Intermodal Transportation Institute
The University of Toledo (UT- ITI)

Annual Report 2006-2007

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The Executive Committee of the Intermodal Transportation Institute

James Hartung — President/CEO, Toledo-Lucas County Port Authority; President, ITI Advisory Committee

Heinz Bulmahn — Vice Provost for Research, Dean of the Graduate College, Bowling Green State University

Frank Calzonetti — Vice President, Research Development, The University of Toledo

David Dysard — District Deputy Director, Ohio Department of Transportation, Region 2

Robert Feldstein — Consultant, Business Consultant Services

Warren Henry — Vice President of Transportation, Toledo Metropolitan Area Council of Governments

Christopher Kaiser — Truckload Operations, ThyssenKrupp Inc./TKS Logistics

Thomas Kovacik — Executive Director, Transportation Advocacy Group of Northwest Ohio

Edwin Nagle — President/CEO, Nagle Companies, Inc.

Anthony Reams — President, Toledo Metropolitan Area Council of Governments

Philip Rudolph, Jr. — New Business Development, The Rudolph/Libbe Companies

Lee Springer — Director, International Business Development, Regional Growth Partnership

Mark Vonderembse — Director, Intermodal Transportation Institute, The University of Toledo
The University of Toledo Intermodal Transportation Institute (ITI)  
Annual Report for 2006-2007

Director’s Message

In January 2002 I began a professional journey which finishes with this first year of activities of The University of Toledo University Transportation Center as part of the Intermodal Transportation Institute. In August of 2007, I will step down as director of the ITI/UT-UTC to return to research, teaching, and other developing projects with significant promise.

In preparing for turning over the directorship to the capable hands of Rich Martinko, allow me to thank my wife for her continuing support and for many late nights, early mornings, and weekends spent working. Dean Tom Gutteridge’s support was essential to the development of the UT-UTC. Dr. Frank Calzonetti, UT’s Vice President for Research Development, Jim Hartung, Tony Reams, Tom Kovacik, and Ed Nagle have been strong community supporters since the beginning. Christine Lonsway, Assistant Director of the UT-UTC and Gloria Cook, our secretary, have made substantial contributions to our success.

Before the UTC came the establishment of the Intermodal Transportation Institute (ITI), the home of the UT-UTC. UT's Intermodal Transportation Institute, which began in January of 2000, is an interdisciplinary research and education center that focuses on developing technology enabled intermodal transportation systems and supply chains that promote economic development and quality of life.

The ITI and the UT-UTC are closely linked to the community through outreach and partnership, and they support the local, regional, national, and international communities through research, education, and economic development. The ITI and UTC report directly to the Office of Research, and are supported by the Colleges of Arts and Sciences, Business Administration, Engineering, and Law. This structure facilitates interdisciplinary programs and projects. The ITI with its close ties to key public and private sector leaders, provides the UTC with access to important partners that supply relevant ideas, advice on project creation and evaluation, and cost share.

The approval of the strategic plan for the operation of the UT-UTC in November 2006 was the culmination of many years of work. In the first year we funded eight projects that define the Center’s commitment to economic development and the education of the next generation of transportation professionals. We held a workshop on the development of market opportunities on the Great Lakes which included new perspectives in short sea shipping. I personally lead the organization of a global Research and Education Panel as part of the International Cargo Handling Coordination Association (ICHCA). In June, I made a presentation in Casablanca, Morocco as part of the efforts to recruit new members to the
Panel; the previous December one of our faculty members gathered participants in Korea and Japan. We now have universities from more than 20 countries who have committed to participate in a collaborative network that will focus on supply chain management and transportation efficiency. In November, we hosted the ICHCA board members, distinguished transportation professionals from Europe, the Canary Islands and Australia, here in Toledo. After their meeting, they participated in our Great Lakes workshop.

I have enjoyed building the Intermodal Transportation Institute and the University Transportation Center at The University of Toledo and working with the many people who have made these successes possible. Through my tenure as ITI director, I have been involved in the Upper Midwest Freight Corridor Study – Phase II, a project of the Mid-West UTC at the University of Wisconsin-Madison. I am also part of the Regional Freight Information Resources projects at the Great Lakes Maritime Research Institute. I will continue as the PI for a $1.48 million Biodiesel Fuel Study funded by the US DOT involving the City of Toledo and the Toledo Area Regional Transit Authority. And, in the fall I will be working on a UT-UTC project to develop a co-operative education program for College of Business students in Supply Chain Management.

To all of you I have met and with whom I have worked, it has been both professionally and personally rewarding. Perhaps our paths will cross again as we continue our efforts to improve the vitally important transportation systems which are so critical to all of our lives.

Mark A. Vonderembse, Ph.D.
Director
University Transportation Center &
Intermodal Transportation Institute
Professor, College of Business Administration
Ohio Department of Transportation Administrator
Selected to Head the ITI/UTC

Richard S. Martinko, former assistant director of highway management of the Ohio Department of Transportation, will take over in August as the director of the Intermodal Transportation Institute and UT University Transportation Center.

A 1974 UT graduate in civil engineering who was named UT’s Outstanding Civil Engineering Alumnus in 2002, Rich is a native of Campbell, Ohio, near Youngstown. He was selected following a nationwide search that included ads placed in academic, business, trade and major newspapers, including The Wall Street Journal, The Blade and Chicago Tribune, according to Dr. Frank Calzonetti, vice president for research development.

“Martinko’s extensive experience in leadership positions at the Ohio Department of Transportation, his business connections and his direct supervision of major transportation projects, including leading ODOT’s largest public works project, the Maumee River Crossing, excited the search committee members and the leadership of the Intermodal Transportation Institute and UT-UTC,” Calzonetti said.
Vision Statement: To develop technology-enabled intermodal transportation systems and supply chains that promote economic development and quality of life.

Mission Statement: To provide research, education and training, and planning and technical assistance in developing and maintaining technology enabled, efficient, secure, and environmentally sound transportation systems, supply chains, and logistic processes.

Goals and Objectives
- Create an internationally recognized center of excellence
- Advance technology and expertise in the many disciplines comprising transportation
- Educate a multi-disciplinary work force
- Attract students, faculty, and staff in undergraduate, graduate, and professional programs
- Enhance diversity in the various fields related to transportation

Focus Areas: Alternate Fuels, Infrastructure Utilization, and Supply Chain Applications

Based on an interdisciplinary approach that links engineering, technology, business, and geography and planning

Figure 1: Focus Areas for the Intermodal Transportation Institute

Focus Areas:
Transportation as a vehicle for economic development (see Figure 1):
- Alternate Energy: Continuing dependence on high-cost, non-renewable fossil fuels imported from politically unstable regions of the world is a threat to the future development, security, and effective use of the transportation network in the U.S. The focus on research and commercialization seeks to develop and distribute renewable, homegrown, low-polluting energy sources to support transportation.
- Infrastructure Utilization: Growing demand for transportation is stretching current infrastructure to, and in many cases beyond, its capacity. By 2020, the demand for moving freight is expected to increase by more than 50 percent. Expanding
infrastructure, by itself, may not be an effective solution because it is expensive and consumes valuable land that could be used for agriculture, recreation, and commerce.

- **Supply Chains:** The emergence of supply chains and sophisticated distribution systems is placing new demands on transportation. Understanding transportation’s role in this new paradigm and adapting the transportation systems to meet the needs of suppliers, manufacturers, and customers is fundamentally important for economic development.

The web site for the Intermodal Transportation Institute can be found at [http://www.utoledo.edu/research/ITI/](http://www.utoledo.edu/research/ITI/)
The University of Toledo University Transportation Center (UT-UTC)

A University Transportation Center (UTC) is an internationally recognized center of excellence that is fully integrated within an institution of higher learning. It is designed to advance technology and expertise in the many disciplines comprising transportation. Through the efforts of the ITI and with the support of public and private sector partners, the University of Toledo was designated as a University Transportation Center by the U.S. Department of Transportation in September of 2005 with partners Bowling Green State University and Wayne State University. The University of Toledo is also part of the UTC designation that includes the University of Detroit Mercy (lead university) Bowling Green State University, Grand Valley State University, and Wayne State University. The UT led UTC brings to campus $2.0 million in federal money over four years plus the required match; funding began in 2006. UT will also share in the $2 million received by the UDM UTC. Both UTCs focus on alternate energy, infrastructure utilization, and supply chain management. The UT-UTC funding will continue through 2010 subject to annual renewal by the U.S. DOT and congressional appropriations. The web site for the UT-UTC can be found at http://www.utoledo.edu/research/ututc/

In November, the strategic plan that will guide the UT-UTC throughout the grant period was approved by the grant administrator in the Research and Innovative Technology Administration of the U.S. DOT. It was among the first five Tier II plans to receive approval. The full text of the plan can be found at http://www.utoledo.edu/research/ututc/strategy.html

This first year, the UTC at The University of Toledo has focused on building programs within the university setting. A project was funded to develop an International Collaborative Masters Program in Global Supply Chain Management. Another masters degree project to develop an MS in supply chain management/transportation is being done in collaboration with the Michigan-Ohio UTC at the University of Detroit – Mercy. At the baccalaureate level, another funded project will support the development of a cooperative program in supply chain management and, it is hoped, serve as a template for similar programs elsewhere.

A project was also funded that will expand the role of intermodal transportation in a newly proposed spatially integrated social science Ph.D. program to be administered jointly among the Departments of Geography and Planning, Economics, Political Science and Public Administration, and Sociology and Anthropology at The University of Toledo. The program will also develop seminars in transportation and urban form. Specific areas of transportation research and teaching will include: 1) Transportation and Urban Form; 2) Transportation, Public Administration and Policy; 3) Transportation Analysis and Quantitative Methods; 4) Intermodal Transportation—Passenger and Freight; 5) Infrastructure Utilization and Planning; and 6) Transportation and the Environment.
The Center theme of economic development through research in transportation is especially valid considering the location of Toledo, Ohio: I-75 and I-80/90 intersect offering unique opportunities in distribution and logistics; 100 local freight carriers have long made Northwest Ohio a major center for the trucking industry; the Toledo Express Airport ranks among the busiest air-cargo hubs in the country; four major freight railroads move through the region making Toledo one of the top ten rail hubs in the U.S.; the Port of Toledo is one of the most diverse and productive ports on the Great Lakes/St. Lawrence Seaway system.

Promoting the conviction that better understanding through transportation research will foster economic development in the region, the UTC funded projects this first year that will do the following:

- Build a data base of freight information resources for the identification of market opportunities for a Great Lakes maritime transportation system.
- Develop a framework for revealing the implications of alternative types of ownership and governance of a new Detroit-Windsor river crossing.
- Develop an intelligent support system in creating optimal truck routes and schedules under the hours-of service rules in the trucking industry.
- Build a global network of transportation scholars that will provide benefits from the synergies of their interaction.

