



PacTrans

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University Transportation Center Newsletter

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PacTrans Region 10 Transportation Conference

The Pacific Northwest Transportation Consortium (PacTrans) held its fourth annual conference on Friday, October 14, 2016 at University of Washington's Lyceum Room in the Husky Union Building. The conference focused on transportation safety and technology with the theme of "Inclusive Technology for Tomorrow's Transportation."

With over 220 in attendance, it was by far the most successful conference to date. This year was not only a success because of general attendance numbers, but also because speakers and audience members were well represented from all four states and five consortium universities in the Pacific Northwest. The conference had a great mix of academic researchers,

government agencies, and private industry professionals; and each of the thirteen speakers gave excellent presentations on a broad range of interesting topics.

Sessions covered an array of interesting topics including: A research focus session on Mobility, a session on Technology Transfer and the transition of successful research results into professional practice, a session on Workforce Development, and finally a session on research hot topics of the future. Following the overall aim of the conference, PacTrans principal investigators and students submitted a total of 32 posters for the conference's annual poster session. For more on the conference, check out our special edition conference newsletter [here](#).



The University of Washington Urban Freight Lab Opens

This past October, the University of Washington's Supply Chain and Transportation Logistics Center opened its new Urban Freight Lab. The lab will investigate high-impact, low-cost ways for businesses to deliver goods in urban settings, and try to help cities better manage the limited space along their streets. "We've had this concentrated population growth in urban areas at the same time that people have been doing an increasing percentage of their shopping online," and getting more goods delivered to their home, said Anne Goodchild, the UW professor of civil and environmental engineering who directs the Supply Chain Transportation and Logistics Center. "This has made urban delivery a more pressing problem."

This lab combines the data and practical knowledge from private industry partners/members such as Costco, FedEx, Nordstrom, UPS, and USPS, with the research strengths and knowledge of the University of Washington. "We're a growing city, so as we get denser, the congestion increases," said Scott Kubly, Seattle's transportation director. "There's been so much change in the last 10 years in how goods move and how people shop that it's really creating a level of urgency around this."

With the significant expected growth of freight demands over the coming decades, this exciting new partnership offers significant potential for PacTrans to get involved. PacTrans, recently appointed FAST Act Region



10 University Transportation Center, will be focusing on the mobility of people and goods for the coming five years. Freight is a significant factor when it comes to issues of mobility and congestion. We are excited to welcome Dr. Goodchild's new lab to the University!

PacTrans Director Yin Hai Wang Speaks at GDSI Conference

This past November, PacTrans director, Dr. Yin Hai Wang, traveled to Taipei, Taiwan to give a keynote address at the Global Spatial Data Infrastructure Association (GDSI) 15 World Conference. The conference lasted for five days, from 29 November to 2nd December in 2016. The theme of conference was Spatial Enablement in Smart Homeland, including three main topics of Smart Disaster Prevention, Smart Transportation and Smart City.

Dr. Wang spoke about the many pressing issues facing our current transportation system: congestion, safety, mobility, aging/failing infrastructure without funding sources to keep up, etc. He then posted the idea that the emergence of big data may

hold the key to solving these seemingly immovable problems. After spending some time on new technologies for collecting data and new innovative data sources, he spent the remainder of his time giving research examples from his lab, here at the University of Washington. Specifically he talked about the Digital Roadway Interactive Visualization and Evaluation Network, or DRIVE Net, data analytics platform.

The (GSDI) Association was formed in 2004 as an inclusive networking organization of academic and research institutions, government agencies, commercial geomatics firms, national and regional GI associations and individuals (geo professionals and students) from



around the world. The purpose of the Association is to promote international cooperation and collaboration in support of local, national and international spatial data infrastructure (SDI) research and implementations that will allow nations to better address social, economic, and environmental issues of pressing importance, including sustainable development.

PacTrans PI Don MacKenzie (UW) Participates at Round Table at White House



Late last month, University of Washington Assistant Professor of Transportation Engineering and PacTrans PI, Dr. Don MacKenzie was invited to the White House for a roundtable on vehicle automation and energy demand. Participants included (of

which there were 30 in total) officials from the Department of Transportation, Department of Energy, the EPA, and the Executive Office of the President, as well as representatives from industry, academia, and the non-profit sector.

