



PacTrans Transportation Conference

PACTRANS

Region 10 UTC Newsletter

**SPECIAL ISSUE
DECEMBER 2015**

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and Technology

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STUDENT CONFERENCE

PacTrans 2015 Regional Transportation Conference Attracted a Remarkable Turnout

The Pacific Northwest Transportation Consortium (PacTrans) held its third annual conference on October 16, 2015 at UW's Haggett Hall. The conference focused on transportation safety and technology.

In attendance during the conference were more than 180 registered attendees which set a new record that included 16 guest speakers, composed of government and private sector officials and faculty members from various universities. Topics covered were very interesting. Presentations were divided into four sessions. Research Session 1 covered Safe Users & Operations; Technology Transfer Session had Translating Results to Professional Practice, then followed by Workforce Development; Research Session 2 covered Safe Infrastructure.

The theme for this 2015 Conference was "Smarter Transportation Safety and Technology." Following the overall aim of the conference, faculty members and students submitted a total of 32 posters that were all displayed during the event.

Dr. Yinhai Wang delivered the welcome address that focused on transportation safety and technology. Dr. Wang is Professor of Transportation Engineering at the UW's Department of Civil & Environmental Engineering and Director of PacTrans. He also heads the Smart Transportation Application and Research Laboratory (STAR Lab) at the University of Washington.

Roger Millar, Deputy Secretary of the Washington State Department of Transportation (WSDOT) was the keynote speaker. He emphasized the need for building relationships with university institutions. His presentation entitled "Practical Design: A New Way of Doing Business," introduced WSDOT's redesigning project development process and policies that consider safety as an important factor of practical design.

The whole-day conference held the attendees' attention tightly with interesting topics skillfully steered by the moderators and speakers. The poster session, on the other hand, exhibited in visually compelling text the ideas that conformed with the general thrust of the conference.

The conference committee, headed by Dr. David Hurwitz, Associate Professor of Transportation Engineering at Oregon State University, did a wonderful job of inviting distinguished officials from the public and private sectors, including faculty members from various institutions. This conference offered an excellent platform for government officers, researchers, and practitioners to exchange ideas and discuss collaboration opportunities.

CONFERENCE AGENDA

- 8:30 AM **Welcome I** Yinhai Wang, *Professor of Transportation Engineering and Director of the Pacific Northwest Transportation Consortium (PacTrans) and the STAR lab, Department of Civil & Environment Engineering, University of Washington*
- 8:45 AM **Welcome II** Vikram Jandhyala, *Vice Provost for Innovation, Executive Director of CoMotion, Professor of Electrical Engineering, And Adjunct Professor of Information School, University of Washington*
- 9:00 AM **Keynote Address I** Roger Millar, *Deputy Secretary, Washington State Department of Transportation*
- 9:30 AM **Keynote Address II** Brooke Steger, *General Manager, Uber, Inc., Seattle*
- 10:00 AM **Brief introductions by Pls for Poster Sessions** David Hurwitz, *Associate Professor of Transportation Engineering, Dept. of Civil & Construction Engineering, Oregon State University*
- 10:30 AM **Hybrid Poster Session/Break**

- 11:00 AM **Research Session I**
(Safe Users & Operations)
- Nathan Belz, *Moderator*
Assistant Professor, Civil & Environmental Engineering, University of Alaska Fairbanks
- Brian Walsh, *State Traffic Design & Operations Engineer, WSDOT*
- Keith Cunningham, *Research Assistant Professor, University of Alaska Fairbanks*
- Scott Frank, *Vice President of Marketing, Airbiquity*

12:00 noon **Lunch**

- 1:00 PM **Tech Transfer Session** (Translating Results to Professional Practice)
- Bruce Haldors, *Moderator*
President/CEO, Transpo Group
- Santiago Navarro, *Program Manager, Technology Transfer, Office of the Asst. Secretary for Research & Technology, USDOT*
- Forest Bohrer, *Manager of Innovation Development, Center for Commercialization, University of Washington*
- Ian Reagan, *Sr. Research Scientist, Insurance Institute for Highway Safety*

