

TRANSNOW

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Pacific Northwest UTCs Plan Historic Meeting

With the passage of the new transportation bill, SAFETEA-LU, Federal Region X now has a University Transportation Center (UTC) in every state of our 4-state region! Two new national UTCs, the Alaska Transportation Research Center, and the Oregon Center for Transportation Studies join our current Tier I and regional UTCs, the National Institute of Advanced Transportation Research (NIATT) and Transportation Northwest (TransNow), respectively, as part of the USDOT's UTC Program.

The new Alaska center represents a consortium of Alaska universities with the University of Alaska Fairbanks (UAF) serving as the lead university. The Oregon center also represents a consortium of universities in that state with Portland State University (PSU) serving as the lead university. NIATT, the current Tier I center located at the University of Idaho (UI), became a center in the UTC Program in 1998 with passage of TEA-21. TransNow, the original Region X UTC, has been our regional center for the past 17 years. TransNow represents a consortium of universities in Region X with the University of Washington (UW) serving as the lead university.

Although we now have separate centers in each state of our region, we will continue to maintain the connections that have been flourishing since the establishment of TransNow in September, 1988. The original regional university consortium - PSU, Oregon State University (OSU), UAF, UI, UW, and Washington State University (WSU) - is still intact and actively linked. Now, each of these universities is part of the UTC in its respective state. The mutually beneficial and highly synergistic multi-

university relationships that were established over the history of the program will continue to thrive. The UTCs in Region X will work together to communicate, collaborate, and optimize our region's resources to meet the transportation education and research needs of the 21st century.

To begin this collaboration, TransNow will host a meeting of old and new Region X UTC's on October 13, 2005, at the Talaris Center in Seattle. At this initial meeting, we will share "best practices," new plans, and generally coordinate with each other. We will discuss potential multi-center projects such as cooperative research studies addressing regional transportation projects that cross state boundaries and cooperative



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New Projects for 2005/06

Backbone Infrastructure 2005, Daniel J. Dailey, 61-2392, University of Washington (UW), dan@its.washington.edu

TransNow, WSDOT, and other Washington state partners have invested in the development of a Puget Sound ITS Backbone infrastructure that is used to obtain, fuse, and deliver traffic and traveler information, providing a widely available common interface to data from several agencies and a common public interface for WSDOT inductance loop data. The goal for this project is to provide support for the ongoing ITS Backbone operated at the UW and to augment the system to include data from Lynnwood, Bellevue, virtual speed and travel time sensors on King county arterials, and non-recurring traffic congestion predictions based on weather information.



Deployment of a Virtual Sensor System based on Transit Probes. Daniel J. Dailey, 61-2391, UW, dan@its.washington.edu
Previously funded joint TransNow/WSDOT projects began the development of technology and software to track Seattle Metro's AVL-equipped fleet and to use them as a set of probe vehicles on both freeways and arterials. Those projects created the ability to capture AVL data from the roadways, estimate individual vehicle speed, estimate individual transit vehicle travel times, and estimate corridor travel times. The goal for this project is to facilitate the use of virtual sensors based on transit probe vehicles in an active traffic management scenario at WSDOT's traffic management center.



Optimization-based Methods for Image Registration, George Turkiyyah, 61-2307, UW, george@ce.washington.edu
The goal of this project is to develop and implement methods for comparing digital image data of transportation facilities to assess change in their condition over time. The main challenge in this problem is the ability to register image sequences taken at different times, perhaps with different cameras, and in different environmental conditions. Registration is a nonlinear transformation that produces correspondence between image features to allow their metrics to be directly compared. The proposed demonstration application is the monitoring of distress evolution in concrete pavements.

Evaluation of Virtual Pavement Construction Simulations, George Turkiyyah, 61-2306, UW, george@ce.washington.edu
This project builds on previous work on the development of a virtual hotmix construction site. Researchers will perform a formal evaluation of its effectiveness and usability with contractors and in the classroom. A secondary objective is to enhance the current version of the simulator. The enhancement will include several factors: non-uniform initial hotmix temperatures; density models of hotmix; the effect of secondary heating devices; and the ability to sample completed jobs (as would occur with an actual construction contract). Additional paving scenarios based on feedback from contractors will provide problematic paving situations to show where training is most needed.

Managing Pedestrian Safety, Anne Vernez Moudon, 61-2475, UW, moudon@u.washington.edu

The first goal of the project is to examine correlations between pedestrian motor vehicle collision locations (PMVC) and bus ridership, road characteristics, vehicular traffic conditions, and land use features along state roadways. Models will measure the odds of future PMVC to occur, based on specific environmental conditions. Such predictive power will in turn serve the second goal of the project to identify locations and road characteristics associated with a high risk of PMVC, for the purpose of targeting pedestrian safety improvement programs and developing treatments and countermeasures.