The purpose of the roundtable was to gather input for federal policy-makers, in an effort to leverage vehicle automation to help reduce energy consumption including the associated environmental impacts of vehicles. “In light of the uncertainty over how much emphasis the incoming Trump Administration will place on energy conservation,” said MacKenzie, “there was a lot of discussion

about the potential roles of state and local governments in achieving these goals.”

Dr. MacKenzie’s contributions to the discussion included the idea that we should not assume that the energy savings potential of automation will necessarily be achieved absent further policy actions: “The biggest opportunity for saving energy is to increase occupancy factors, either through travelers sharing rides more often, or riding in smaller vehicles more often. It is widely thought that these changes will be more feasible if self-driving cars lead to increased use of on-demand mobility services.”

PacTrans Associate Director David Hurwitz Participates in Big City Challenges Expert Panel

Several months ago, OSU Associate Professor and PacTrans Associate Director, Dr. David Hurwitz, was invited to sit on an expert panel hosted by the Portland Business Journal. The title of the panel was *A Right Path to Progress: A Panel of Experts on the Rose City’s Biggest Challenges*. “By almost any measure, Portland has been one of the most dynamic cities in the country in the 21st century.” Growth and change are constant, and seem to be happening at an ever-faster pace, raising the question of what the future holds for Portland.

Dr. Hurwitz was joined by a handful of experts from the development and finance world. He was not only the only academic but also the only expert there to represent the transportation system and community. He spoke

about the parallels between the paradigm shift of the early 20th century (horse-and-buggy to personal automobile) and the paradigm shift that we are likely to see in our lifetime (ridesharing platforms, autonomous vehicles, and the internet-of-things). He also spoke at length about the importance of

policy and infrastructure investments and how those will play a huge role in our changing urban environments.

For the full script of the panel, click [here](#).

THE FUTURE OF PORTLAND
THOUGHT LEADER FORUM

A BRIGHT PATH TO PROGRESS
A PANEL OF EXPERTS ON THE ROSE CITY'S BIGGEST CHALLENGES

 JASON WERTS CHIEF OPERATING OFFICER, UNITUS COMMUNITY CREDIT UNION Werts joined Unitus Community Credit Union in 2006. As chief operating officer, he ensures an outstanding member experience, quality operational infrastructure, and cross-functional effectiveness. He	 PETER ANDREWS BROKER AND REAL ESTATE CONSULTANT, MELVIN MARK BROKERAGE Andrews is a real estate broker with Melvin Mark Companies, a privately-owned company offering comprehensive commercial real estate services. He guides tenants, landlords, developers and investors in their search for the right space, asset and investment. He	 DAVID ZEHNBAUER PARTNER, DUNN CARNEY ALLEN HIGGINS & TONGUE Zehntbauer is a partner at Dunn Carney where he chairs the firm's Real Estate Practice and is a key partner in the firm's Business and Agriculture and Natural Resources teams. He has more than 20 years of experience counseling commercial real estate clients and closely held businesses regarding	 SCOTT CHERNOFF PRESIDENT, CUMBERLAND HOLDINGS Chernoff has over 25 years of experience in a broad range of real estate investments. Shortly after graduating from Cornell University, he began his real estate career with Win Properties Inc. in New York City. Chernoff joined Trust Company of the West in 1994 in the distressed mortgage	 DAVID HURWITZ ASSOCIATE PROFESSOR, OREGON STATE UNIVERSITY Hurwitz is an associate professor of transportation engineering and the director of the Driving and Behavior Simulator Laboratory in the School of Civil and Construction Engineering at Oregon State University. Hurwitz also serves as the associate director at OSU for the
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RESEARCH HIGHLIGHTS

PacTrans Multi-Institution Outreach Project

PacTrans engages PIs in research with several different categories of projects. Single-institution (or small) projects that typically have more modest budgets, and multi-institution projects that require PI collaboration within our consortium and typically have more substantial budgets, and finally, we have two special, ongoing projects each year. One revolves specifically around education and other around outreach. The specific theme is identified by our board of directors and then the director-representative from each of the five consortium partner institutions identifies a PI from their university to be part of the five-person team that works on this project.