2:00 PM **Break**

2:10 PM **Workforce Development Session**

- Kevin Chang, *Moderator*
Assistant Professor of Civil Engineering, College of Engineering, University of Idaho
- Karen Dixon, *Senior Research Engineer and Program Manager of Roadway Safety Program, Texas A&M Transportation Institute*
- Stephen Albert, *Executive Director, Western Transportation Institute, Montana State University*
- Shawn Leight, *ITE VP Elect, Vice President, CBB Transportation Engineers, Adjunct Professor, Washington University, St. Louis, MO*

3:10 PM **Break**

3:30 PM **Research Session II** (Safe Infrastructure)

- Haifang Wen, *Moderator*
Assistant Professor, Civil & Environmental Engineering, Washington State University
- Kim Willoughby, *Research Manager, Washington State Department of Transportation*
- Jason Weiss, *The Miles Lowell and Margaret Watt Edwards Distinguished Chair in Engineering and Director of Kiewit Center for Infrastructure and Transportation Research, Oregon State University*
- Joseph Wartman, *H.R. Berg Associate Professor of Geotechnical Engineering, Dept. of Civil & Environmental Engineering, University of Washington*

4:30 PM **Closing Comments** David Hurwitz, *Conference Chair and Associate Professor of Oregon State University*

4:35 PM **Social Hour and Networking**

5:35 PM **End of Conference**

INTRODUCTION

Welcome Remarks

Watch Video

Dr. Yinhai Wang delivered the welcome address. He emphasized the importance of transportation safety and technology. Professor of Transportation Engineering at the UW's Department of Civil & Environmental Engineering and Director of the Pacific Northwest Transportation Consortium (PacTrans), Dr. Wang also heads the Smart Transportation Application and Research (STAR) Laboratory at the University of Washington.

Dr. Wang recognized the contributions of the members of the Board of Directors (BOD), External Advisory Board (EAB), and sponsoring companies (Transpo Group and DKS). He referred to PacTrans' mission and vision, its beginnings as TransNow and its 27 years at the UW. As one of the University Transportation Center's sites as Region 10, PacTrans is on its third year of operation, collaborating with the University of Alaska Fairbanks (UAF), University of Idaho (UI), Oregon State University (OSU), and Washington State University (WSU). PacTrans' goal and vision, he said, is focused on research on safety,



technology transfer, workforce development, and educational outreach.

<http://depts.washington.edu/pactrans/watch-the-2015-regional-transportation-conference-presentation/>

Transportation will change the dynamics within a city.

Welcome Address—CoMotion and Innovation

**Vikram Jandhyala, Vice Provost for Innovation at UW
Executive Director, CoMotion; UW Co-CEO, Global Innovation Exchange**

Watch Video

Innovation has hit the global ecosystem, placing the UW on the world map as the #4 (Most Innovative University Overall) on Reuters Inaugural Rankings this year. Technology transfer plays a big role in innovation, as well as an emphasis on partnerships in both public and private sectors, and developing new models in research and education. Startups have grown tremendously in this region, wherein we have come close to sixty within the past three years. The UW is central to startups within the Pacific Northwest, with CoMotion, UW's Collaborative Innovation Hub, playing an integral role.

Open innovation partnerships are encouraged as well as being a part of the external innovation ecosystem. Dr. Jandhyala placed emphasis on planning the right things and work together within



the complex ecosystem. This region's profile has changed due to lots of innovation on aerospace, software industry, technology, and biotechnology, and transportation solutions have to be in place, because all of these will reach a limit. Transportation will change the dynamics within a city.