In alternate energy research projects, the UT-UTC funded one project, another project was funded through the Michigan-Ohio UTC and the ITI continued work on a major study funded by the U.S. Department of Transportation. A grant was awarded for work that will result in the improvement of the noise and vibration characteristics of hybrid vehicles with alternative propulsion systems.

A list of all the UT-UTC funded projects with their funding amounts and abstracts can be found in Appendix A or on the web at [http://www.utoledo.edu/research/ututc/projects.html](http://www.utoledo.edu/research/ututc/projects.html)

Technology transfer is at the heart of developing a more effective transportation system on the Great Lakes. The conference “Great Lakes: From Data to Markets to Shipping Opportunities” held by the UTC in the fall of 2006 was attended by maritime and other transportation professionals from around the country. This was the second in a series begun with the Great Lakes Maritime Data Workshop held in Detroit June 2006 as part of the development of the Great Lakes Maritime Research Institute (GLMRI) project “Expanding Regional Freight Information Resources of the Upper Midwest: The Great Lakes Maritime Information Delivery System.” The third in this series, continuing the focus on developing shipping opportunities, will be held in Toledo, October 2007.

The director of the ITI/UT-UTC, Mark Vonderembse, has spearheaded the organization of the International Cargo Handling Coordination Association (ICHCA) Research and Education Panel. Expressions of interest, cooperative arrangements and letters of commitment have been received from a dozen universities in Australia, Singapore, India, Japan, Korea, Hong Kong, Spain and Canada; discussions are being held with several others. In October 2007, as part of the development of this panel, the “International Symposium and Workshop on Global Supply Chain, Intermodal Transportation and Logistics” will be held in
Dr. Vonderembse made a presentation at the ICHCA Canarias/Africa Regional Chapter meeting in Casablanca, Morocco in June 2007 as part of the recruiting effort. In December 2006, Dr. Paul Hong, a faculty member of the Information Operations Technology Management Department of the College of Business Administration, traveled to Korea and Japan to gather participants for the panel during the Asia Academy of Management meeting in Tokyo.

The UT-UTC took a leadership role in the coordination and organization of a Brazil/USA webinar on renewable fuels. Initiated by FHWA and RITA within the US Department of Transportation, seven universities participated in Team USA. On June 18, 2007 the webinar “Renewable/Alternative Fuels in the Transportation Sector” was held with seven presenters from the U.S. along with the University of Sao Paulo and the Brazilian Ministry of Mines and Energy. The goal of the webinar was to build cooperation in the future and identify collaborative efforts among the participants. The presentation from the universities in the U.S. can be viewed at [http://research.utoledo.edu/brazil_webinar.html](http://research.utoledo.edu/brazil_webinar.html).

The complete Annual Report of the UT-UTC for 2006-2007 covering all of its activities can be found at [http://www.utoledo.edu/research/ututc/docs/UT-UTC_Annual_Report_2007_colo.pdf](http://www.utoledo.edu/research/ututc/docs/UT-UTC_Annual_Report_2007_colo.pdf). Abstracts of all of the funded projects are also presented in Appendix A. The first UT-UTC newsletter disseminated in March is attached in Appendix B. It can also be found on the UT-UTC web site.

### Partnership in the Michigan-Ohio UTC at the University of Detroit – Mercy

The University of Toledo is also a partner in the Michigan-Ohio University Transportation Center led by the University of Detroit – Mercy. Along with the other partners (Bowling Green State University, Wayne State University, and Grand Valley State University) the UT-UTC participates in projects which share the same basic theme. Several joint projects are already underway. The Director and the Vice President, Research Development both sit on the policy committee of the MI-OH UTC. ([http://mioh-utc.udmercy.edu/](http://mioh-utc.udmercy.edu/))

### Research – Alternate Fuels

An alternate energy project was funded by the MIOH-UTC in which The University of Toledo is a partner. The research will investigate the factors associated with biodiesel oxidative stability, including natural and synthetic antioxidants, storage and processing conditions. Titled “Improve Oxidative Stability of Biodiesel Fuels: Antioxidant Research and Development” the details of the project including the abstract can be found at [http://mioh-utc.udmercy.edu/research/af-4/index.htm](http://mioh-utc.udmercy.edu/research/af-4/index.htm)
Education – Alternate Fuels

An education project in alternate energy was funded by MIOH-UTC involving the building of a hydraulic test stand which will be used to evaluate the components of hydraulic hybrid vehicles. This experimental setup will enable faculty at The University of Toledo and the University of Detroit — Mercy to teach concepts related to hybrid vehicles in a hands-on environment. Titled “Multipurpose Educational Modules to Teach Hydraulic Hybrid Vehicle Technologies” the details of the project and the abstract can be found at http://mioh-utc.udmercy.edu/education/af-1/index.htm

Education – Supply Chains

Another education project funded by the MIOH-UTC in which UT faculty participated is titled “Supply Chain Transportation Efficiency Systems Graduate Degree Program.” The graduate program being developed by faculty from UDM and UT will cover all areas in supply chain and transportation efficiency. Full details of the project can be found at http://mioh-utc.udmercy.edu/education/sc-1/index.htm

Collaborations with the University of Wisconsin – Madison

New National UTC — CFIRE

The University of Toledo and the ITI will participate in the national Center for Freight and Infrastructure Research and Education, CFIRE. $500,000 has been designated for the University of Toledo as a collaborator over five years.

CFIRE is one of the ten National University Transportation Centers that were established by the SAFETEA-LU. CFIRE is led by the University of Wisconsin, Madison (Dr. Teresa M. Adams, Director). CFIRE will “…focus on issues of sustainability and freight transport as it advances technology, knowledge and expertise in the planning, design, construction and operation of sustainable freight transportation infrastructure and its associated systems.” The University of Toledo places a priority on supporting activities that will advance the state-of-the-art of freight transportation planning especially in the areas of commodity flows and supply chain relationships, and in linking freight movements to economic development. Also, the program will provide graduate students to work on freight-related research, education, and outreach activities. It is expected that the program described in the work plan will graduate three master’s students with either full or partial funding from CFIRE. Research projects undertaken by these students and faculty supervisors, along with outreach and support for conference participation, will make a significant contribution toward advancing the freight transportation research in many fronts.
Director Vonderembse and Peter Lindquist of the Center for Geographic Information submitted the work plan for the project for years 1 and 2. The involvement with CFIRE is a long-term investigation to continue to develop the regional transportation data repository and related resources in the Midwest FreightView distributed GIS system. Data from these resources will then be incorporated in studies to trace economic linkages and their related commodity flows in the Midwestern economy through an input-output modeling approach. In Years 1 and 2 of the work plan, the study region will be limited to the ten states comprising the Mississippi Valley Freight Coalition. The linkages drawn from the input-output model will be compared to highway, rail and waterway traffic volumes on the region’s transportation infrastructure and to county-level employment by those economic sectors used in the model. These findings will enable the project team to identify regional patterns in the flow of freight on the county level within the region, and in turn, to identify critical supply chain relationships—particularly in the manufacturing economy.

The proposed project positions itself among a variety of interdisciplinary research approaches that include economics, geo-spatial technology, and supply chain management and logistics. It is envisioned that the outcome of this research will enable regional economists, supply chain analysts, and transportation specialists to better understand the structure of traffic flows resulting from the spatial distribution of suppliers, manufacturers, distributors and markets within the region. It is further envisioned that the long-term outcomes of this work will provide a deeper understanding of the relationship between the related factors of transportation costs, composition of commodity flows, their direction and volumes, the impact of transportation system efficiency, and technological changes associated with fuel sources, mode of transportation, and other anticipated and projected improvements in the transportation system. In this respect, the multidisciplinary team at the University of Toledo is well-positioned to successfully conduct the research and deliver relevant results.

The Center for Geographic Information Science and Applied Geographics (GISAG) and the Intermodal Transportation Institute at the University of Toledo will cooperate in carrying out the project. Detailed transportation-related data have been accumulated at the GISAG Center in the course of designing and implementing both the Great Lakes Maritime Information Delivery System and Midwest FreightView. (See Figure 1 below.) In addition, detailed ES/202 economic data representing employment by NAICS Sectors have been encoded, registered and linked to the transportation network. The purpose of both of these systems is to serve as the informational backbone to the spatial analysis of transportation patterns that include highways, rail, air, and maritime modes in the Midwest. Intermodal connections are also integrated into these systems with an emphasis on perspectives and impacts of such factors as technological and regulatory readiness, environmental impact, potential for improving effectiveness, and utilization of the transportation infrastructure.

The data viewer is currently available for use on the GISAG Citrix Metaframe system. However, the project team is currently developing a more robust UNIX-based delivery system for users. A secure FTP site will also be available for direct download of data for partner schools and agencies. Resources are being allocated to assist users in accessing and using the data.
Work continues on both systems with the aim of merging them into a single comprehensive multimodal Information Delivery System within the framework of Midwest FreightView. This new multifunctional analysis tool integrated in a geographic information system will focus on synthesizing economic spatial data with commodity flow data and traffic patterns in order to effectively document and explain patterns of economic activity among all major sectors of the regional economy with an emphasis on their linkage to freight movement. This work will continue with the partnership of the Great Lakes Maritime Research Institute.

![Midwest FreightView Data Viewer](image)

As a result, this system will enable analysts to more effectively characterize the direction and patterns of economic change in the transportation industry and regional economy, and more accurately measure the impacts of transportation changes on the regional economy. In turn, it is anticipated that this tool will provide a foundation for modeling flows between modes and for evaluating transportation alternatives according to their environmental, economic, and transportation system load impacts. As an innovative applied technique under development, this tool should enable the project team to identify potential configurations of the transportation system with respect to minimizing environmental impacts, creating a favorable economic outlook, maximizing sustainability among alternative technological assumptions, and a variety of additional complex decision-making criteria.

Key personnel on the project are

- Dr. Peter S. Lindquist, Chair, Department of Geography and Planning
- Dr. Oleg A. Smirnov, Department of Economics
- Dr. P.S. Sundar, Department of Information Operations, and Technology Management
- Dr. Mark A. Vonderembse, Department of Information Operations, and Technology Management
The Upper Midwest Freight Corridor Study

Phase II of the Upper Midwest Freight Study (Illinois, Indiana, Iowa, Ohio, Michigan, Minnesota, and Wisconsin) was concluded in October 2006. The results were presented to the CEOs for the state DOTs at the Mississippi Valley AASHTO meeting. Based on this work, it was agreed to add three states to the project (Missouri, Kansas, and Kentucky). Also, a Memorandum of Understanding was signed to work together to identify regional transportation problems and needs and to work together toward resolutions.