Beginning with our MAP-21 grant in 2014, the outreach project has been focused on reduction of vehicular accidents, more specifically lane departure crashes. In the most recently completed phase of this project, David Hurwitz (OSU, Lead PI), Linda Boyle (UW), Leila Hajibabai (WSU), Billy Connor (UAF), and Ahmed Abdel-Rahim (UI), created a public service announcement competition for students at both the high school and college levels. Essentially students had to produce a 20 to 30 second youtube video, and series of 5 tweets/ Instagram posts, and a poster that all got at the issue of lane departure crashes. The intent here was to utilize students' understandings of their peers to generate media that was relevant and meaningful to them.

PacTrans received dozens of submissions from across all four states within our Region through the portal set up on our website. These are just a few of the highly creative examples we received.

In this upcoming year, the last year of this particular outreach project, the team will explore outreach to K-9 students. This will likely be in the form of class projects and presentations at elementary and middle schools, as well as engaging the students at outreach events like OSU's Undergraduate Engineering Expo and UW's Engineering Discovery Days. More to come on those soon.



STUDENTS

Region 10 Student Conference

The 2016 PacTrans Student Conference was held October 15 at the Husky Union Building (HUB), University of Washington campus. More than 45 students from the University of Washington, Washington State University, Oregon State University, the University of Idaho, and the University of Alaska were in attendance making it one of the best attended student conferences in recent years.

The conference began with a keynote address from Mr. Mustafa Mohamedali, the technology transfer manager for Washington State Department of Transportation (WSDOT); WSDOT also sponsored the conference this year and provided a generous donation used for cash prizes in the student poster contest among other things. Mr. Mohamedali talked about a variety of things, though his two main focal points were current projects WSDOT is working on and what an agency like WSDOT is looking for in young engineers entering the workforce after college. With regard to the former, it was quite interesting to see some of WSDOT's plans for a variety of innovative projects to help improve safety and mobility in one of the country's most congested cities (Seattle), as well as elsewhere across the state, over the next several years. The latter portion of the talk on desirable skills for young engineers was also quite illuminating as the vast majority of conference attendees will end up in the transportation workforce (public and/or private sector) in the next five years. It was really great to get some insight on what large agencies like WSDOT are looking for firsthand from someone who has been in the business as long as Mr. Mohamedali.

Following Mr. Mohamedali's presentation, the second presentation took place and featured two employees of INRIX, Dr. Yegor Malinovskiy and Ms. Myca Craven. For the first half of this presentation, Ms. Craven talked about some of INRIX's exciting work in the realm of GPS probe vehicle data analysis and general data science. It was exciting to see how in this new era of "big data" what types of problems are available for transportation engineers to solve that may not have been feasible previously. Ms. Craven, and Dr. Malinovskiy, also pointed out the importance of general data science skills (e.g., proficiency with statistics, databases etc.) for the modern transportation engineer. After Ms. Craven's portion of the presentation, Dr. Malinovskiy discussed his transition



from academia into the private sector, his experience as a young engineer/analyst, and some of the interesting projects he has worked on at INRIX.

After his discussion, the annual student poster competition was held. This year, more than 20 students submitted posters on their current research projects, many of which stemmed from PacTrans projects. The contest was judged by both students and the speakers alike, and the authors of the top three posters were awarded cash prizes.

The next part of the conference has also become an annual fixture, that being the panel session featuring recent graduates describing their experience transitioning from school into the workforce as well as taking questions from student attendees. This year's panel was comprised of Mr. Melaku Dubie (Seattle Department of Transportation), Mr. Luka Ukrainczyk (DKS Associates), and Dr. Yegor Malinovskiy (INRIX). All three panelists graduated from transportation engineering programs in Region X within the past three years. Students enjoyed hearing about topics such as their job search process, differences between the public and private sector, useful classes to take in school, and typical daily work assignments among many others.

