

# MTC Asset

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## UNI steers students toward transportation careers

When Jess Elder, James Gerjevic, and Matthew Kajewski started their master's programs in the Department of Geography at the University of Northern Iowa, they weren't particularly interested in transportation. Elder was interested in GIS and planning, Gerjevic in GIS and remote sensing, and Kajewski in GIS and computer science.

With MTC support and faculty encouragement, all three students were able to develop their interests in transportation, combine them with their backgrounds in geospatial technologies, and enter careers as transportation professionals.

Jess Elder, who studied the application of travel demand models to university campuses, landed a job with the Federal Aviation Administration in Washington, D.C. as a GIS analyst/cartographer on flight path and terrain analysis. (He's since taken a job with the National Geographic Society.)

After completing his thesis on the extraction of transportation infrastructure data from hyperspectral remote sensing imagery, James Gerjevic found work as a GIS specialist at the Union Pacific Railroad. His focus is on the management of railroad infrastructure assets (see sidebar).

Matthew Kajewski conducted research on the automated query and analysis of crash

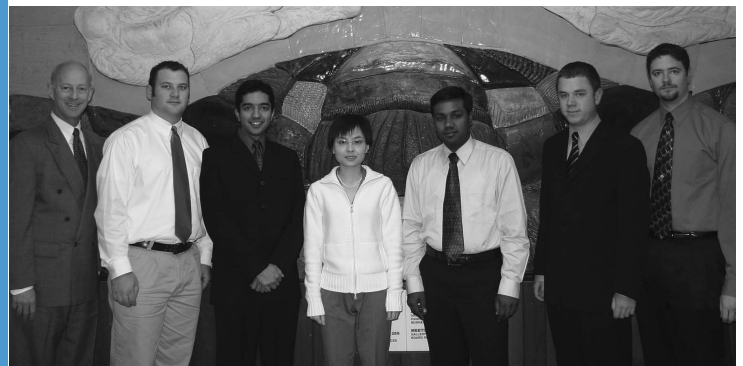
statistics in a GIS environment using MapObjects, Visual Basic, and CrimeStat (a point pattern analysis package). He now works as a GIS architect/programmer at IMAPS, LLC, a firm in the St. Louis area involved in GIS, navigation, and aviation flight planning. Kajewski's work deals with aeronautical and nautical navigation applications and charts for the National Geospatial-Intelligence Agency (NGA), the U.S. Navy, and the U.S. Coast Guard.

## UNI grad makes good at Union Pacific

James Gerjevic was involved in a project to make the process of locating railroad maps more efficient. It included scanning and georeferencing 15,000 or so paper maps. It also involved developing some ArcIMS and stand-alone applications to deliver the maps to the people who wanted to see them.

Union Pacific was pleased with the results. So much so that its real estate department's GIS group has grown from one person to five. The project was even featured in the spring 2005 edition of ArcNews ([www.esri.com/news/arcnews/spring05articles/union-pacific.html](http://www.esri.com/news/arcnews/spring05articles/union-pacific.html)).

## Transportation Scholars Conference 2005



Tom Stout, far left, and Devi Prasad Tulasi, third from right, were co-winners in the student paper competition.

Two students were named co-winners in the student paper competition. Devi Prasad Tulasi, University of Missouri-Columbia, and Tom Stout, Iowa State University, were each awarded \$1,000.

Tulasi won for "Asset Management System for Communication Towers Operated by the Missouri Department of Transportation." Stout won for "Matched Pair Safety Analysis of Four-Lane to Three-Lane Roadway Conversions in Iowa."

All student papers are available on the MTC website at [www.ctre.iastate.edu/mtc/papers/](http://www.ctre.iastate.edu/mtc/papers/). Students wrote about

- Dedicated truck lanes on interstates.
- Nighttime road construction.

- Managing data for long-term health monitoring.
- Offsetting opposing left-turn lanes at signalized intersections.
- Taxicab industry's regulatory structure.
- Modernizing a proven automated transit system to enhance cost effectiveness.