The University of Toledo Intermodal Transportation Institute was a participant in both Phase I and Phase II of this study with ITI director Mark Vonderembse serving as a co-project manager of the research team for Phase II. The ITI and the Ohio Department of Transportation were both sponsors of the project. UT currently houses all of the data for the Upper Midwest States and will continue to play an important role.

The future work will be done with the expanded participants as the Mississippi AASTO Valley Freight Coalition. The project is being led by the National Center for Freight and Infrastructure Research and Education (CFIRE) at the University of Wisconsin – Madison. Both the ITI and ODOT remain as sponsors. This project continues to evolve in response to stakeholder needs.

The final report of the Freight Corridor study can be found at [http://www.mississippivalleyfreight.org/](http://www.mississippivalleyfreight.org/). Both ITI director Mark Vonderembse and Peter Lindquist of the Department of Geography and Planning were report authors. Volume II of the report includes a paper by Dr. Vonderembse titled “Trade Between China and the Upper Midwest States” and by Dr. Lindquist titled “Information Resources for Supporting the Regional Freight Agenda in the Upper Midwest.”

Midwest Freight Corridor Study Discussion in Ohio

In the fall of 2006, the ITI hosted a dialogue lead by Ernie Wittwer, project leader for the Upper Midwest Freight Corridor Study Phase II, as part of an expansion of the project to the next phase. In conjunction with the Mississippi Valley region of the American Association of State Highway and Transportation Officials (AASHTO), Mr. Wittwer was asked by the state DOTs to meet with shippers and carriers in the ten states of an expanded study to discuss the transportation needs of Ohio and the nation. This meeting attended by public and private sector transportation practitioners emphasized a global vision to solving existing and impending problems.
The Great Lakes Maritime Research Institute (GLMRI) was established in 2004 to pursue research efforts in marine transportation, logistics, economics, engineering, environmental planning, and port management. The US Maritime Administration designated GLMRI as a National Maritime Enhancement Institute on June 1, 2005.

GLMRI represents a consortium of the University of Wisconsin-Superior Transportation & Logistics Research Center and the University of Minnesota Duluth Swenson College of Science & Engineering and Labovitz School of Business and Economics. Affiliate institutions, including the University of Toledo, are shown in the graphic below which appears on the GLMRI website.

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. More on GLMRI can be found at http://www.glmri.org/

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The Great Lakes Maritime Information Delivery System

The Intermodal Transportation Institute was integral to the development of the “Regional Freight Information Resources for the Upper Midwest: The Great Lakes Maritime Information Delivery System.” Phase I established a transportation information system that
enables the use of market analysis to determine opportunities for moving freight on the Great Lakes. The original project extended from January 2006 to August 2006. Funding was received for work in Phase II which focuses on expanding regional freight information resources for the Upper Midwest with the implementation of the Great Lakes Maritime Information Delivery System. The Online Information Clearinghouse can be accessed at www.maritime.utoledo.edu.

To link this study to the “real world,” an advisory board composed of Great Lakes maritime and shipping experts was established to provide input into the research agenda. Members of the board include the Maritime Administration, the St. Lawrence Seaway Development Corporation, the U.S. Coast Guard, the Lake Carriers Association, the Great Lakes Commission, the American Association of Great Lakes Port Authorities, The Society of Naval Architects and Marine Engineers, and the U.S. Army Corps of Engineers.

The final report “Expanding Regional Freight Information Resources for the Upper Midwest: The Great Lakes Maritime Information Delivery System” was written by Peter S. Lindquist of the Department of Geography and Planning and Director Vonderembse. The complete report can be accessed at http://www glmri.org/research.html

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Projects with the U.S. Army Corps of Engineers

**Master Dock File for the Great Lakes**

Through numerous contacts and an on-site meeting with U.S. Army Corps of Engineers personnel, funding was identified to create a Great Lakes Master Dock File which will update and enhance information on docks in the Great Lakes area. The work will entail gathering information on docks and facilities, and updating the information. The project is envisioned as multi-year.

The Navigation Systems Division, Navigation Data Center (NDC), and its predecessors have been responsible for the periodic revision of the Port Series Reports for over 80 years. The reports in the series cover the principal United States Coastal, Great Lakes and Inland Ports, and are the result of authority granted by statute. Each report constitutes a complete description of the port facilities included within a port area, a group of port areas, or similar port entity.

Each facility description is currently derived from a combination of acquired data including, but not limited to, personal site inspection by qualified engineering personnel; personal interviews with terminal operators; and review of port facility plans, charts, maps, aerial photography, directories, and other media.
The existing process of surveying port areas in totality is highly accurate, however, the process requires a significant amount of the NDC’s time and resources to maintain current information. It takes many years to complete the total U.S. inventory of piers, wharves, docks, and facilities, and their characteristics. It is believed this information needs to be more current in order to be used effectively to make critical transportation decisions. Information on facilities is accurate at the time it is collected, but becomes less accurate as the data become dated.

The overall goals of the project are to establish a process for collecting data for the U.S. Army Corps of Engineers Master Dock Plus database in a more efficient manner than previously provided using former Port Series methods, and to develop a process that will facilitate dynamic and timely updates to the Master Docks Plus database, including a process for electronic exchange of information between Master Docks Plus and systems external to the Corps. The project will include selected facilities within the Great Lakes region to prototype and formulate the new process for collecting data.

The University of Toledo will be tasked to perform all functions necessary to determine the character of the port area’s viable facilities. Each such facility, including piers, wharves, and docks, used or capable of being used for handling cargo or for providing services to commercial craft will be surveyed using processes developed by the University, incorporating new technologies and applications such as GIS and data overlays. A visual inspection will be performed to obtain all required information in cases where other methods and technology are not sufficient. Descriptions of each facility will include all items required for input into the Corps’ Master Docks Plus database.

Independent Technical Review for the Great Lakes Transportation Rates for 2005

Director Vonderembse served as the PI on a grant to perform an independent technical review of the Great Lakes and St. Lawrence Seaway transportation rate analysis which was conducted by the Tennessee Valley Authority (TVA) for the Great Lakes and Ohio River Division’s (LRD) Navigation Planning Center of the U.S. Army Corps of Engineers.

The review focused on the methodology, judgment, and assumptions used to construct the transportation rates. The project did not involve verifying the absolute precision of the rate data but rather verified the reasonableness of the data. The project was completed in June 2007.
The Intermodal Transportation Institute at The University of Toledo is the lead on a U.S. Department of Transportation (Transit Authority) funded “Biodiesel Study” which focuses on the impact of using a mixture of renewable biofuel and diesel fuel on operating costs as well as engine emissions, performance, and expected life in a subset of the local transit authority bus fleet and City of Toledo vehicles. It will also examine the economic and financial impacts of these alternatives on operations. Unique aspects of the project include 1) its large scale signified by the use of new vehicles to set an effective benchmark, 2) the collection of extensive emission (in-bus, tail pipe) and engine wear data, 3) the examination of the impact of technology and economies of scale on large scale production.

The buses began to use biodiesel in the Spring of 2006; preliminary results for pollution levels were achieved by June 2006. This project is funded at $1.48 million (UT’s share $575,605). It began in July 2005 and will continue through June 2008.

### Progress Report June 30, 2007 Summary

With the vision and leadership of Congresswoman Marcy Kaptur, the Toledo Area Regional Transit Authority (TARTA) and the Intermodal Transportation Institute (ITI) at the University of Toledo developed a long-term, large-scale comprehensive research project to understand and assess the impacts of using a mixture of renewable biodiesel (B-20: 20% biofuel and 80% ultra-low sulfur diesel) compared to ultra-low sulfur diesel. The following make this study unique.

1. The first study that does on-road testing of ultra-low sulfur diesel and first attempt to investigate the impact of using B-20 made with ultra-low sulfur diesel.
2. The testing is exhaustive including nearly 60 vehicles over a three year period and involves more than 5 million miles of operation.
3. With three years of data, it is possible to estimate and compare the life cycle costs of using ultra-low sulfur (ULS) diesel fuel versus B-20 made with ULS diesel.
4. In addition to tail pipe emission testing, this study examines in-bus air quality.
5. The first study that examines the use of hydrogen gas as an additive to B-20.
Use of B-20

1. Switching costs from diesel to B-20 for TARTA and the City of Toledo were minimal.
2. There were no unexpected problems in the continuing use of B-20. Initially, both the City of Toledo and TARTA experienced the need to change fuel filters more frequently as B-20 helped to clean the fuel tank and lines.
3. Drivers at TARTA and the City of Toledo felt that the engines ran smoother and quieter, that there was less exhaust smell, and that there was no loss of power with B-20 compared to ULS diesel. They perceived no down side to the use of B-20.
4. Mechanics at TARTA saw no difference in the performance of B-20 compared to ULS diesel. Mechanics at the City of Toledo felt that the vehicles using B-20 ran smoother and quieter and had less odor than similar vehicles using ULS diesel.

Performance and Costs

1. The City of Toledo experienced an increase in miles per gallon (MPG) when using B-20 compared to ULS diesel, between 5.5% and 11.0%.
2. TARTA experienced mixed results. For the Bluebird buses, MPG was higher for the buses using B-20 compared to buses using ULS. This is true for stop-and-go as well as over the road routes. For the Thomas buses, the opposite is true. This seems to indicate that engine type/manufacturer makes a difference in MPG.
3. The City of Toledo experienced no significant difference in engine related maintenance costs while TARTA had mixed results with much lower engine related maintenance costs in the Thomas buses that used B-20. The opposite was true for the Bluebird buses.
4. There was no difference in engine wear between the B-20 and ULS diesel vehicles.

Environmental Impact

1. Overall, there are no significant differences in tailpipe emissions between B-20 and ULS diesel. However, there are significant improvements for both B-20 and ULS diesel compared to low sulfur diesel.
2. There is no difference in indoor air pollution when B-20 is compared to ULS diesel.
3. To reduce emissions, lower idling revolutions/minute and increase engine temperature.

Hydrogen Enhancement

Projecting a ten percent fuel savings to a fleet of 173 buses, and using the 2006 TARTA usage patterns, the annual savings of fuel purchased at $2.20 per gallon will be $233,100 and represents an annual reduction of 1.17 thousand tons of carbon dioxide. (The dollars saved are gross estimates and do not include the cost to retrofit the engines.)
Perspectives

1. TARTA and the City of Toledo are encouraged by the potential fuel savings from B-20
2. TARTA is pleased by the positive impact of B-20 use on emissions. (Emission and air quality testing on the City of Toledo vehicles begins in the second year.)
3. TARTA is purchasing 35 new Bluebird buses and is planning to use biodiesel in all.
4. The City of Toledo is expanding the use of biodiesel in its fleet.

