



UT-UTC UPDATE

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The Newsletter of The University of Toledo University Transportation Center

UT-UTC Presentation at the Ohio Conference On Freight



Director Rich Martinko and graduate students from the Department of Geography and Planning were presenters at a workshop titled “The Great Lakes Maritime Research Information Clearinghouse – University Transportation Research Benefitting the Freight Movement Industry” at the Ohio Conference on Freight 2009. This third annual conference was held September 22nd and 23rd at the University of Toledo. The UT-UTC was a major sponsor of the event. The development of the Clearinghouse was supported in part by the UTC.

During the presentation, Rich described the information delivery system and its development after which the students demonstrated its use by responding to requests from the audience. Interest was keen as images of freight movement, population density, the docks on the Great Lakes System, and ports from which shipments are made came up on the screen. In response to audience inquiries, the data was manipulated in real time revealing the broad extent of possible uses for analysts and decision makers.

The Information Clearinghouse is a resource for public policy decisions and a link between maritime freight movements, economic viability, and environmental quality in the Great Lakes, and supports the promotion of sustainable maritime transportation in the region. For more go to <http://www.maritime.utoledo.edu/>. A Data Viewer user name and password can be requested from Samir Dhar at samir.dhar@utoledo.edu.



Geography & Planning graduate students helped Director Martinko with the presentation at the Freight Conference: (from the left) Kelly Rowand, Krithica Kantharaj, Rosanna Violi, and Xi Lu

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*Transportation for Economic Security and Development:
Alternate Energy, Infrastructure Utilization, and Supply Chains*

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UT Solar Car Team on the GO

The 2009-2010 academic year has been an active one for the new UT Solar Car Team. The Team made an outstanding presentation to the US DOT Research and Innovative Technology Administration (RITA) during their site visit to the UT-UTC describing their progress.

During the Fall semester, the UT Solar Car Team participated in the senior design courses for both mechanical and electrical engineering in the College of Engineering. As part of these courses, the Team completed the design of the car's chassis and electrical power system. The Team also secured build space in the Research and Technology Complex on the UT campus.



Gordon Shaw of the UT Solar Car Teams answers questions from Ohio Governor Ted Strickland while he tours the Research & Technology Complex, the new home of the team.

The mechanical engineering (ME) team developed several different chassis designs before selecting one, based on a set of metrics. Detailed chassis design was then completed based on the selected design. This final chassis design was tested using finite element analysis to ensure that the design met safety standards. Any weak points that were found were reinforced and retested to ensure compliance. The finalized design was then submitted to the College of Engineering machine shop for construction. By the end of the semester, the chassis was nearing completion.

The electrical engineering (EE) team began the final design of a boost converter, which is a critical part of the power system. The boost converter allows the solar panels to recharge the batteries by DC to DC power conversion. The final design was based on a set of design criteria that centered on safety and efficiency. This design was finalized and prototyped. The Team will again participate in the senior design project for the Spring semester.



An "enlightened" Grant Administrator Amy Stearns (center) and Sean Ricketson, Research Grant Manager at FTA (far right) join Director Martinko (third from right) and the UT Solar Car Team after their presentation at the UT-UTC site visit. Team advisor, Dr. Terry Bigioni, is on the far left.

With strong support from the UT-UTC, the Team has been assigned 780 square feet of build space on the first floor of the Research and Technology Complex. The secure space will allow the Team to store tools, parts, and computer and test equipment, alongside the car in a central location that is accessible to all Team members. It will also provide a place to hold the Team's regular meetings.

UT FSAE Team to Race with Biofuel E85

The UT-UTC, along with the Intermodal Transportation Institute, are sponsoring the UT FSAE team, Rocket Motorsports. This support enables the education and real world involvement of students in automotive engineering, but this year will assist the team in their effort to run their car on E85. Among the Team goals is to win the endurance category (which they did in 2007), but this time with a biofuel.