Yet again, the student conference was a success in terms of both attendance and quality of the program. Students had a great time interacting with the speakers as well as fellow students from around Region X in an environment focusing explicitly on student needs/interests. We look forward to next year's conference!

STUDENTS

Students visit WSDOT TMC

Transportation classes offered by PacTrans consortium institution make every effort to prepare students for the jobs that desire after graduation. One unique component of many of our classes is that transportation faculty will regularly set up site visits companies and agencies where students can see it in action. This past December a graduate level transportation operations class of about 20 UW transportation engineering students visited the Northwest Region Transportation Management Center in Shoreline, which is one of the six regional Traffic Management Centers (TMCs) of WSDOT. These centers operate 24-hour, 7 days a week, and facilitate a broad range of complex operation. The TMC is the operation center of the many Intelligent Transportation Systems (ITS) used

to make the system run more safely and efficiently. ITS devices include roadside cameras, ramp meters, variable message signs, speed and lane control signs, and radios.

With increasing traffic and challenges in managing resulting congestion, the Northwest Region TMC has grown to a team of approximately 30 engineers, technicians, and UW interns. The TMC has grown with the expansion of ITS technologies such as variable speed limits and lane control with Active Traffic Management (ATM), tolling of SR 167 HOT Lanes and I-405 Express Toll Lanes, and the new SR 99 bored tunnel and retrofitted I-90 tunnels.

The TMC facility in Shoreline, being a data bank, has its own massive server room, ninety 46-inch screens, radio dispatched system,



uninterrupted power supply and generator that can keep the facility operating for up to 7 days. The center can be activated as an Emergency Operations Center (EOC) during a major, long-term closure that will impact the transportation system. For the future, TMC is moving towards practical design, improved metering and tolling, and shoulder use lanes on congested corridors.

PacTrans-Supported OSU ITE Student Chapter Brings Home Gold

This past November 2016, the Oregon State University Institute of Transportation Engineers (ITE) student chapter won first place in the 25th annual Oregon ITE Traffic Bowl in Portland, Oregon. The team consisted of M.S. student Joseph

Calveria, Ph.D. student Alireza Mostafizi, Ph.D. student Shangjia Dong, and M.S. student David Covey. They were in second place heading into final jeopardy and wagered all their points to win the competition. The team earned a \$500 cash prize

for their first place finish. Portland State University took second place and the Oregon Institute of Technology earned third place. Congratulations to our students for their great performance!



James Tsai Seminar



This October, PacTrans hosted its quarterly Regional Transportation Seminar at the University of Washington. The special guest was Dr. James Tsai, a Civil Engineering professor from Georgia Tech. He delivered a presentation titled, Smart City Transportation Asset Management and Safety Analysis Using Emerging 3D and GPS/GIS Methodologies.

Consistent among the projects discussed, Dr. Tsai talked about how much less expensive many currently expensive technologies will soon become due to the emergence of the autonomous vehicle. LiDAR was one of the examples used.

Foreseeing this significant drop in cost for fairly advanced sensing technology, he and his students have been working to develop new methodologies that implement such hardware.

More specifically they have been using it for collecting roadway characteristics data and developing methodologies for identifying conditions and predicting dangerous roadway sections for roadway safety improvement.

He went on to assert that because so much more information can be collected at such a faster rate with these new technologies, it is conceivable that their work could effectively document how roadway imperfections (ie. cracking) spread and at what point potholes are formed. The moral of this story is that new technologies, and their affordability, open vast new opportunities for more efficient and cost effective data collection across the transportation field.

PacTrans would like to extend a huge thank to Dr. Tsai for taking the time to speak with us.

**MICHAEL KYTE LECTURE
SERIES PRESENTS:**

Wayne Kittelson

This past October, PacTrans consortium partner, the University of Idaho hosted the Michael Kyte Distinguished Lecture. This year, PacTrans External Advisory Board Member, Wayne Kittelson, of Kittelson and Associates gave a great talk on, “Moving Forward over the next 15,000 days: Shaping our future transportation system.”