New Activities Planned For Year 2

1. Identify the type of bus routes to determine if there is a relationship between the route (stop-and-go or over the road) and fuel economy.
2. Investigate the differences in fuel economy between vehicles with different engines: Thomas buses versus the Bluebird buses, and TARTA buses and City of Toledo vehicles.
3. Conduct detailed analysis of maintenance costs to determine if there is a relationship between the type of fuel used and engine related maintenance.
4. Expand the number of City of Toledo vehicles in the program so side-by-side comparisons can be done.
5. Conduct in-vehicle testing of air quality for the City of Toledo vehicles.
6. Perform tailpipe testing for buses on specific routes.
7. Investigate different levels of biodiesel from B-5 up to B-100.
8. Assess particulates in the exhaust stream.
9. Investigate the possibility of using additives in ULS diesel and in B-20 to determine if there are differences in fuel economy and emissions.
10. For the hydrogen boost project, conduct additional testing on the rolling dynamometer, tail pipe emissions, and fuel economy.

Policy Consideration for Discussion

1. The results from the first year could support a policy to require the use of a small amount of biofuel in all diesel fuel (2 to 5%), depending on availability and achieving consistent high quality fuel. Minnesota has a similar requirement that could be investigated.
2. Widespread use of biodiesel requires standards and testing to achieve a consistent, high quality. If Northwest Ohio is to become a center for this activity, it is essential that research and facilities to support this testing be created in our region.
3. With tight budgets in both public and private sector organizations, it is necessary to find ways to offset the extra cost for biodiesel. Alternatives should be examined.
4. It may be reasonable to argue that these incentives will be more than offset by the economic impact of using and paying for fuel grown by farmers in this country rather than shipping our dollars abroad for imported oil. Economic impacts can be assessed.
Transportation on the Great Lakes

Ship and Port Design for Short Sea Shipping

Short Sea Shipping is the ability to move freight by water as an alternative to overland hauling via rail or truck. Shipping routes on the Great Lakes and along the coast of the U.S. are substantially underutilized. This is an opportunity to move freight off congested highways and rail corridors onto water.

To help relieve growing congestion on the highways and rail lines around the Great Lakes, the ITI is working with public and private sector organizations as well as unions to identify and develop new technologies in ship and port design that could expand shipping on the Lakes. Efforts are currently underway involving the International Cargo Handling Coordination Association (ICHCA) to address this need.
From Data to Markets to Shipping Opportunities Workshop

An all day workshop entitled “Great Lakes: from Data to Markets to Shipping Opportunities” was held at the University of Toledo, Toledo Ohio on November 7, 2006. This event was sponsored by the University’s Intermodal Transportation Institute and University Transportation Center (ITI/UT-UTC); the Geographic Information Science and Applied Geography Research Center (GISAG) of the Geography and Planning Department; The Great Lakes Maritime Research Institute (GLMRI), a consortium of the University of Wisconsin-Superior Transportation & Logistics Research Center and the University of Minnesota Duluth College of Science & Engineering and Labovitz School of Business and Economics; The Toledo-Lucas County Port Authority, and the International Cargo Handling and Coordination Association International.

The purpose of the workshop was to examine ways to use the Great Lakes as an important transportation link. The states and Canadian provinces surrounding the Great Lakes face a growing demand for transportation. Many vital highway and rail corridors are congested and are projected to get much worse; demand for freight movement will expand substantially by 2020 (50% or more); and there is a lack of funds and support to increase highway capacity. The Great Lakes offers a low cost, low congestion, low emission alternative to truck and rail movements.

The proposed project focuses on economic development of the Great Lake’s marine transportation system. It examines technology alternatives for moving container and trailer freight on the Great Lakes in ways that are coordinated and compatible with other modes of transportation. Understanding the shipping technology that is currently available globally is an important initial step in selecting vessels to provide shipping services that meet customers’ needs (technical requirements and economic feasibility). If existing vessels are not appropriate, then their designs can be modified or new vessels can be created. This project is complementary with current efforts to understand the movement of freight in the Great Lakes region across all modes of transportation. Identifying market opportunities for shifting freight movements onto the waterways and developing vessels that are well suited to the task should increase regional transportation efficiency.

The workshop attempted to evaluate the market opportunities for short sea shipping by commodity type. What commodities are currently moving by highway and rail that could move via ship at lower costs? What new opportunities are possible? How can we more fully participate in international trade? The workshop identified the need to develop a plan and methodology for analyzing the origin to destination of freight flows in the Great Lakes region for the purposes of establishing scheduled shipping in order to compete for time sensitive cargo. This would apply to bulk cargo, containers, and trailers on ships. The effort must evaluate the economic viability of establishing transshipment facilities for expanding international trade including the possibilities of containers, and it must review and summarize the new technologies for vessel design and propulsion systems that could improve the operating cost and delivery time for cargo on the Great Lakes. Finally, this effort must work with existing agencies to bring the Great Lakes ports together to develop a shared plan for expanding commerce on the Great Lakes.
Those attending the workshop included representatives from the American Great Lakes Ports Association; the Army Corps of Engineers - Waterborne Commerce Statistics Center; the Detroit/Wayne County Port Authority; the Great Lakes Commission; ICHCA Board Members; the International Joint Commission, Council of the Great Lakes; the Lake Carriers' Association; the Toledo-Lucas County Port Authority; the US Maritime Administration; Nagle Companies (truck and logistics); the Toledo Metropolitan Area Council of Governments; the Toledo Trucking Association; the US Corps of Engineers, Navigation Planning Center; the US Saint Lawrence Seaway Development Corporation; the National Oceanic & Atmospheric Administration, Office of Coast Survey - Navigation Service Division; and others.

The program included a progress report on the Great Lakes Database by Dr. Peter Lindquist, Chair of UT’s Department of Geography and Planning; a presentation titled “Developing a Marketing Plan” by Dr. Mark Vonderembse, Director of UT’s ITI and UTC; and an overview of shipping technology by David Bendall, Deputy Chairman of ICHCA International and founder of MariTrade, a company specializing in services to the shipping industry. He presented pictures of large catamaran vessels used in Australian passenger and freight movement which are fast in transit, fast turnaround in port, offer flexibility and versatility in deck layout, shallow draft, minimal crew numbers and are reliable and economical to operate. After the presentations, the group separated into two sections for further discussions on the data and on market development. The presentations can be viewed at http://www.utoledo.edu/research/ITI/

This was the second in a series following the Great Lakes Data Workshop which was held in Detroit, Michigan June 2006. A third workshop is being planned for the fall of 2007, again in Toledo.
Building a Global Network of Scholars and Educators

The Intermodal Transportation Institute and University Transportation Center has established a strong relationship with the International Cargo Handling Coordination Association International (ICHCA) through its willingness to head the formation of an International Research and Education Panel. Director Mark Vonderembse is the chairman of this Panel. The ITI/UT-UTC, along with its industry advisory board, has identified global supply chain and transportation as critical to the long-term competitiveness of the US. To address this, the UT-UTC is attempting to build educational and research relationships with high-quality universities around the world which will form the panel within ICHCA.

In June, Dr. Vonderembse gave a presentation at the ICHCA Canarias/Africa Regional Chapter meeting in Casablanca, Morocco in which he explained the concept of the Global Network of Scholars in an effort to recruit members. In December 2006, Dr. Paul Hong, Associate Professor of Information Operations Technology Management at The University of Toledo, traveled to Kyungpook University in Korea to meet with professors to discuss supply chain management practices and participation in the panel. He also attended the 2006 Asia Academy of Management conference in Tokyo followed by meetings with researchers at Tokyo University. They discussed future engagement with Asian scholars to promote joint research in global supply chain management involving China, Japan and Korea. Several universities have signed letters of commitment as a result of this trip.

The Core Concept

Research on global supply chain management/transportation efficiency systems is critical for promoting economic cooperation and improving global living standards. Global supply chain management integrates information, material and cash flow processes across all functions including sourcing, operations, return and recycling, and logistics and planning – for all partners. Supply chain system professionals are the agents of change for e-business, manufacturing, high-tech, service and consulting companies. This is the core philosophy for building an international network of scholars.
The International Research and Education Panel is affiliated with the International Cargo Handling Coordination Association (ICHCA) International Limited and the International Manufacturing Strategic Survey (IMSS). This group acts as a collaborative network of universities that focus on supply chain management and transportation efficiency and will address all aspects of supply chain management from transportation, to cargo handling, to shipping, etc. The International Panel will engage in research collaborations to understand and resolve issues that are critical to businesses and would develop education and training programs for professionals in these fields. This program is international in scope and interdisciplinary in approach because it brings together the many disciplines (engineering, technology, business, economics, and trade and commerce) that support the movement of goods around the globe.

**Project Objectives**

The objectives are (1) to engage in an international network of research collaboration to identify, analyze, and solve complex transportation and supply chain problems, and communicate those solutions toward their successful implementation, and (2) to develop education and training programs that meet the needs of transportation, logistics, and supply chain professionals around the world. The research and educational programs will be guided by the close association with ICHCA and its members who will act as an advisory board for this network of universities.

These efforts will create an international organization that is capable of defining and completing research and publications that are relevant to global supply chain managers. They will also be able to develop educational programs at the associate, undergraduate, masters, and Ph.D. levels to prepare a new workforce for an environment of expanding global trade, and training and updating the skills of workers and managers already working in their fields.

It is critical to fully develop membership in the Research and Educational Panel of ICHCA. Vision, mission, and objectives must be agreed on; a charter for the organization written; and some initial projects designed that will allow it to be successful. It is also essential to identify existing organizations to partner with and to develop a plan to support the vision described earlier.

**Participating Universities**

In addition to the universities listed below, conversations are taking place with several others. The following universities have expressed interest in the International Research and Education Panel:

- Australian Maritime College
- Queensland University of Technology
- PSG Institute of Management (India)
- Singapore Polytechnic
- University of Technology, Sydney
The following universities have signed a letter of commitment to participate in the panel:

**Politecico di Milano** - Gianluca Spina: Professor in the Department of Management, Economics, and Industrial Engineering at Politecico di Milano, Italy. He is also the Business School Director and International Manufacturing Strategy Survey (IMSS) Coordinator

**McMaster University, Canada** - Paul K. Bates: Dean of the College of Business Administration, McMaster University, Canada

**Tokyo University, Japan** - Note: On December 22, 2006, Paul Hong (The University of Toledo) met all three scholars below and they affirmed their desire to engage in continuous collaborative research with The University of Toledo.

Youngwon Park: Researcher at the Manufacturing Management Research Center at the University of Tokyo, Japan.

Takeshi Hiromatsu: Professor at the University of Tokyo and Director of Advanced Social and International Studies.

Takahiro Fujimoto: Professor in the Department of Economics at Tokyo University and Executive Director of the Manufacturing Management Research Center at the University of Tokyo, Japan.