SESSIONS

KEYNOTE SESSION

Practical Design: A New Way of Doing Business

Roger Millar, PE, AICP

Deputy Secretary, Washington State Department of Transportation (WSDOT)

In 1978, Roger Millar served on The Virginia Highway and Transportation and Research Council in the Soil Mechanics Lab, now The Transportation and Research Council. Deputy Secretary Millar started by reviewing WSDOT's organization plan.

In his address, Deputy Secretary Millar of WSDOT underscored the following issues:

- Incorporation of smart technology – changing world
- Environmental Stewardship – minimize environmental footprint
- Strengthen the organization – training and opportunities focused on supporting the residents of Washington State
- Safety – practical design solutions that are cost-effective and safe

The WSDOT has redesigned its project development, processes, and policies based on a practical design approach to deliver smart benefits and smart fiscal projects that minimize the environmental footprint. Safety is a key value of practical design, he stressed.

In January, the “State of Transportation Address” illustrated recent practical design applications to show what Washington citizens expect: the delivery of transportation services, programs and projects that are necessary, high quality, efficient, and developed with appropriate land use in mind.

Looking ahead, WSDOT will continue to aim for practical design applications that maximize safety, decrease congestion, and encourage low cost economic development. This requires a clear understanding of performance outcomes for WSDOT and other DOTs in Region 10 and research that can provide evidence. The WSDOT welcomes and looks forward to working with PacTrans on this and other relevant areas of research.



[Watch Video](#)

The Road Ahead: Moving Cities Forward

Brooke Steger, General Manager, Uber, Inc., Seattle

Roadways are expanding, as well as cities. The Uber, Inc. created a transportation solution that is simple and quick, spanning the globe to over 60 countries and 350 cities. Its business practices have been challenged, but Uber, Inc. has surpassed these different challenges with standardized regulations across the region.

According to Brooke Steger, Uber's General Manager in Seattle, traffic congestion is one of the key issues that need to be resolved and Uber is helping ease out the road congestions - one driver, traversing the city picking up and dropping off passengers. Uber has changed the transportation culture in an ever-growing populace, like Seattle, fast becoming Uber's hub.

In her talk, Ms. Steger pointed to Uber's basic philosophy: All neighborhoods served, anytime, anywhere. The future? The next thing to be picked up and dropped off—food, aside from kittens.



[Watch Video](#)

SESSIONS

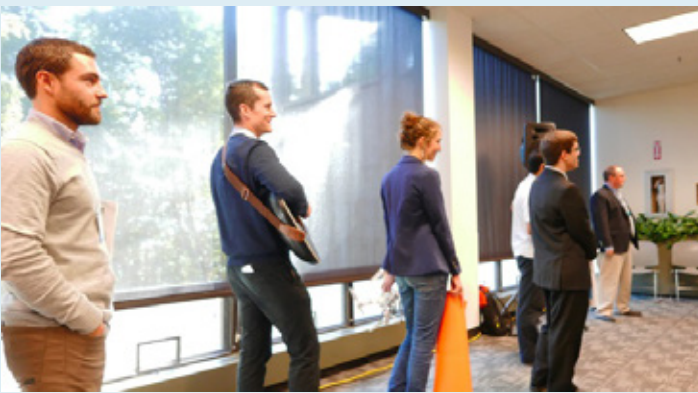
Introduction to Poster Session

[Watch Video](#)

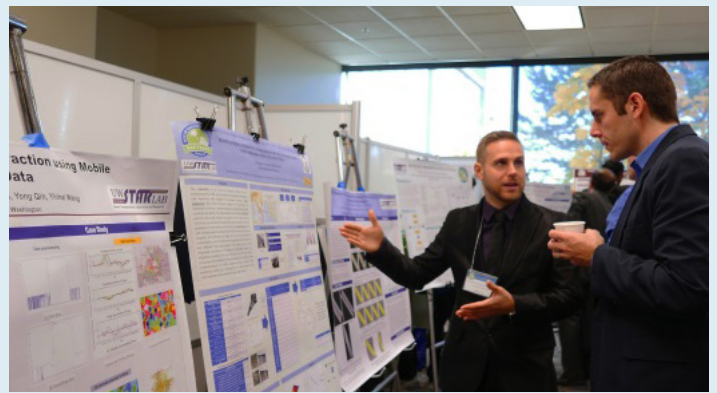


David Hurwitz, Moderator
*Associate Professor of Transportation Engineering,
Civil & Construction Engineering, Oregon State University*