“15,000 days,” says Kittelson, “is essentially the equivalent of 40 years, or a career.” He refers to it in days because he makes the argument that the days are much more important than the years. “The days are where everything gets done, in fact, they’re the only place that anything gets done,” Kittelson elaborated. He went on to discuss agents of change, highlighting three general areas: technology, academic institutions, and personal traits/ characteristics.

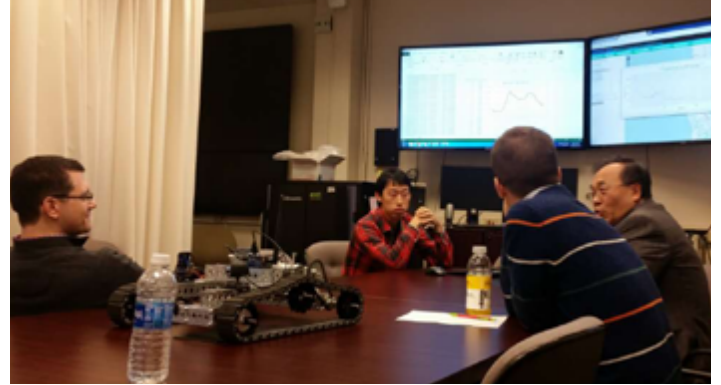
See it [here](#).



The Michael Kyte Distinguished Lecture has a short but strong history of offering industry leaders a microphone (literally) to shape future generations of transportation professionals!

Washington State Senator Joe Fain Visits the STAR Lab

This October, Washington State Senator Joe Fain, Republican member representing the 47th Legislative District, which includes Auburn, Kent, Covington and Renton in South King County, visited PacTrans and the Smart Transportation Applications and Research Laboratory (STAR Lab). Senator Fain was very interested in the many big data analytics and emerging technology projects currently underway in the PacTrans director's lab. Dr. Wang and several of his student researchers presented the DRIVE Net platform, a collision avoidance system algorithm for transit, wireless sensing technology, and several others. Conversations were productive and both parties were extremely optimistic about future partnership.



Norwegian Public Roads Administration Senior Principal Engineer Torgeir Vaa Talks Partnership with PacTrans and the STAR Lab

This past October, Torgeir Vaa, spent a week at the University of Washington discussing potential projects and collaborations with PacTrans director, Yinhai Wang. Mr. Vaa is the senior principal engineer in the Intelligent Transportation Systems Department of the Norwegian Public Roads Administration (NPRA).

Mr. Vaa's primary interest is in traffic sensing and big data analytics tools that have been under development in the UW STAR Lab for many years. He was particularly interested in using Dr. Wang's Mobile Unit for Sensing Traffic version 1 (MUST-1) sensor and the DRIVE Net data platform for monitoring their busy freight corridors. Specifically, much discussion revolved around opportunities with the E8 corridor.

This particular corridor is an interesting case. It connects fishing towns in Norway to Helsinki, Finland. This is particularly important because Finland is the only country with permission to fly over Russia.

Thus, to get fresh salmon to Tokyo and China, the goods need to be moved quickly to Finland so they can be transported by air to their final country destination. The E8 corridor is a narrow highway that regularly has treacherous conditions: snow and ice, steep slopes, etc.

The mobile sensors would provide an inexpensive way to keep tabs on vehicle location and traffic information. Further, the DRIVE Net platform could integrate spatial and temporal data to better visualize actual operations on that economically important corridor. Mr. Vaa and Dr. Wang also spoke about other potential mobile sensor functionalities that the STAR Lab could be working on to further improve their utility in this particular application.



PacTrans Board of Directors



Yinhai Wang, PhD
Professor, Transportation Engineering
 Department of Civil & Environmental Engineering
Director, Pacific Northwest Transportation Consortium (PacTrans), Region 10, UTC
Director and Founder, Smart Transportation Applications and Research (STAR) Laboratory
 University of Washington



David S. Hurwitz, PhD
Associate Professor of Transportation Engineering
 Department of Civil and Construction Engineering
Director, Driving and Bicycling Research Laboratory
Associate Director, PacTrans
 Oregon State University



Linda Ng Boyle, PhD
Professor and Chair, Department of Industrial & Systems Engineering
Professor, Transportation Engineering, Department of Civil & Environmental Engineering
Associate Director of Research, PacTrans
 University of Washington