**Sookmyung Women’s University, Korea** - Byung-Kyu Sohn: Professor and Global SCM Coordinator at Sookmyung University, Korea.

**Kyungpook University, Korea** - Gyewan Moon: Associate Professor and Director of the Innovation Center at Kyungpook University

**City University of Hong Kong** - Hongyi Sun: Associate Professor of Mechanical Engineering and Engineering Management at the City University of Hong Kong.

*From Left to right: (December 22, 2006) Prof. Takahiro Fujimoto, Prof. Paul Hong and Dr. Ezra Park at the Manufacturing Research Center, University of Tokyo, Japan*
The UT-UTC funded a project in global supply chain management/transportation to build a global network of scholars and educators. As part of this project, the UTC and the ITI in collaboration with ICHCA are holding the International Symposium and Workshop on Global Supply Chain, Intermodal Transportation, and Logistics Management on October 25th and 26th 2007 at the University. Information about the symposium and workshop can be found at www.business.utoledo.edu/scm.

ICHCA, headquartered in London, has more than 1,000 members in 80 countries. It is dedicated to the promotion of safety and efficiency in handling and moving goods by all modes of transport across both national and international supply chains.

The objectives of the gathering include:

- To involve world-class researchers and practitioners to share best practices; explore, identify, analyze, and solve complex transportation, cargo handling and supply chain problems; and to communicate these solutions toward their successful implementation.
- To establish a global network of universities and centers of learning that work cooperatively with ICHCA International Limited to address critical worldwide needs in transportation, logistics, and supply chain management.
- To work toward creation of an International Research Center in Global Supply Chains, Transportation and Logistics

Call for Papers — Prospective authors and presenters, both academicians and practitioners, have been invited to contribute to this international symposium and workshop. Potential areas of focus include but are not limited to:
Global Supply Chains:
• Bilateral and Multilateral Country Issues
• Global Supply Chain Security
• Designing and Managing the Global Supply Chain
• Information Technologies and Electronic Commerce
• Dispersed design capabilities of products for global demands
• Global trends in product disposal, remanufacturing and recycling.

Transportation:
• Transportation Systems Planning
• Transportation & Transshipment Modeling and Optimization
• Simulation Modeling
• International Finance
• Managerial Accounting
• Trading Blocs and United Nations Organizations.
• Economics and Public Policy

Logistics & Cargo Handling:
• Safety and security issues in international transportation and handling of cargo
• Emerging Technologies of Cargo Handling and Transportation
• Short Sea Shipping
• Planning for small and medium sized enterprises in Logistics, Cargo handling and supply chain management

The intended outcomes from the symposium and workshop include:

• Publication of proceedings, working papers, and journal articles.
• Research publications on emerging trends in Intermodal Transportation, Logistics and Supply Chain Management and use benchmarking to leverage their businesses.
• Planning annual conferences starting in 2008 on research, education, and outreach of the Center on Global Supply Chains, Intermodal Transportation and Logistics.
• Creation of a core group to plan, coordinate and implement activities for the Research Center for the 2008 and beyond.
• Development of education and training programs for transportation, logistics, and supply chain professionals around the world.
• Showcasing best practices in Intermodal Transportation, Logistics and Supply Chain Management.

The steering committee is composed of:

• Subba Rao (University of Toledo, USA)
• Mark Vonderembse (University of Toledo, USA)
• Paul Hong (University of Toledo, USA)
• Taj Shahram (University of Detroit-Mercy, USA),
• Hockey Min (Bowling Green State University, USA),
• Nanda Gopal (PSG Institute of Management, India)
• Tobias Schoenherr (Eastern Michigan University, USA)
• Gyewan Moon (Kyunpook University, Korea)
• Ezra Youngwon Park (University of Tokyo, Japan)
Sponsors of the event include the College of Business Administration, the University Transportation Center, the International Business Institute and the Intermodal Transportation Institute at The University of Toledo, the Toledo-Lucas County Port Authority, the Great Lakes Maritime Research Institute and the University of Detroit-Mercy.

ICHCA Board Meetings in Toledo and London

The International Cargo Handling Coordination Association (ICHCA) International Ltd. met in Toledo, Ohio in November for a quarterly meeting of their board of directors. Jim Hartung, International Chairman of ICHCA is also the Chairman of the Executive Committee of the Intermodal Transportation Institute, the umbrella organization of which the UT-UTC is a part. Included at the meeting were officials from London, Australia, the Canary Islands and Japan. After being hosted by University President Lloyd Jacobs at a dinner following their meeting, the group attended the Great Lakes Workshop the next day where David Bendall, Deputy Chairman of ICHCA International and founder of MariTrade, a company specializing in services to the shipping industry, gave an overview of new
ideas in short sea shipping technology. UT-UTC Director, Mark Vonderembse, attended the meeting in Toledo and the following quarterly meeting in London.

The International Cargo Handling and Coordination Association (ICHCA) International Ltd. is an international membership organization of more than 1000 transportation professionals from 80 countries who are dedicated to the promotion of new technologies and best practices for the efficient handling and movement of people and goods by coordinating all modes of transportation. Headquartered in London, ICHCA has chapters in Australia, Japan, the Canary Islands/Africa and the USA.

ICHCA Canarias/Africa Regional Chapter Meeting

In June, the Director traveled to Casablanca, Morocco for the ICHCA Canarias/Africa Regional Chapter Meeting. While there he gave a thirty minute presentation on the ICHCA Research and Education Panel for Global Supply Chain Management to about 100 participants from countries in the region. The primary purpose of the trip was to recruit universities and private sector companies in North Africa to participate in the Panel. While there he also toured the Marrakech Port to better understand their shipping capabilities.

ITI Heads Reorganization of ICHCA North America Chapter

The ITI/UT-UTC has been asked to participate in the development and rebirth of ICHCA USA. As a first step, this new direction will expand ICHCA USA to include all of North America. Given the remarkable growth in trade and the reduction of trade barriers, in particular NAFTA, this is a logical next step. For the Great Lakes region, this expansion is especially important because of the level of commerce with Canada. The reorganization will begin by working initially within the Great Lakes region. As part of the process, a development team has been formed to formalize the new direction and plan programs. A membership drive will seek to renew the involvement of old members and welcome new participants into the organization. The chapter has been renamed ICHCA North America reflecting the broader vision. The ITI is the secretariat of the chapter.
Transportation Cluster Leadership and Economic Development Activities

The ITI has provided leadership for the regional economic development Transportation Cluster including providing substantial technical and managerial support for the creation of a marketing plan for the region.

Summary of ITI Activity in Economic Development

Following are some key points about the involvement of the Intermodal Transportation Institute (ITI) in Economic Development for our region. This has been a team effort involving many players, who have worked hard so that all are on the same page.

1. At a meeting in November 2003, the ITI Executive Committee asked the ITI to take a leadership role in transportation related economic development working with the Toledo-Lucas County Port Authority (TLCPA), Toledo Metropolitan Area Council of Governments (TMACOG), and the Transportation Advocacy Group of Northwest Ohio (TAGNO).

2. The ITI has worked with these entities, the Regional Growth Partnership (RGP), the Toledo-Lucas County Port Authority, and UT and BGSU in the application of the cluster concept as it relates to transportation. It also participated in the RGP’s efforts to identify our strengths and weaknesses and to develop an economic development plan.

3. Working with the partners identified in Item 1, the ITI began the task of devising a concept and plan for transportation related economic development. The result was a Transportation Opportunity District (TOD) proposal that identified different types of economic development. With the help of many participants and much input, this has evolved into “The Lake Erie West Global Logistics Hub” concept, which has four major elements. This concept is currently the focus the Toledo/Lucas & Wood Counties Transportation Coalition’s “Transportation Legislative Agenda,” which is supported by more than a dozen organizations including the ones listed in Item 1. The four elements are:

   a. Toledo Express Global Logistics Park, which has within ½ mile the 16th largest freight airport in the US, access to I-80/90 and triple trailers, and an east-west main line for the Norfolk Southern railroad.

   b. Toledo Seaport, which is growing, has exceptional rail and highway access, and has access to international shipping.

   c. Trans-Pacific Inland Port, which is a proposed rail to truck intermodal exchange that brings international trade (shipping containers) to the heartland.
d. Golden Triangle Distribution Corridor, which is a prime location among the intersections of I-75, I-80/90, and I-280 that has distribution centers such as Walgreens and has room for expansion. It also has access to Metcalfe Airport in eastern Wood County.

4. The ITI played an important role in developing a marketing concept for transportation related economic development.

5. This marketing concept has lead to serious discussion about the creation of inland ports in the Toledo areas. These facilities would receive containers that would land at ports on the east or the west coast of Canada and make the journey to Toledo via Canadian National (CN) Railroad. There are currently two projects that are being discussed. These are complimentary rather than mutually exclusive.

a. The redevelopment of CN’s Lang Yard in North Toledo to receive containers from the east or west coast of Canada and to return grain, hardwoods, coal, and other items. The ITI, along with the TLCPA, TMACOG, TAGNO, and the City of Toledo (including Mayor Finkbeiner), has attended two meetings with CN management to discuss this possibility. The ITI is responsible for preparing marketing data so CN can estimate the potential market. The ITI and TMACOG are responsible for completing a Transportation Study that gauges the impact of this development on our transportation system.

b. There have been weekly meetings for about a year to work with local and national developers to create a greenfield inland port that would be serviced by CN. This intermodal facility would be tightly integrated with warehousing and distribution facilities to streamline the flow of goods and to enhance productivity. Financial backing is in place and options have been taken on key plots of land. An operating agreement is being worked on between CN and another class one railroad.
Proposals Submitted for Funding Revolutionary KACI System

In March, the ITI submitted proposals for grant funding for feasibility studies for the KACI system to the National Cooperative Highway Research Program (NCHRP) Innovations Deserving Exploratory Analysis (IDEA) program in conjunction with the Transportation Research Board (TRB), and to the Ohio Department of Transportation Office of Research and Development Ohio Partnered Research Exploration Program (OPREP). Partners in the proposals were KACI Intermodal Systems, Ltd. and the Toledo-Lucas County Port Authority. TranSystems joined in the submission to NCHRP. Although neither proposal was funded, this was an effort by the ITI to assist in moving innovative new ideas in intermodalism forward.