## Contents

- 2 MTC Student of the Year
- 2 Students at TRB
- 3 Research:  
At UM-St. Louis Recently Completed
- 3 From the Director
- 4 Transportation Seminars

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The MTC is located at Iowa State University's Center for Transportation Research and Education.

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## MTC Student of the Year



Hillary Isebrands

Iowa State University PhD student Hillary Isebrands was named student of the year for 2005.

Isebrands is currently working on several research projects at Iowa State University's Center for Transportation Research and Education as well as her dissertation research on modern roundabouts. She published her first journal paper last year and presented two papers at TRB in January 2006.

After earning her bachelor's degree in civil engineering from Iowa State University in 1997, Isebrands worked as a transportation engineer in highway design for an engineering consulting firm in Wisconsin for six years. She returned to Iowa State to attend graduate school in 2003 and completed her master's degree in 2004.

## Students at TRB 2006

The MTC helps students fund their travel and attendance at the Transportation Research Board's Annual Meeting. Following are a few Iowa State University students' reactions to the experience.

### Eric Fitzsimmons

This trip has been the highlight of my graduate school experience at Iowa State. I now have a better understanding of what the transportation side of civil engineering deals with and what possibilities are out there for my future.

One of my favorite sessions was about airport terminals of the future. The topic was whether we should design airports to be great gathering places or design an airport around low cost carriers. The panelists literally disagreed with each other.

### Neil Burke

I attended a session on the application of public-private partnerships in highway financing. Having written a course paper on this topic, I thought I was fairly well versed on it. I found out that there are many additional variables to consider, and from different viewpoints than those I included.

### Victor Lund

Viewing TRB presentations on well thought out research projects further deepened my interest in transportation research. However, it was also educational to view some presentations on research projects that were not well thought out. The presentations that I thoroughly enjoyed include the "Airport Terminal of the Future" and Iowa State University's Dr. Charles Jahren's presentation "Deciding When to Pave an Aggregate Road." Not only did the presentations I attended deepen my interest in research, but they also strengthened my desire to produce professional work in everything I do.

### Jon Wiegand

The most interesting part of the conference was discovering what makes a quality technical paper and presentation. After listening to various question and answer sessions, along with discussion outside of the room, there are key factors that are required to improve the research's credibility. The conversation of participants outside of the presentations was also interesting, being able to discuss research that is not published yet and hearing what is currently being done at other locations.

### Dan Ormand

One of the topics I learned more about at TRB was perceptual countermeasures to reduce speeds. Decreasing the lane width, pavement width, or lateral clearance are perceptual countermeasures I have been aware of. The use of pavement markings such as transverse bars and peripheral transverse lines to reduce speeds is an idea I found to be very interesting.

### Eric R. Petersen

It was a good opportunity to network with professionals and, with the help of the employment opportunities room, I was able to set up interviews with potential employers.

### Amanda Parke

On Sunday night three of us attended the Women in Transportation reception. There I met with a member of a national consulting firm who offered me an internship. I hope to hear from them soon.

# Research

## At UM-St. Louis

### Scheduled appointments to move through locks and dams?

Traffic on the Upper Mississippi River-Illinois Waterway carries bulk commodities vital to the U.S. economy. When the traffic gets delayed, the economic impact can be significant.

Researchers at the Center for Transportation Studies used a simulation model and analyzed U.S. Army Corps of Engineers OMNI data from the Upper Mississippi River. They concluded that at current traffic levels, implementing new traffic management policies such as appointment/scheduling/re-sequencing systems would not be recommended.

The economic benefits would be too small relative to the potentially large disruptions they would create in existing markets. However, if traffic levels were to dramatically increase, implementing new traffic management policies could yield significant economic benefits, potentially outweighing the cost of disruptions in existing markets.

### Taxis and the Americans with Disabilities Act (ADA)

Research on the taxi industry revealed the potential to substantially reduce the cost of ADA mandated service of public transit companies. Taxi firms can provide on-demand wheel chair accessible service at fares typically 60 percent of dial-a-ride trips and provide the users significantly more flexibility in their trips.

