

# Transportation Northwest Regional Center Newsletter



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## TRANSNOW BREAKFAST PLANNED FOR TRB ANNUAL MEETING

Wednesday January 15, 2003, TransNow will present its annual breakfast meeting at 7:30 a.m. at the Marriott Hotel. The event will accommodate 25-30 people, including the TransNow Board of Directors, current and former TransNow faculty and students, and other guests. Please e-mail TransNow if you would like to participate. [transnow@u.washington.edu](mailto:transnow@u.washington.edu)

Encouraging Research and Innovation in Transportation Since 1920



## TRANSNOW PRESENTS SUMMER SEMINAR

Thirty students, faculty, and transportation professionals joined TransNow in welcoming Max Donath, Professor of Mechanical Engineering and Director of the ITS Institute at the University of Minnesota, to the University of Washington campus. Dr. Donath presented a seminar entitled



DR. NIHAN AND DR. DONATH

“DGPS-Based Augmented Reality: ‘Seeing’ the Roads and Staying in the Lane.” Professor Donath covered such topics as vehicle collision statistics, a driver’s Head Up Display of the local geospatial landscape, and prevention of lane-departure accidents. DGPS-based technology can be a lifesaver during a whiteout, a sandstorm, or other low-visibility conditions, and has proven to be especially useful for interstate trucking. Under the auspices of the USDOT’s Intelligent Vehicle Initiative, a field operational test is being conducted in order to evaluate the system on snow plows and emergency response vehicles.

## SCHOLARSHIPS AND STUDENT AWARDS

TransNow was pleased to match funding with a record number of scholarship and student award sponsors in 2001-2002. Agency sponsors are listed below.



- **CH2M Hill**, the UW Department of Civil and Environmental Engineering, and TransNow presented an Award for Excellence in Transportation Studies to Andrew Barash.
- **Coral Sales**: TransNow provided supplemental scholarships to each of the Coral Sales Company scholarship recipients: Nicole Conrad, Edward Egan, Jennica Ottenbreit, and David Rosen.
- **ITE**: The WA State Chapter of ITE and TransNow presented 7 scholarships to UW graduates and undergraduates in transportation engineering. ITE also provided awards for technical papers, and an award to the UW Student Chapter.
- **ITS America**: The TransNow Internship program, in partnership with the Washington State Department of Transportation (WSDOT), was selected as one of 25 finalists in ITS America’s 2002 Best-of-ITS Awards Program. Awards were presented during the Society’s annual meeting in Long Beach, CA in May 2002.
- **NWTC**: The NW Transportation Conference, held at OSU in February 2002, emphasized Sustainable Transportation. A student poster competition, recognizing outstanding transportation research by students of Oregon universities, offered cash prizes. Awards were presented to PSU and OSU students, and each winner received a supplemental award from TransNow.

*Continued on Page 2*

## NEW PROJECTS FOR 2002-2003

## PROJECTS I



Scott Rutherford, professor and chair of the Civil and Environmental Engineering Department at the University of Washington, is working on the project *Flexcar Program Evaluation*. Flexcar is one of the largest carshare operations in the U.S. with outlets in Seattle, Portland, and Washington D.C.

Flexcar began in 1999 as a public private partnership between King County Metro, the city of Seattle and a private operator known as Flexcar. Flexcar now has 60 vehicles in the Seattle area with a few in downtown Bellevue and the rest in Seattle. The purpose of this proposal is to fund a graduate student to work with the Dr. Rutherford, King County Metro, and Flexcar in preparing a comprehensive evaluation of the extent to which Flexcar has met the stated project goals. This review will also evaluate the Flexcar business model and gauge its effectiveness and viability.

At Portland State University (PSU), Jennifer Dill has a project titled *Impacts of a Vehicle Inspection Program on Vehicle Operations and Equity*. This research project has two interrelated parts: 1) an assessment of the equity impacts of the Vehicle Inspection Program in Oregon; and 2) an assessment of the impacts of Oregon's new trip permit program on vehicle ownership and operations. The findings of the research will be relevant to any region or state with a vehicle inspection and maintenance program.

James G. Strathman, also of PSU, is currently working on *Use of AVL and APC Data in Developing and Monitoring Transit Service Standards*. This project looks to evaluate transit service standards as they apply to scheduling, level of service, and stop spacing decisions. Also, it looks to develop a relational framework incorporating the interdependencies among service standards and opportunities for using archived AVL-APC data for monitoring and analysis. 🏔