Abstract from the NCHRP KACI Proposal

The KACI Intermodal System concept has the potential to significantly reduce truck traffic on our congested highways by providing a rapid, uncomplicated, and economical exchange of highway vehicles onto and off of railroad cars. The system uses parallel tracks and track switches that cause the train to articulate into a zigzag configuration while entering the terminal. This switching operation causes both ends of every car to be situated so that they abut two corresponding parallel docks at the same elevation. All the cargo/vehicles on the train can be driven simultaneously onto or off the rail cars, allowing trains to be loaded and unloaded quickly and inexpensively. The KACI concept is a breakthrough in transportation technology that reduces terminal time, reduces equipment costs, and saves labor. It overcomes the limitations that have prevented intermodal trains from being cost effective in short and medium haul applications. This project will demonstrate the feasibility of the concept through a cost/benefit analysis when compared to existing intermodal operations, provide comparisons to short and medium haul highway trucking operations, and analyze short distance, high speed, and high throughput truck shuttle train. Cost share is provided by the applicant, KACI Intermodal Systems, and the Toledo Lucas-County Port Authority. Adoption of this system will save time, money and resources, will provide environmental benefits and reduce congestion by getting trucks off of the highways.
USA/Brazil Webinar:
Renewable/Alternative Fuels in the Transportation Sector

The UT-UTC took a leadership role in the coordination and organization of a Brazil/USA webinar on renewable fuels. Initiated by the US Department of Transportation, universities across the nation participated in Team USA. On June 18, 2007 the webinar “Renewable/Alternative Fuels in the Transportation Sector” was held with seven presenters from the U.S. along with the University of Sao Paulo and the Brazilian Ministry of Mines and Energy. The goal of the webinar was to build cooperation in the future and identify collaborative efforts among the participants. The presentation from the universities in the U.S. can be viewed at http://research.utoledo.edu/brazil_webinar.html.

Webinar Participants
- Michael Avery, Federal Highway Administration
- William Chernicoff, U.S. DOT RITA (moderator)
- John Sheffield – University Transportation Center, University of Missouri-Rolla
- Monica Mazurek – Center for Advanced Infrastructure & Transportation (CAIT), Rutgers University
- David Shonnard – Materials in Sustainable Transportation Infrastructure, Michigan Technology University
- Mark Vonderembse – Intermodal Transportation Institute, The University of Toledo
- Aaron Singer-Englar – Sustainable Transportation Energy Pathways (STEPS) Program, University of California-Davis
- Alan Dybing – Upper Great Plains Transportation Institute, North Dakota State University
- Bill Chernicoff - Research & Innovative Technology Administration, U.S. Department of Transportation
- Marlon Arraes Leal, Federal Ministry of Mines and Energy
- José Eduardo Holler Branco, Researcher-Leader of the Federal University of Sao Paulo
### Team USA Participants*

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<td>South Carolina State University</td>
<td>Reinhardt Brown</td>
<td>Interim Executive Director, James. E. Clyburn University Transportation Center</td>
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<tr>
<td>The Texas A&amp;M University System</td>
<td>Melissa Tooley</td>
<td>University Transportation Center for Mobility - Gilchrist, Texas Transportation Institute</td>
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<tr>
<td>The University of Toledo</td>
<td>Christine Lonsway</td>
<td>Assistant Director, University Transportation Center</td>
</tr>
<tr>
<td>The University of Toledo</td>
<td>Mark Vonderembse</td>
<td>Director, Intermodal Transportation Institute &amp; University Transportation Center</td>
</tr>
<tr>
<td>University of California-Davis</td>
<td>Yueyue Fan</td>
<td>Associate Professor in Civil and Environmental Engineering, Institute of Transportation Studies</td>
</tr>
<tr>
<td>University of California-Davis</td>
<td>Joan Ogden</td>
<td>Associate Professor ESP, Co-Director Hydrogen Pathways Program, Institute of Transportation Studies</td>
</tr>
<tr>
<td>University of California-Davis</td>
<td>Aaron Singer-Englar</td>
<td>Assistant Program Manager, Sustainable Transportation Energy Pathways (STEP5) Program, Institute of Transportation Studies</td>
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<tr>
<td>University of California-Davis</td>
<td>Daniel Sperling</td>
<td>Director, Institute of Transportation Studies, Professor of Transportation Engineering and Environmental Policy</td>
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<tr>
<td>University of California-Davis</td>
<td>Anthony Eggert</td>
<td>Energy Policy Adviser, Institute of Transportation Studies</td>
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<tr>
<td>U.S. Department of Transportation</td>
<td>Mike Avery</td>
<td>Western Hemisphere Team Leader, Office of International Programs Federal Highway Administration</td>
</tr>
<tr>
<td>U.S. Department of Transportation</td>
<td>Kyle Gracey</td>
<td>Office of the Secretary of Transportation (OST)</td>
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<tr>
<td>U.S. Department of Transportation</td>
<td>Daphne Speaks</td>
<td>Transportation Specialist, USDOT/FHWA/Office of Policy Office of International Programs, Western Hemisphere Program</td>
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<tr>
<td>U.S. Department of Transportation</td>
<td>Bill Chernicoff</td>
<td>Hydrogen Engineer, Research &amp; Innovative Technology Administration</td>
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<tr>
<td>U.S. Department of Transportation Research &amp; Innovative Technology Administration</td>
<td>Robin Kline</td>
<td>University Programs Specialist</td>
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## Team Brazil Participants*

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<tr>
<th>Name</th>
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<tr>
<td>Professor Amaral</td>
<td></td>
<td>Deptamento de Economia, Administração e Sociologia - ESALQ-USP</td>
</tr>
<tr>
<td>Jose´ Vicente Caixeta-Filho</td>
<td></td>
<td>University of São Paulo, Brazil</td>
</tr>
<tr>
<td>Helaine Carrer</td>
<td>Depto Ciências Biológicas, ESALQ-USP</td>
<td>University of São Paulo, Brazil</td>
</tr>
<tr>
<td>Marcio de Castro Silva Filho</td>
<td>Depto Genética, ESALQ-USP</td>
<td>University of São Paulo, Brazil</td>
</tr>
<tr>
<td>Ricardo Gomide</td>
<td></td>
<td>Ministry of Mines and Energy Brasilia</td>
</tr>
<tr>
<td>Jose´ Eduardo Holler Branco</td>
<td>Lider de Projetos do Grupo ESALQ-LOG</td>
<td>ESALQ-LOG</td>
</tr>
<tr>
<td>Suzana Kahn Ribeiro</td>
<td></td>
<td>Federal University of Rio de Janeiro</td>
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<tr>
<td>Marlon Leal</td>
<td></td>
<td>Ministry of Mines and Energy Brasilia</td>
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<tr>
<td>Raul Machado-Neto</td>
<td>Center for Agricultural and Environmental Biotech, School of Environmental and Biological Sciences</td>
<td>Rutgers University</td>
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<tr>
<td>Amir Mattar Valente</td>
<td>Supervisor/Professor</td>
<td>LABTRANS</td>
</tr>
<tr>
<td>Sylvia Muylaert</td>
<td></td>
<td>Federal University of Rio de Janeiro</td>
</tr>
<tr>
<td>Glaucia Souza</td>
<td>Instituto de Química - Departamento de Bioquímica</td>
<td>University of São Paulo, Brazil</td>
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<tr>
<td>Ismael Ulyssea Neto</td>
<td>Professor, Civil Engineering - UFSC</td>
<td>LABTRANS</td>
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<tr>
<td>Ursula Vieira</td>
<td>Researcher</td>
<td>LABTRANS</td>
</tr>
<tr>
<td>Valter Zanela Tani</td>
<td>Researcher</td>
<td>LABTRANS</td>
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*Every effort has been made to get names, universities/organizations and titles correct but in the flurry of email communication, errors may have been made. Apologies are extended to anyone who is incorrectly or inadequately represented in the Team USA or Team Brazil lists.
UT-UTC Student-of-the-Year

Guy Schafer, a graduate student in the department of Geography and Planning was named the Student-of-the-Year by the newly formed University of Toledo University Transportation Center and was recognized at the annual awards dinner of the Council of University Transportation Centers in Washington, DC on January 20th. The award is given to a student who has demonstrated technical merit and accomplishments in research, superior academic performance and displayed professionalism and leadership in transportation related work.

In addition to a $1000 cash award, Guy received funding for his expenses and registration to attend the annual Transportation Research Board conference in Washington which began the day after the awards dinner. Support for his wife to join him at the dinner was also included.

Guy Schaefer was born in Toledo, Ohio and remained in the area graduating from a suburban high school. He received a BA in Visual Communications from the University of Toledo in 1999. From 1998 to 2005 he worked in the transportation and logistics industry including employment at National Logistics Management where his duties included coordinating shipments and routing for Ford, General Motors and Daimler-Chrysler. In 2005, he returned to the University as a graduate assistant working toward a Masters in Transportation Planning/GIS in the Department of Geography and Planning. His research has included work on the Upper Midwest Freight Corridor Study, work with the Great Lakes Maritime Research Institute and a study commissioned by a local port authority of air freight in the mid-west including imports and exports from Europe, Asia and South America. Guy was selected as Student of the Year for the University of Toledo UTC because of the integral role he played in the successful completion of the Corridor Study and the combination of industry perspective and academic rigor he brings to his research.

In May, immediately after the end of the spring semester, Guy started his new job at Ohio Module Manufacturing Co. LLC (OMMC), a division of Hyundai Mobis, in the materials department. Within a few months he was already involved in transportation changes that saved the company significant transportation costs. OMMC is part of an innovative co-located manufacturing project with the Chrysler Group in the City of Toledo. The suppliers – Hyundai Mobis, the Kuka Group and Durr Industries – are partners in the development, construction and daily operations at the Toledo manufacturing complex. OMMC will house a rolling chassis module which will include power train and drive train components, as well as wheels and tires for Jeep Wranglers.
Abstract: Since driver fatigue has been known to be the primary cause of serious truck crashes, the Federal Motor Carrier Safety Administration (FMCSA) has attempted to implement new hours-of-service (HOS) regulations that aimed to promote safer driving environments. The new HOS regulations effective in January 4th of 2004, however, may lead to substantial cost increases for the trucking industry which will in turn hurt shippers and ultimate customers. For instance, motor carriers may need to hire additional 84,000 drivers to comply with new HOS rules requiring that drivers be placed out-of-service until they accumulated enough off-duty time. In particular, off-duty break required to refresh driving hours was increased to 10 consecutive hours from the old rule of eight cumulative hours. A chronic shortage of truck drivers would further aggravate the additional driver recruitment problem. In addition, due to potential loading/unloading delays and stiffer fines/penalties resultant from new HOS rules, motor carriers such as Schneider National estimated that trucking productivity would decline by 4-19% (WERC Sheet, 2004). To better cope with the challenges of declining trucking productivity, this project develops an intelligent decision support system that aided logistics executives and transportation planners in creating optimal truck routes and schedules under HOS rules.