The Team is very excited about running with E85 which they say is not only good for the environment but can make the engine more efficient. They are hoping in the future they will be able to link with a UT associated start-up company and run on UT made fuel.

For the 2010 race they have finished a new frame which they hope to have on the ground by March. The suspension, power train, chassis, electrical and composite groups are working hard to get the new car ready for testing. An engine control module designed by UT students is being set up in the FSAE lab. It will enable the testing of all engine components, including testing at various loads, before the car is taken to the test track.

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Formula SAE is a student organization sanctioned by the Society of Automotive Engineers. Their challenge is to design, build, and race an open wheel formula style race car. The UT chapter built its first car in the 1994-1995 academic year and races in the FSAE West competition in California and the FSAE race at the Michigan International Speedway. They are judged on design, manufacturing methods, project budget, overall professionalism, as well as the dynamic performance of the car. (To see race history and the cars, check out <http://www.eng.utoledo.edu/~sae/about/history.html>)



The UT 2008-2009 FSAE Team with their car

New Research Projects And Final Reports

New UT-UTC research projects funded to begin July 1, 2009 included the following:

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

Transportation Informatics: An Image Analysis System for Managing Transportation Facilities (Phase II of "A Novel Image Database System for Maintenance of Transportation Facility")

Magnetic Sensor for Nondestructive Evaluation of Deteriorated Prestressing Strand - Phase II

A Data Library Management System for Midwest FreightView and its Data Repository

Value of ITS Information for Congestion Avoidance in Intermodal Transportation Systems, Phase III

Combined Truck Routing and Driver Scheduling Problems Under Hours-of-Service Regulations - Phase II

Finished projects with final reports include:

Travel Behavior of U.S. Domestic Airline Passengers and its Impacts on Infrastructure Utilization

High Speed Transportation Corridor: A Conceptual Framework

Special projects associated with the economic development focus of the UT-UTC include:

Commodity Flow for the Toledo Region

Norfolk Southern Airline Yard Intermodal Project

Details of the projects including the final reports can be accessed from the UT-UTC web page

<http://www.utoledo.edu/research/ututc/projects.html>

Network of Scholars to Hold 4th Symposium in Spain

The fourth International Supply Chain Management Symposium and Workshop (IGSCC) will be held in Madrid, Spain on the campus of the IE Business School on September 23-24, 2010. The theme of this symposium is "Challenges and Opportunities for Supply Chains in Turbulent Times." The conference is being organized by the IE Business School (Madrid, Spain), The University of Toledo (Toledo, USA), and PSGIM (Coimbatore, India). The fourth Supply Chain Management Symposium and Workshop provides a platform for professionals, practitioners, academics, educators and researchers in the field of Supply Chain Management and related areas to disseminate and share the latest research results, knowledge, and experiences in the field.



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IE Business School is an international higher education institution based in Madrid offering Doctoral and Masters degrees. They were ranked number three in Europe and number six worldwide in International MBA programs by the *Financial Times* in 2010.

Since 2007 this Symposium and Workshop has taken place in different continents: The University of Toledo, Ohio (USA) in 2007, Pusan National University (Korea) in 2008 and PSGIM (India) in 2009. The other Universities that lead these conferences include the University of Tokyo and Waseda University (Japan) and Kyungpook National University (Korea).

For further information on the symposium and workshop, see <http://symposiumscm2010.ie.edu/>

Director Martinko Hosts Intermodal Project Meetings



As a result of the Joint Intermodal Task Force appointed by the Mayor of the City of Toledo, the upgrade of the Norfolk and Southern intermodal yard in Toledo, Ohio (known as Airline Junction) was identified as an economic development priority. Armed with facts and figures from an economic impact study funded by the City and the UT-UTC, the project was awarded \$12.76 million in Transportation Project Federal Recovery Act Resources and State of Ohio monies.