*Awards continued from page 1*

- **PCI:** A team of UW CEE undergrads submitted two entries in the PCI "Big Beam" competition in August 2002. This competition is intended to test the students' design skills in prestressed concrete. The teams compete to design and build a beam that is best in eight possible categories. High strength, small amounts of reinforcement, and light weight are critical to winning. The UW teams came in numbers 1 and 2 in the regional competition, and the number 1 team was then entered in the national competition, which they then won. It was the first time UW had entered the competition.
- **Traffic Bowl:** UI students took first place at the Annual Traffic Bowl Competition in Portland, Oregon, November 11, 2001.
- **Valle:** David Rosen was this year's recipient of the Valle Scholarship and Scandinavian Exchange Program at the UW.
- **WTS:** Each year, WTS offers scholarships to female student members based on academic achievement and a commitment to excellence in the transportation industry. TransNow joined WTS in providing a cash scholarship to Monica Reyes. 🏔

### Transit Vehicles as Speed Probes

TransNow Principal Investigator Dan Dailey, from the Electrical Engineering Department at the UW, has been funded for a project entitled *The Use of Transit Vehicles as Speed Probes for Traffic Management and Traveler Information in Addition to Performance Monitoring*. This project continues research reported in TransNow's final project report, TNW2001-09, *AVL-Equipped Vehicles as Traffic Probe Sensors*. To date, this project has created a preliminary prototype designed to provide arterial and freeway speed estimates. To view, please see <http://www.its.washington.edu/transit-probes/>, a preliminary prototype page for access to arterial and freeway speed estimates created using transit vehicles as probes. The website presents speed estimates for buses traveling on freeways and arterials. Clicking on any of the shaded areas will bring up a larger image of that area. From there, moving the mouse over any of the yellow sensor "spots" will show the exact location of that particular sensor. The website includes a regional selection map and a snapshot of speed estimates taken from virtual sensors in SR-99 and I-5 North in Seattle. In addition to creating a virtual speed sensor, this project uses data fusion techniques to estimate accurate corridor travel times, notably the point estimates of speed as a function of time and space. The researchers then integrate

$$v(x, t) = \frac{dx}{dt}$$

to determine travel time; the resulting travel time through the corridor as a function of time of day.

Material from this project has been published in various journals. For complete information please contact [dan@ee.washington.edu](mailto:dan@ee.washington.edu) or see TransNow's annual report.

### Motor Carrier Marketing Strategies

TransNow PI Starr McMullen from Oregon State University is working on a project entitled *An Analysis of Motor Carrier Marketing Strategies, Information Technologies, and Productivity*. This study uses firm-level data to examine the productivity growth and efficiency of for-hire U.S. motor carriers. Of particular interest is how new technologies are related to motor carrier productivity and efficiency, and the long run savings to firms and governments

## IN PROGRESS

from adopting these technologies. Findings should provide useful information to the USDOT Federal Motor Carrier Safety Administration (FMCSA), which has a stated goal to promote "...the use of information systems and advanced technologies to improve commercial vehicle safety, simplify government administration systems, and provide savings to states and the motor carrier industry." There appears to be a positive and significant relationship between electronic data interchange (EDI) and productivity gains. EDI technology allows the trucking firms to communicate more easily with shippers. Firms who adopt a "lowest-freight-rate" strategy have significantly higher productivity gains than those that pursue other strategies. This result is consistent with expectations and may help explain why past studies that fail to separate firms by marketing strategy do not find large productivity gains in trucking.

Sarah Dammen, Masters student in Economics at OSU, worked with ODOT on a summer internship dealing with vehicle operating costs. Also, using data collected for this project, Ms. Dammen has started working on a study of how motor carrier safety practices and technology affect accident rates. The results are expected to be of interest to the FMCSA. For more information please contact s.mcmullen@orst.edu.

### Vehicle Tracking Technologies

Researchers Jianyang Zheng and Yin Hai Wang at the UW are studying the background and undertaking a literature review related to vehicle tracking technologies. Cargo theft, loss, and damage have long been serious problems for the shipping industry. Total U.S. losses due to theft are estimated at \$54 billion annually. Because of this situation, there exists an urgent need for an efficient vehicle tracking system that provides real-time monitoring of cargo and assets. Knowing where the containers are, how long they have been at a certain location, and where and when they may have been tampered with, are all critical issues.

Vehicle tracking technologies include:

- Biometric Identification (BIOID)
- Electronic Supply Chain Manifest (ESCM)
- Electronic Container Seal Systems (ECS)
- Radio Frequency Identification Systems (RFID)
- Global Positioning Systems (GPS)
- Automated Cargo-Tracking Transponders (ACTT)

For more information please contact yinhai@u.washington.edu. 📧

## THE STUDENT'S VOICE: CRYSTAL BENJAMIN

TransNow welcomes interns, fellows, RA's, and TA's to academic year 2002-2003. A complete list of students will be included in the May 2003 newsletter. We have asked one student, Crystal Benjamin, to comment on her participation in the TransNow Internship program.