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Project Dates: 07.01.2007 – 11.30.2008

Project Year: Year 1

UT-UTC Designation: UTUTC-SC-1

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Abstract: The United States and Canada share the largest trading relationship in the world, and currently account for approximately $200 billion of annual surface trade between Southwestern Ontario and Southeastern Michigan. This figure is expected to reach $300 billion by the year 2030. The Central Business Districts of the cities of Detroit and Windsor are currently connected by a bridge and a tunnel, both built during the late 1920s, that constitute the vital trade corridor between the two countries. The Ambassador Bridge (a four lane facility) is privately owned and operated, while the Detroit-Windsor Tunnel is a two-lane facility jointly owned by the two cities and operated by a private corporation.

During the last few years, a number of studies have been undertaken by the Michigan Department of Transportation and the Ontario Ministry of Transportation to investigate the need, location and type of a proposed third river crossing connecting the cities of Detroit and Windsor. These studies appear to indicate a strong need for such a river crossing, even though its exact location, access and type (tunnel, bridge, etc) are yet to be determined. Nor has any decision been made on the Ownership, Tenure and Governance (OTG) of the proposed crossing.

The purpose of this study is to develop an analytic framework that can be used to test alternative OTG scenarios for the proposed river crossing, including public, private and various joint ownership scenarios. The proposed framework will, among other things, incorporate the concept of “investment decision under uncertainty.” The estimates of the project costs and benefits (particularly those beyond the immediate future) are likely to be characterized by significant variances. The risks and uncertainties associated with these estimates will be incorporated in the proposed framework. The framework developed will be tested with data that may be available from different published reports and from the Michigan Department of Transportation.

Principle Investigator:

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Project Dates: 06.15.2007 – 06.14.2008

Project Year: Year 1

UT-UTC Designation: UTUTC-IU-1

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Regional Freight Information Resources for Market Opportunities in the Great Lakes Maritime Transportation System

Focus: Infrastructure Utilization

Abstract: The purpose of this proposed project is to extend the Great Lakes Maritime Information Delivery System to include data for market opportunities for shippers and carriers for diverting freight to the Great Lakes Maritime Transportation System (GL MTS). The Great Lakes Maritime Information Delivery System is a comprehensive data repository and information clearinghouse for the maritime industry in the Great Lakes and Seaway. The main objective for the system is to promote sustainable maritime transportation in the region by serving as an information resource for public policy decision making and for drawing the link between maritime freight movements, economic viability, and environmental quality throughout the region. The system is designed to be a diversified web-based information delivery site that houses a detailed data repository consisting of 1) vessel movements and commodity flows, 2) port and dock functions, 3) regional economic activity, 4) regional population/socioeconomic patterns, and 5) environmental impacts. To date, the development of the system has concentrated on developing an information base that emphasizes regional economic impact of the GL MTS, linking the GL MTS to the wider regional intermodal freight system, safety, environmental impacts/benefits, shipper savings, rate comparisons, and congestion effects of other modes compared to GL MTS. The project proposed here will enable users to retrieve data concerning such factors as Tonnages, Value of Cargo, Scheduled Service, Ship Technologies, Dock and Port Facilities, Intermodal Connections and Transshipment Costs. As a result, data will be made available for developing market plans that can identify key decision makers and market segments that can be served by the GL MTS, tonnages and cargo values associated with those markets, scheduled service and frequency of service that can be established, and ship technologies that can be used to optimize flows through the system.

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Project Dates: 05.03.2007 – 06.30.2008

Project Year: Year 1

UT-UTC Designation: UTUTC-IU-2

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Global Supply Chain Management/Transportation: Building a Global Network of Scholars and Educators

**Focus:** Supply Chains

**Abstract:** Research on Global Supply Chain Management/Transportation Efficiency Systems is critical to US competitiveness. Global Supply chain management integrates global information, material and cash flow processes across all functions including sourcing, operations, return and recycling, and logistics and planning – for all partners. Supply chain system professionals are the agents of change for e-business, manufacturing, high-tech, service and consulting companies. Transportation system analysis and planning stress the conceptual and quantitative approaches to the analysis of transportation and related systems. The objectives are (1) to engage in international network of research collaboration to identify, analyze, and solve complex transportation and supply chain problems and to communicate those solutions to achieve successful implementation and (2) to develop education and training programs that meet the needs of transportation, logistics, and supply chain professionals around the world.

The planned activities are with researchers and educators from Africa, Asia, Australia, Europe, North America, and South America. The development of these programs depends on leveraging the diverse collaborative work that has been established with International Cargo Handling and Coordination Association (ICHCA) International Ltd, International Manufacturing Strategic Survey (IMSS), Supply Chain Symposium, and MIOH UTC, and University of Toledo Manufacturing Management Alumni network.

**Principle Investigator:**

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**Co-Principal Investigators:**

*Paul Hong, Ph.D.*
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The University of Toledo

**Project Dates:** 05.08.2007 – 12.31.2007

**Project Year:** Year 1

**UT-UTC Designation:** UTUTC-SC-2

**Funding:**

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Reducing Noise and Vibration of Hydraulic Hybrid and Plug-In Hybrid Electric Vehicles

**Focus:** Alternate Energy

**Abstract:** The University of Toledo University Transportation Center (UT-UTC) has identified hybrid vehicles as one of the three areas of the research. The activities proposed in this research proposal are directed towards the noise, vibration, and harshness (NVH) solutions for hybrid vehicles. The soaring fuel prices require imperious steps in developing alternate propulsion technologies. The design and development of hybrid vehicles is a critical issue for an economy dependent on an efficient, fast, and secure transportation system. To date, better fuel economy has been mainly achieved by combining two propulsion sources (hybridization) and/or by developing better managing algorithms for the internal combustion engines. Examples for the hybridization are the plug-in hybrid electric and the hydraulic-hybrid vehicles. An example of managing internal combustion engines is the cylinder on demand as a solution that Honda has recently introduced. One common problem with these solutions is excessive noise and vibration that is caused by switching between the propulsion sources and propulsion modes. To mitigate this problem there is a need to develop vibration isolation devices that can provide isolation over a wide range of frequencies. This proposal seeks to study the NVH problem of the hybrid vehicles and to introduce isolation mounts to overcome these issues.

Hydraulic and elastomeric mounts are generally used to dynamically isolating engines and power trains form the chassis, while statically holding these elements together. Hydraulic mounts overcome some of the drawback of the elastomeric mounts. The stiffness and damping of the hydraulic mounts vary with frequency and amplitude of vibration. It is possible to design a hydraulic mount that has a significantly larger static stiffness, compared to an elastomeric mount, and has a much smaller dynamic stiffness at a specific frequency. To achieve low vibration transmissibility, the mount can be tuned to the primary frequency of the vibration source. On the other hand, to isolate the high frequency vibration of the engine the mount should have low stiffness and low damping, which is not possible to achieve.

This proposal proposes to develop a semi-active mount, which will be realized by improving the existing hydraulic mounts through adding a magnetorheological (MR) fluid element. In response to magnetic fields, MR fluids change their viscosity, which can be harnessed in a variable stiffness and damping mount. The resulting mount will provide shock and vibration isolation over a wide range of frequencies. This extended isolation frequency range will be achieved through the variable dynamic stiffness of the MR portion of the mount. This solution will make it possible to improve the noise and vibration characteristic of hybrid vehicles with alternative propulsion systems.

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**Project Dates:** 08.01.2007 – 07.31.2008

**Project Year:** Year 1

**UT-UTC Designation:** UTUTC-AE-1

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Incorporating Intermodal Transportation into the Spatially Integrated Social Sciences

**Focus: Infrastructure Utilization**

**Abstract:** The purpose of this proposal is to request development funds to expand the role of intermodal transportation in the newly proposed Spatially Integrated Social Science Ph.D. Program to be administered jointly between the Departments of Geography and Planning, Economics, Political Science and Public Administration, and Sociology and Anthropology at The University of Toledo. The particular transportation-related areas of interest that the SISS program that complement the UT UTC will be in the areas of Transportation for National Security, Transportation and Regional Economic Development, Infrastructure Utilization, and the spatial dimensions of Supply Chains. Each of these topics readily lend themselves to the faculty expertise, the available geospatial technology, and the regional economic needs of northwest Ohio. Furthermore, the SISS faculty will focus on the movement of people among all modes of the transportation system and in the conflicts that arise between the movement of freight and the movement of passengers. Specific areas of transportation research and teaching will include: 1) Transportation and urban form; 2) Transportation, Public Administration and Policy; 3) Transportation Analysis and Quantitative Methods; 4) Intermodal Transportation—Passenger and Freight; 5) Infrastructure Utilization and Planning; and 6) Transportation and the Environment. It is anticipated that transportation and all of its spatial dimensions will play a pivotal role in this program and will attract students with an interest in combining an analytical approach to studying transportation, but from a perspective that appreciates the contribution of diverse social science disciplines to understanding this important spatial process.

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**Project Dates:** 05.03.2007 – 06.30.2008

**Project Year:** Year 1

**UT-UTC Designation:** UTUTC-IU-3

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Global Supply Chain Management/Transportation Efficiency Systems Graduate Degree Program

Focus: Supply Chains

Abstract: Global Supply Chain Management/Transportation Efficiency Systems graduate degree program covers areas in global supply chain management and transportation efficiency. Global Supply chain management integrates global information, material and cash flow processes across all functions including sourcing, operations, return or recycling and logistics and planning – for both all partners. Supply chain system professional are the agents of change for e-business, manufacturing, high-tech, service and consulting companies. Transportation system analysis and planning stress the conceptual and quantitative approaches to the analysis of transportation and related systems. Our objective is to prepare students to identify, analyze, solve complex transportation, supply chain problems, and communicate those solutions towards their successful implementation.

The program could be very flexible which students with engineering/science/business backgrounds could take. There will be a core and a set of electives leading to two distinct specialties in two focused areas. Students must meet certain requirements such as having engineering/science background to take specialized courses in transportation. We could also identify some of the courses for undergraduate who want to get a concentration or double major.

This proposal is being submitted to leverage the collaborative work on developing a Masters program with the University of Detroit Mercy – MIOH UTC and to further develop an International Collaborative Masters Program in Global Supply Chain Management with help from ICHCA International Ltd.

Principle Investigator:

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Co-Principal Investigators:

Paul Hong
Associate Professor, Information Operations Technology Management
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James Pope
Professor, Information Operations Technology Management
College of Business Administration, The University of Toledo

Project Dates: 05.08.2007 – 12.31.2007

Project Year: Year 1

UT-UTC Designation: UTUTC-SC-3

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Develop a Plan for Cooperative Education in Supply Chain Management at the Undergraduate Level

**Focus:** Supply Chains

**Abstract:** Cooperative education enables undergraduate students to work in the environment that they will face when they graduate. It integrates hands-on business experience with academic training. It provides students with an understanding of how concepts and ideas that are discussed in the classroom are used in the business world. It also provides motivation and a willingness to learn that is difficult to establish without this experience.