Director Martinko was a lead member on the Task Force, PI on the economic study, the primary contact with Norfolk Southern, the interface with the City and with the Ohio Rail Commission. Once funded, the primary issue became ensuring that all of the pieces fit together. On July 10, 2009, the UT-UTC hosted a meeting attended by all of the parties involved to map out the strategy, timeline, and

accountabilities necessary for the management and completion of the project. By the end of the session, all agreed that having everyone sit together to discuss the project plan and resolve any probable difficulties was extremely helpful.

On July 30, 2009, the City held a public meeting to enable open discussion of the project. Held on the University of Toledo campus adjacent to the Airline Junction site, the Director took the opportunity to educate those attending, primarily neighbors of the rail yard, informing them of the economic benefits to the community, how the project developed, where the funding came from, and how the project would proceed. City of Toledo administrators and elected officials, members of the Joint Intermodal Task Force, and representatives from Norfolk Southern were in attendance to answer questions posed by the audience. The exchange of information included the “neighbors” learning details of the project and the “experts” gaining knowledge from the people who live next to the railroad yard. By the end of the evening the predominant mood was acceptance of the project and the shared belief that it would be good for Toledo.

Following these gatherings, the Director held several meetings with Task Force members, Norfolk Southern representatives, City of Toledo administrators, academics and marketing people to plan a strategy in support of the project. These meetings considered the best way to disseminate information to businesses who could benefit from the expansion of the intermodal capability, identify products and services that could gain from the project, and develop a plan for expanding distribution facilities in the area.

The Airline Junction construction is to begin May 2010 and will be completed by the end of the year.

ITI/UTC Nominated UT Center Of Excellence

When The University of Toledo, along with the other state-assisted universities in the University System of Ohio, was called upon to present programs considered for designation as USO Centers of Excellence, the UT administration chose the Intermodal Transportation Institute / University Transportation Center as one of three to be presented to the Chancellor during his visit to campus.

Director Martinko’s presentation not only highlighted the work done as a UTC, but also how that work and the

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information gathered as part of its projects supported the economic development initiatives of the region and the State. With the ITI/UTC not only an established resource for transportation and logistics data, but also an acknowledged contact point for assembling the parties needed to put together a successful project, the Center has brought together academics, practitioners and community leaders. This hands-on application to real problems has become a distinguishing feature of the ITI/UTC.

UT-UTC Integral in Meta-Plan Regional Transportation Report



Recognizing that transportation and logistics is the cross-cutting foundation of the Toledo, Ohio economy in its present transition, a working group was formed to identify strategies and action plans that take full advantage of the strategic geography and transportation assets of the region as part of a Meta-Plan. The working group is led by The University of Toledo UTC, the Toledo Metropolitan Area Council of Governments, and the Toledo-Lucas County Port Authority. This group produced a draft report in September of 2009 that defines strategies that leverage past transportation investments and identifies opportunities for future economic growth.

Transportation and Logistics has been identified as one of the region's core industry sectors. Transportation logistics is the business and systems related to the movement of goods and people. In the Toledo region, the \$1.7 billion transportation logistics industry is a critical cross-cutting cluster that knits the entire \$73.7 billion regional economy together. Prior investments in regional highway, transit, rail, air, and water systems provide unparalleled access to work sites, recreation, education, health care, and many other activities that sustain the economy and enrich the lives of families.

The region's key transportation assets include convenient access to an extensive interstate highway system, one of the most active railroad centers in the country, a regional airport that serves as a major air freight transportation and distribution center, and one of the largest seaports on the Great Lakes. In addition to the region's physical assets, the inventory of resources includes world-class transportation expertise, numerous academic centers of excellence, and a critical mass of coordinated public, private, and legislative transportation stakeholders.

The Meta-Plan is a process that leverages the existing strategic action plans of Northwest Ohio's development agencies and organizations in a way that would reduce duplication of services, increase coordination and collaboration, and identify core industry sectors that all entities would support and pursue.

Once implemented, and if proven to be successful, the Meta-Plan could serve as an economic development model for the entire state.

The draft document can be accessed at <http://www.utoledo.edu/research/ITI/>

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