Billy Connor, PE
Director, Alaska University Transportation Center (AUTC)
Associate Director, PacTrans
 University of Alaska - Fairbanks



Anne Vernez-Moudon, PhD
Professor, Urban Design and Planning
Professor, Architecture
Professor, Landscape Architecture
Adjunct Professor, Civil & Environmental Engineering
Adjunct Professor, Epidemiology
Director, Urban Form Lab (UFL)
Associate Director of Education, PacTrans
 University of Washington



Ahmed Abdel-Rahim, PhD
Associate Professor of Transportation
 Department of Civil Engineering
Associate Director, PacTrans
 University of Idaho



Mark E. Hallenbeck, MS
Director, Washington State Transportation Center (TRAC)
Associate Director of Outreach, PacTrans
 University of Washington



Kenneth L. Casavant, PhD
Professor and Agricultural Economist
 School of Economic Sciences
Associate Director, PacTrans
 Washington State University
Adjunct Professor, UGPTI,
 North Dakota State University
Director, Freight Policy Transportation Institute

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Rhonda Brooks
 Director, Research
 Research Manager
 for Design, Safety,
 Environment & Safety
 Washington State
 Department of
 Transportation
 (WSDOT)



Charlie Howard
 Director
 Integrated Planning for
 Puget Sound Regional
 Council (PSRC)



Carolyn Morehouse
 Chief of Research
 Development &
 Technology Transfer
 Alaska Department of
 Transportation & Public
 Facilities (AKDOT&PF)



Michael Bufalino
 Research Manager
 Oregon Department
 of Transportation
 (ODOT)



Wayne Kittelson
 Principal
 Kittelson & Associates,
 Inc.



Ned Parrish
Research Program Manager
 Idaho Transportation
 Department (ITD)
 Jerry Whitehead
 President & Owner
 Western Trailers
 Boise, ID



Scott Drumm
 Manager, Department
 of Research and
 Strategic Analysis
 Port of Portland



Frank Breust
 Vice President
 Government and
 External Affairs, BMW
 Group Representative
 Office, California



Jerry Whitehead
 President & Owner
 Western Trailers
 Boise, ID

SAVE THE DATE: UPCOMING PACTRANS EVENTS

PacTrans Regional Transportation Conference | Friday, October 6, 2017

Location: University of Washington campus

Region X Student Conference | Saturday, October 7, 2017

Location: University of Washington campus

The Pacific Northwest Transportation Consortium (PacTrans) is the Region 10 University Transportation Center (UTC) established in January 2012 with a \$6.89 million grant from the US Department of Transportation (USDOT).

PacTrans is a coalition of transportation professionals and educators from Oregon State University (OSU), the University of Alaska Fairbanks (UAF), University of Idaho (UI), University of Washington (UW), and Washington State University (WSU). With dual themes of safety and sustainability, PacTrans serves as an engine and showcase for research, education, and workforce development in the Pacific Northwest.

The goal of PacTrans is to create an environment where consortium universities and transportation agencies within Region 10 work together

synergistically. The solutions that we develop will meet the needs of the region and provide direction for the five strategic goals of the U.S. Department of Transportation.

- Safety
- State of good repair
- Livable communities
- Environmental sustainability
- Economic competitiveness

The Pacific Northwest offers a unique blend of opportunities to examine a variety of transportation issues, including those related to urban centers, rural communities,

diverse geographic features (e.g., coastal plains, mountain ranges), and a growing population of pedestrians and bicyclists. This diversity makes the Pacific Northwest a natural laboratory in which to investigate transportation solutions that are applicable both locally and nationally.

PacTrans is dedicated to collaborating with transportation agencies, companies, and research institutions to jointly develop safe and sustain-able solutions for the diverse transportation needs of the Pacific Northwest.

Contributors

Melanie Paredes, UW

Cole Kopca, UW

Contact

Dr. Yin Hai Wang
University of Washington
More Hall, Room 112

Email: PacTrans@uw.edu
Phone: (206) 685-0395
Find us on Twitter @PacTrans UTC

PacTrans.org