CRYSTAL BENJAMIN

I graduated from the UW Community and Environmental Planning (CEP) program in the College of Architecture and Urban Planning in June of 2002. CEP is an undergraduate planning major without many technical requirements where students create their own degree by writing an Individual Study Plan (ISP). My ISP was focused on transportation planning and as I came to the end of my planning degree, I realized that in order to be marketable in the transportation world, I would need more technical training. This is why I decided to look into attending the transportation program in the Department of Civil and Environmental Engineering at the UW. Two people really influenced me: Nicole Conrad (CEE class of 2002 and former TransNow intern) and Scott Rutherford (CEE Chair). Nicole graduated from CEP the year before I did and she is the one who convinced me that I could get into the transportation program and do well even without a very technical undergrad degree. I met Dr. Rutherford when we both served on the University Transportation Committee. His technical presentations convinced me that I had a lot to learn about the transportation field.

The TransNow tuition fellowship and internship salary is what really allowed me to attend the University for another year. I have been in school for quite some time and the cost was beginning to become unbearable. However, with the TransNow internship, I was able to avoid the downturn in the economy as I graduated with my Bachelors degree. I continue to conduct job searches and what I am finding is that graduate degrees are preferred in the field I am trying to enter. Had I not had the TransNow opportunity, I would have stayed in transportation planning. But, with an education in transportation engineering, I will be much closer to my career goals when I graduate. 📧

## TRANSNEWS

- **Aviation Conference:** Oregon State University, the Oregon Department of Aviation, and NASA were co-sponsors for the 2<sup>nd</sup> Statewide Conference on Aviation, at Redmond, Oregon, held June 18-20, 2002. More than 100 participants convened for "Air Service to Oregon Communities...How to Get It & How to Keep It Going." Plans for the 2004 Oregon Statewide Conference on Aviation (May 17 - 20) are already underway.
- **Concrete Canoe:** The American Society of Civil Engineers (ASCE) sponsored the Northwest Colleges Best Solutions Regional Competition at the University of Idaho in April 2002. The University of Washington Concrete Canoe team finished first in every category, with Washington State University (WSU) finishing second.
- **Electronic Newsletter:** The next TransNow Newsletter will be available by linking to the website or by e-mail preview. Please e-mail TransNow if you are interested in being on the distribution list.
- **Future Truck Contest:** University of Idaho students participated in a Future Truck contest held at Moscow Idaho in June 2002. The annual contest challenges the next generation of innovators to help solve a world energy and air pollution problem. Student engineers worked with a converted 2002 Ford Explorer to meet competition as well as urban driving performance standards with low- to zero-emissions. The UI team placed 7<sup>th</sup> overall and took first place in the towing event.
- **Institute of Transportation Engineers:** The ITE, an international educational and scientific association emphasizing meeting society's needs for safe and efficient surface transportation, held its District 6 Annual Meeting in Palm Desert, CA, July 14-17, 2002. Kevin Chang attended the meeting and presented a paper co-authored



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## TRANSNEWS

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by Professor Nancy Nihan entitled, *Assessing the Institutional Infrastructure of Regional Freight Mobility*. Over 425 people participated in this year's district meeting. Next year, the ITE District Meeting will be combined with the ITS International Meeting and will be held in Seattle, Washington August 24-27, 2003.

- **Intelligent Transportation Systems:** Xiaoping Zhang and Yinhai Wang from the UW attended the ITS America 12<sup>th</sup> Annual Meeting and Exposition Conference from April 29 to May 2, 2002 in Long Beach CA, and presented a paper entitled *Monitoring Freeway Congestion Using Single-Loop Measurements*. Three particularly prominent topic areas addressed in the conference were Homeland Security, Telematics, and Transportation Reauthorization.
- **The TransNow/WSDOT Internship** program was selected as one of 25 finalists in 7 award categories for the 2002 Best of ITS Awards Gala.
- **Minority Program:** TransNow students Jianyang Zheng and Naveen Juvva assisted in the UW's annual College of Engineering Gear-Up Program, which is an outreach to low-income middle and high school students. The event was held in July 2002.
- **NSF:** The National Science Foundation (NSF) has awarded \$10M to establish a Center for the Advancement of Engineering Education (CAEE) at the UW. The Center is directed by Cindy Atman. The CAEE has three major elements: scholarship on learning engineering, program for enhancing engineering teaching, and annual engineering education institutes.
- **PSU:** A Transportation Seminar series presented on live streaming has been created by professors Jennifer Dill and Robert Bertini of PSU. A recent video seminar, *The Portland Steetcar: A First Year Progress Report*, featured speaker Kay Dannen of Shiels Obletz Johnsen, Inc. For more information contact Robert L. Bertini, Ph. 503-725-4249, <http://www.bertini.org>. Or access the Transportation Seminar web site: <http://web.pdx.edu/~bertini/seminars.htm>.
- **Valle:** Scott Rutherford, Chair of CEE at the UW, has been named Director of the Valle Scholarship and Scandinavian Exchange Program, effective August 31, 2002. Dr. Rutherford will oversee the expansion of the Valle program to the Baltic countries, and will begin a cooperative venture in Sustainable Development with the IVL Swedish Environmental Research Institute and four leading universities in Sweden. 