## Recently Completed

### Synthesis of Procedures to Forecast and Monitor Work Zone Safety and Mobility Impacts

Tom Maze (Iowa State University)

This project provides a synthesis of what is currently being done by state transportation agencies (STAs) across the country to plan, manage, operate, and evaluate work zone safety and mobility.

Administrative Final Rule CFR part 630 Subpart J "Work Zone Safety and Mobility" requires that STAs develop policies to investigate the safety and mobility impacts as early as possible in the project development process. The rule provides some flexibility by allowing each state to set its own procedures and policies to comply and by allowing states to seek solutions that are commensurate with the severity of the potential impacts and require the most aggressive planning for "significant projects."

The research included interviews of staff members at 30 STAs and three case studies. Maze found that only California and Ohio had really thought about work zone impacts throughout the life-cycle of project development and project delivery and had documented the roles and interactions between different offices.

Most agencies that were interviewed lacked objective performance data. However, many described processes where they have experts review and evaluate work zones on a periodic or continuous basis.

For more information, see [www.ctre.iastate.edu/mtc/projects/2005-01.htm](http://www.ctre.iastate.edu/mtc/projects/2005-01.htm).

# From the Director

by Tom Maze

In addition to authorizing a total of 60 University Transportation Centers (UTCs) through SAFETEA-LU, Congress earmarked funding for several university programs like the National Concrete Pavement Technology Center at Iowa State and a feasibility study on collecting road user fees through on-board computers and GPS at the University of Iowa.

Both the Iowa State and University of Iowa designations are multi-million dollar programs. The list of other fund designations for university research in SAFETEA-LU is long and involves universities throughout the country.

## UTC recompetition

Our region (Iowa, Kansas, Missouri, and Nebraska) has had a region competition for the UTC three times since 1987. Iowa State has won twice. This spring there will be another competition.

The MTC consortium currently consists of Iowa State University and the University of Missouri–Columbia as senior partners. Junior partners include the University of Missouri–St. Louis, the University of Northern Iowa, Lincoln University (in Jefferson City, Missouri), and the University of Missouri–Kansas City.

## New members

For the new UTC, we are proposing to continue with the same consortium members plus one or two new universities from the region. The University of Iowa has already agreed to join the MTC consortium.

All consortium members participate in the MTC educational program. However, non-member universities in the region are welcome to participate in the MTC research program.

In fact this year we received research proposals from two universities that have never participated in the MTC before, Wichita State University and Missouri State University (proposals are currently being evaluated).

## Risk and safety theme

For the proposed new center, we plan to shift our focus from the current theme of sustainable asset management to one focusing on minimizing risk and improving transportation safety. Risk and safety are topics that parallel current federal legislation and are emphasized in federal and state research funding programs.

Our proposal for a new consortium will be due in June. If you have thoughts regarding how to make our program better, please contact me or the members of our management team: Charlie Nemmers at UM–Columbia, Ray Mundy at UM–St. Louis, Tim Strauss at UNI, Sharon Koechling-Andrae at Lincoln University, Linda Boyle at Iowa, and David Plazak at CTRE/ISU.

# Transportation Seminars

Each spring the MTC plans and hosts a seminar series for transportation students at all MTC universities. Each seminar is held at 10 a.m. on Fridays and is broadcast in real time. For information about participating sites, contact David Plazak, 515-296-0814 or [dplazak@iastate.edu](mailto:dplazak@iastate.edu).

Speakers' PowerPoint presentations are usually posted on the seminar web page ([www.ctre.iastate.edu/educweb/scholars.htm](http://www.ctre.iastate.edu/educweb/scholars.htm)) a few days after they've given them. Upcoming seminars are listed at right.

- April 7 Ben Allen (Iowa State University Provost), Future Freight Capacity Needs
- April 14 James Brunke (The Boeing Company), Boeing Company Supply Chain Issues
- April 21 Michael Dreznes (Quixote Corporation), Utilizing Forgiving Highways to reduce "Needless Deaths"
- April 28 Joe Pestka (Missouri DOT), Airports and Their Impact on the Economy

Woodrow Wilson Bridge reconstruction project in Washington, D.C. See the February 3 presentation online. Below, the concrete barge. Right, bascule construction.



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