The Poster Session was one of the highlights of the conference. The poster authors were challenged, within a period of one minute, to capture the audience's attention with their artistic abilities represented in their presentations. This session proved that engineers are performing artists too, from poetry to singing, but most could not avoid being engineers. The paradigm stays but this session increased the conference attendees' interest in viewing the poster exhibit.



Transportation Engineers can be performing artists too.



Salvatore Antonio Biancardo fully engaged with Prof. Don MacKenzie.



Zhibin Li responding to questions.



The poster exhibit was a big draw to conference attendees.



Kristian Henrickson, STAR Laboratory Manager, has a whole spread of information about the lab's research projects.



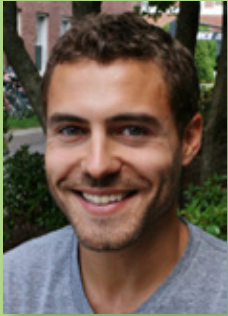
John Ash tackling a Q&A moment with a conference attendee.

RESEARCH SESSIONS

RESEARCH SESSION I:

[Watch Video](#)

Safe Users & Operations



Prof. Nathan Belz, Moderator
*Assistant Professor of Civil & Environmental Engineering,
University of Alaska Fairbanks*

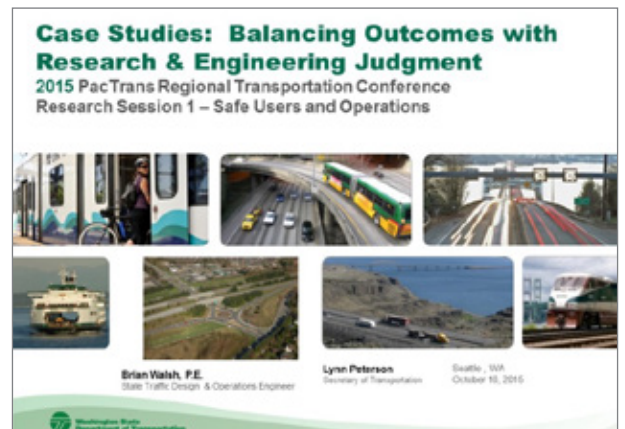
Prof. Nathan Belz currently serves on the TRB Roundabout Committee, the TRB Rural Public and Intercity Bus Transportation Committee, the Fairbanks North Star Borough Transportation Advisory Council, and the Chair of the UAF Green Bikes Steering Committee. Prof. Belz was the moderator of the Research Session 1 of the conference, with Brian Walsh, Keith Cunningham, and Scott Frank as speakers.

Presented Case Studies Of How Engineering Judgment/ Experience Supported By Research Yields Good Outcomes

Brian Walsh, PE, State Traffic Design & Operations Engineer, Washington State Department of Transportation (WSDOT)

Engineering projects and their intended outcome are sometimes in the eye of the beholder and may not, at first glance, be seen by some as the “correct” interpretation of the research on the particular project or its elements. Whether a project was begun as a safety project or a mobility project or a multi-modal project, research on a particular element or every element of a project is essential, and while available, it has to be used with a discerning eye. Transportation practitioners, particularly on the public sector side, must use many metrics to ultimately find balance in a completed project or outcome. The goal is or should be, to ultimately leave the location a better location than it was before when looking at performance measures that were used in the selection of the project. To get this type of better outcome and strive to find the best “balancing act”, the practitioner must be open to innovative approaches as well as work selectively with traditional engineering fixes while managing a number of issues and expectations of the customer in making the project or outcome acceptable to those who will ultimately use this facility. Research across many disciplines is used to support that “balancing act.”