Estimation of Incident-Induced Travel Delays on Freeways, Yinhai Wang, 61-2393, UW, yinhai@u.washington.edu
Traffic congestion on Seattle's key streets and highways costs each commuter an average of \$759 annually in wasted time and fuel (Road Information Program, 2004). The objective of this study is to develop an algorithm for quantifying incident-

induced travel delays on freeways using archived loop detector data and incident log data. The algorithm will be automated in a computer program to facilitate the applications.

Cost-Effective Safety Improvements for Two-Lane Rural Roads, Yin Hai Wang, 61-2394, UW, yinhai@u.washington.edu

National statistics show that about 74.9% of fatal crashes, and only 38.8% of total accidents, occurred on two-lane roads in the U.S. in 2004. This indicates that accidents on two-lane roads are more serious than those on multi-lane roads. The objective of this study is to better understand rural roadway accident causes in Washington state and to help find cost-effective solutions for reducing the frequency and severity of crashes on rural two-lane roadways.



Feasibility Study Evaluating Transportation Security Systems and Associated Multi-Modal Efficiency, Eric Jessup, 145836-Task 1, WSU, eric_jessup@cahnrs.wsu.edu

The overall purpose of this research project is to conduct a feasibility study and development of a general methodology to determine the impacts on multi-modal and system efficiency of alternative freight security measures. The methodology to be examined will be developed by applying it in several case study scenarios in the Pacific Northwest. This project is very timely because it will build on another project that is currently underway by the same team, which studies the impact of security measures on the competitive international trade situation for products coming into and out of the state, region, and nation.

Data Visualization as a Tool for Improved Decision Making within Transit Agencies, Thomas Kimpel, 821528—Task 5, PSU, kimpelt@pdx.edu, Combined Project between TransNow and Oregon Center for Transportation Studies

Portland's TriMet has been a leader in bus transit performance monitoring using data collected via automatic vehicle location (AVL) and automatic passenger counter (APC) technologies. The proposed project 1) develops visualization methods that serve to reduce the quantity and enhance the quality of the information presented in transit service performance reports and 2) develops effective communication tools for presenting important findings to decision makers.

Note: Because of the recent restructuring of the UTC's (there are new national transportation centers in Oregon and Alaska), TransNow PI Tom Kimpel at Portland State University (PSU) will be completing one project with the Oregon Center for Transportation Studies. A combined final report will be presented in 2006. 🏹

Projects Redirected to Oregon and Alaska

Several projects that received good reviews in the TransNow peer review process were redirected to the new centers in Oregon and Alaska:

- Dynamic Travel Time Estimation Using Regression Trees, Rasaratnam Logendran and Prasad Tadepalli, OSU, and Robert Bertini, PSU
- Using Archived ITS Data to Measure the Operational Benefits of a System-wide Adaptive Ramp Metering System, Robert Bertini, PSU
- Establishing the Link between Urban Form, Street Connectivity, Roadway Design, and Pedestrian Safety, Jennifer Dill, PSU
- Using Existing ITS Commercial Vehicle Operation (ITS/CVO) Data to Develop Truck Travel Time Estimates and Other Freight Measures, Christopher Monsere, PSU

- Guidelines for Operating Traffic Signals During Low-volume Conditions, Ahmed Abdelghany, UAF. 🏹

UTC Meeting (from page 1)

education projects that may share course and/or training materials via distance learning technologies. Invited participants will come from the Alaska Department of Transportation (ADOT), the Idaho Transportation Department (ITD), PSU, the Oregon Department of Transportation (ODOT), OSU, UI, UAF, UW, the Washington State Department of Transportation (WSDOT), and WSU.

Transportation scholars all over the Northwest are eagerly looking forward to this new era of enhanced federal support, diversification, and collaboration. 🏹

*Transportation Northwest
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TransNews

American Road and Transportation Builders Association

Nancy Nihan, Director of TransNow, is the new president of the American Road and Transportation Builders Association (ARTBA) Research and Education Division.

LOOP SIMulator

Nancy Nihan, Yinhai Wang, and Patikhom Cheeverunothai (RA) at the UW have recently patented a LOOP SIMulator (LOOPSIM) - both hardware and software - as a development of the "Improving Dual-Loop Truck (and Speed) Data: Quick Detection ..."

IEEE Conference, March 19-22, 2005

At the 2005 IEEE International Conference on Networking, Sensing and Control in Tucson, AZ, Jianyang Zheng, RA working with Prof. Yinhai Wang at the UW, presented a paper on GPS accuracy evaluation with image processing.

STARLab

The WSDOT has selected STARLab at the UW to be a remote operations center and will provide life traffic data and traffic operation software. STARLab has also acquired several new software programs and data sources. With this capability, STARLab will be able to prepare undergraduate and graduate students for entry into the transportation marketplace.

Hospitality Suite

TransNow and the College of Civil and Environmental Engineering at the UW will be offering a hospitality suite at the TRB Annual Meeting on Monday, January 23, 2006.

Open House Planning

TransNow is seeking creative demos geared to K-12 students for the CEE Open House of the UW in April 2006. If you have exhibits that you know to be effective in teaching this age group about transportation science, contact transnow@u.washington.edu.