This project will lay the foundation for developing a cooperative education program for the Supply Chain Management Area of Specialization within the Bachelors of Business Administration at the University of Toledo. The purposes of this effort are to enhance the students’ experiences thereby making them more marketable and to increase enrollment.

It will develop goals and objectives for the program, outline a curriculum, develop an organizational structure that enables students to graduate in a timely manner, and make a recommendation for successful implementation. During this process, the PI will meet with appropriate managers and staff in the College of Engineering at the University of Toledo, where a mandatory cooperative education program exists, as well as other universities that currently have cooperative education programs in Business Administration including the University of Cincinnati and with business organizations to determine their willingness to participate in the program.

**Principle Investigator:**

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**Project Dates:** 09.01.2007 – 12.31.2007  
**Project Year:** Year 1  
**UT-UTC Designation:** UTUTC-SC-4  
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Director’s Message – A Debt of Gratitude for Years of Work

It has been a long road to this first issue of the UT-UTC UPDATE, the newsletter of the University Transportation Center at The University of Toledo. The approval of the strategic plan for the operation of the Center last November was the culmination of work that started four years earlier. Now we are preparing to review and fund the projects that will define the Center’s commitment to economic development and the education of the next generation of transportation professionals. Along the way there have been many to whom we owe a huge debt of gratitude, but it is the willingness of leaders in the public and private sectors who responded to every call for support and assistance that really made the UT-UTC a reality. These are people who rarely if ever missed a meeting and always backed their promises 100%.

As a result of these efforts, the University of Toledo was designated as a UTC and was funded at $2,000,000 over the next four years. UT is partnering with Bowling Green State University and Wayne State University in its efforts to address transportation related alternate energy development, improve infrastructure utilization, and enhance supply chain performance. A strong transportation system with reliable and cost competitive energy sources is essential to our competitiveness in global markets.

This award provides UT with several things.
- A seal of approval that acknowledges the expertise of our university.
- Recognition of the importance of our region to national and international transportation, logistics, and supply chains.
- The credibility to gain support for research and program development from other U.S. DOT programs.
- Access to resources that will allow the ITI to grow and develop in the areas of alternative energy for transportation, infrastructure utilization, and supply chain management with emphasis on improving intermodal connectivity and efficiency.
- The generation of new research projects and educational programs in these focus areas.

For the community, this means that UT becomes a more effective partner in economic development as it initiates new research and educational activities.
Student-of-the-Year Celebrates at Awards Banquet in Washington

Guy Schaefer, a graduate student in the department of Geography and Planning was named the Student-of-the-Year by the newly formed University of Toledo University Transportation Center and was recognized at the annual awards dinner of the Council of University Transportation Centers in Washington, DC on January 20th. The award is given to a student who has demonstrated technical merit and accomplishments in research, superior academic performance and displayed professionalism and leadership in transportation related work.

Joining him at the awards dinner were Guy’s wife, Sarah, along with the UT-UTC assistant director, Christine Lonsway. A special moment for Guy was being congratulated on stage with a handshake from former Secretary of Transportation Mineta along with CUTC dignitaries.

Guy Schaefer was born in Toledo, Ohio and remained in the area graduating from a suburban high school. He received a BA in Visual Communications from the University of Toledo in 1999. From 1998 to 2005, he worked in the transportation and logistics industry including employment at National Logistics Management where his duties included coordinating shipments and routing for Ford, General Motors and Daimler-Chrysler. In 2005, he returned to the University as a graduate assistant working toward a Masters in Transportation Planning/GIS in the Department of Geography and Planning. His research has included work on the Upper Midwest Freight Corridor Study, work with the Great Lakes Maritime Research Institute and a study commissioned by a local port authority of air freight in the mid-west including imports and exports from Europe, Asia and South America. Guy was selected as Student-of-the-Year for the University of Toledo UTC because of the integral role he played in the successful completion of the Corridor Study and the combination of industry perspective and academic rigor he brings to his research.

Guy intends to seek employment in the Toledo area where his wife has an accounting business. It will be an asset to this community to keep this talented young professional serving this area. Congratulations Guy!

Great Lakes Workshop: from Data to Markets to Shipping Opportunities

An all day workshop entitled “Great Lakes: from Data to Markets to Shipping Opportunities” was held at the University of Toledo on November 7, 2006. This event was sponsored by the University’s Intermodal Transportation Institute and University Transportation Center (ITI/UT-UTC); the Geographic Information Science and Applied Geography Research Center (GISAG) of the Geography and Planning Department, The Great Lakes Maritime Research Institute (GLMRI), a consortium of the University of Wisconsin-Superior Transportation & Logistics Research Center and the University of Minnesota Duluth College of Science & Engineering and Labovitz School of Business and Economics; The Toledo-Lucas County Port Authority, and the International Cargo Handling and Coordination Association International Ltd.

The purpose of the workshop was to examine ways to use the Great Lakes as an important transportation link. The states and Canadian provinces surrounding the Great Lakes face a growing demand for transportation. Many vital highway and rail corridors are congested and are projected to get much worse; demand for freight movement will expand substantially by 2020 (50% or more); and there is a lack of funds and support to increase highway capacity. The Great Lakes offers a low cost, low congestion, low emission alternative to truck and rail movements.

The proposed project focuses on economic development of the Great Lakes marine transportation system. It examines technology alternatives for moving
container and trailer freight on the Great Lakes in ways that are coordinated and compatible with other modes of transportation. Understanding the shipping technology that is currently available globally is an important initial step in selecting vessels to provide shipping services that meet customers' needs (technical requirements and economic feasibility). If existing vessels are not appropriate, then their designs can be modified or new vessels can be created. This project is complementary with current efforts to understand the movement of freight in the Great Lakes region across all modes of transportation. Identifying market opportunities for shifting freight movements onto the waterways and developing vessels that are well suited to the task should increase regional transportation efficiency.

The workshop attempted to evaluate the market opportunities for short sea shipping by commodity type. What commodities are currently moving by highway and rail that could move via ship at lower costs? What new opportunities are possible? How can we more fully participate in international trade? The workshop identified the need to develop a plan and methodology for analyzing the origin to destination of freight flows in the Great Lakes region for the purposes of establishing scheduled shipping in order to compete for time sensitive cargo. This would apply to bulk cargo, containers, and trailers on ships. The effort must evaluate the economic viability of establishing transshipment facilities for expanding international trade including the possibilities of containers, and it must review and summarize the new technologies for vessel design and propulsion systems that could improve the operating cost and delivery time for cargo on the Great Lakes. Finally this effort must work with existing agencies to bring the Great Lakes ports together to develop a shared plan for expanding commerce on the Great Lakes.

Those attending included representatives from the American Great Lakes Ports Association; the Army Corps of Engineers - Waterborne Commerce Statistics Center; the Detroit/Wayne County Port Authority; the Great Lakes Commission; ICHCA Board Members; the International Joint Commission, Council of the Great Lakes; the Lake Carriers’ Association; the Toledo-Lucas County Port Authority; the US Maritime Administration; Nagle Companies (trucking and logistics); the Toledo Metropolitan Area Council of Governments; the Toledo Trucking Association; the US Corps of Engineers, Navigation Planning Center; the US Saint Lawrence Seaway Development Corporation; the National Oceanic & Atmospheric Administration, Office of Coast Survey - Navigation Service Division; and others.

The program included a progress report on the Great Lakes' Database by Dr. Peter Lindquist, Chair of UT's Department of Geography and Planning; a presentation titled "Developing a Marketing Plan" by Dr. Mark Vonderembse, Director of UT's ITI and UTC; and an overview of shipping technology by David Bendall, Deputy Chairman of ICHCA International and founder of MaritTrade, a company specializing in services to the shipping industry. After the presentations, the group separated into two sections for further discussions on the data and on market development. The presentations can be viewed at http://research.utoledo.edu/ITI/ITI.htm.

**INTERNATIONAL SERVICE**

**INCAT Tasmania – “Jervis Bay”**

New “fast ship” technology used in Europe, Australia and other places may be useful on the Great Lakes.

This was the second in a series following the Great Lakes Data Workshop which was held in Detroit, Michigan last June. A third workshop is being planned for the summer of 2007, again in Toledo. For additional information or to be notified of the next workshop, email ITI@utoledo.edu.

**INTERNATIONAL CARGO ORGANIZATION MEETS IN TOLEDO & LONDON**

The International Cargo Handling and Coordination Association (ICHCA) International Ltd. met in Toledo, Ohio in November for a quarterly meeting of their board of directors. Jim Hartung, International Chairman of ICHCA is also the Chairman of the Executive
Committee of the Intermodal Transportation Institute, the umbrella organization of which the UT-UTC is a part. Included at the meeting were officials from London, Australia, the Canary Islands and Japan. After being hosted by University President Lloyd Jacobs at a dinner following their meeting, the group attended the Great Lakes Workshop the next day where David Bendall, Deputy Chairman of ICHCA International and founder of MarITrade, a company specializing in services to the shipping industry, gave an overview of shipping technology.

The International Cargo Handling and Coordination Association (ICHCA) International Ltd. is an international membership organization of more than 900 transportation professionals from 80 countries who are dedicated to the promotion of new technologies and best practices for the efficient handling and movement of people and goods by coordinating all modes of transportation. Headquartered in London, ICHCA has chapters in Australia, Japan, the Canary Islands/Africa and the USA.

UT-UTC Director, Mark Vonderembse, attended the meeting in Toledo and the following quarterly meeting in London. The ITI/UT-UTC has been asked to participate in the development and rebirth of ICHCA USA. As a first step, this new direction will expand ICHCA USA to include all of North America. Given the remarkable growth in trade and the reduction of trade barriers, in particular NAFTA, this is certainly appropriate. For the Great Lakes region, this is especially important because of the level of commerce with Canada. It is the intention to begin the reorganization by working initially within the Great Lakes region. As part of the process, a development team has been formed to formalize the new direction and plan programs. A membership drive will seek to renew the involvement of old members and welcome new participants into the organization.

Global Network of Scholars

The UT-UTC has established a strong relationship with ICHCA International through its willingness to head the formation of an International Research and Education Panel. Director Mark Vonderembse is the chairman of this Panel. The UT-UTC, along with its industry advisory board, has identified global supply chain and transportation as critical to the long-term competitiveness of the US. To address this, the UT-UTC is attempting to build educational and research relationships with high-quality universities around the world which will form the panel within ICHCA.

As a beginning step in this effort, last December Dr. Paul Hong, Associate Professor of Information Operations and Technology Management at The University of Toledo, traveled to Kyungpook University in Korea to meet with professors to discuss Korean firms in relation to supply chain management practices. He attended the 2006 Asia Academy of Management conference in Tokyo followed by meetings with researchers at Tokyo University. They discussed future engagement with Asian scholars to promote joint research in global supply chain management involving China, Japan and Korea.

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