an interest in researching that area

Academic

– How do you see institutions such as yours in fulfilling the national MTS strategy?

- Education of new professionals
- A bridge between state and federal agencies
- Academic awareness of MTS
- Community awareness of the importance of MTS
- Leveraging non-MTS agency grants
 - EPA Clean Diesel Grant for Repowering ships
 - State DNR – Ballast water
 - EPA Natural Gas Distribution Systems – Great Lakes
 - USDA – Marine transportation of Bio-Mass
- Research – Applied and Theoretical
- Knowledge transfer

Academic

- **Weaknesses**

- Lack of academic expertise in MTS/Intermodal
- Lack of University support of MTS research
- Lack of dedicated federal funding for University R&D in MTS
- International collaboration limited using Federal funds –
- Outreach to industry and agencies –
“Ivory Tower mentality”

Academic

Actions:

- » Immediate – Agency Pooled fund for National Maritime Enhancement Universities – Interagency transfer
- » Near Term - create dedicated funding for MTS University Research
 - FHWA – FTC University Transportation Centers
 - FAA – Centers of Excellence
 - RITA – Sun Grant Universities
 - FRA – Legislation in process
 - MTS – ??????



Questions...

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Photo by Chris J. Benson

Challenge Questions

- What are your near term (<5yrs) and long term (>10yrs) visions of the Marine Transportation System (MTS) in the context of the overall transportation system? *“Wish list”*
- *Operating the MTS as a system – Performance metrics and goals*
- *Integration of the MTS system into state DOT and national planning*
- *Dedicated funding for University MTS research*
- *Replacement of the all vessels over 30 years old with “green vessels”*
- *Planning for a North American transportation system*

Challenge Questions

- What do you consider are the drivers that will shape the future of the MTS?
- *Energy costs*
- *Congestion*
- *Environmental (external) costs of transportation systems*
- *Regulatory barriers to system efficiency*
- *Research and development*
- *Security and safety*

Challenges

- What near term and long term research and development initiatives will support the future of the MTS?
- *Cargo handling*
- *Reducing the cost of capital for vessels*
 - *Shipyard productivity*
 - *Legislation*
- *Intermodal connectivity*
- *Reducing operating costs for vessels*
- *Reducing external costs of the MTS - Greening supply chains*
- *Collaborative research*

Challenges

- What are the advantages to having a National CMTS Research and Development Strategy to support the MTS?
- *Unified approach*
- *Leveraging assets*
- *Communication of ideas and findings*

- What are the challenges to developing a National CMTS Research and Development Strategy to support the MTS?
- *Funding*
- *Open Communication*