Brian Walsh’s presentation explored a few case studies of completed project or projects in design or planning and show the theme of “how to employ engineering judgment and experience” while drawing on the research that supports the preferred or completed outcome despite many technical, social, and sometimes political challenges inherent in the process.



RESEARCH SESSIONS

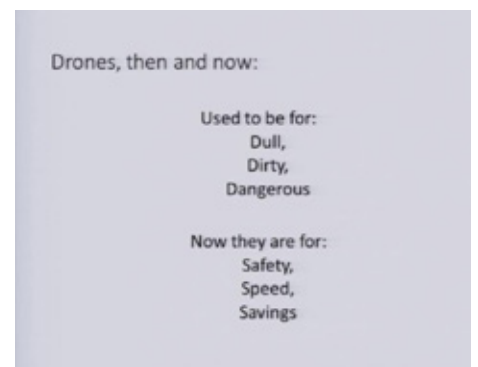
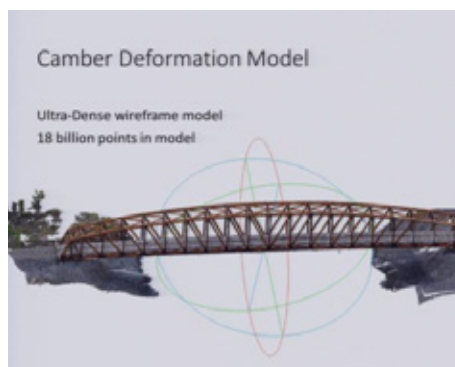
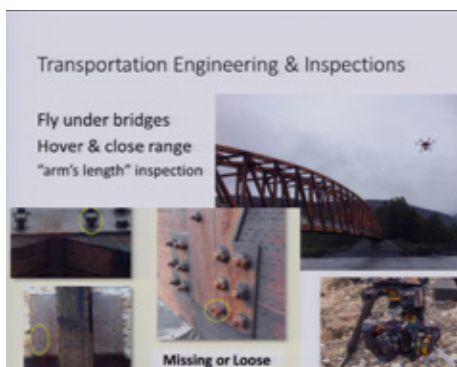
Drones For Safer Transportation Engineering



Keith Cunningham, PhD

Research Assistant Professor, University of Alaska–Fairbanks

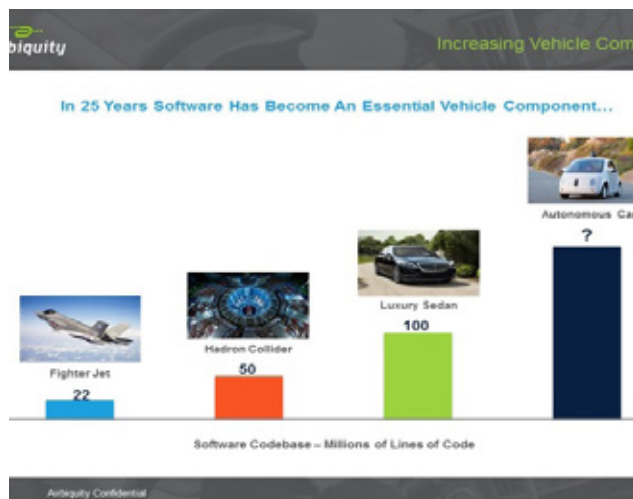
The University of Alaska Fairbanks, in partnership with the University of Washington and Oregon State University, has been evaluating how drones, or unmanned aircraft systems, can play a larger role in transportation engineering, especially in the realm of safer surveying and monitoring of infrastructure. This research includes safer ground survey methods in busy corridors, characterizing unstable slopes, inspection of bridges, airport obstruction surveys, and monitoring critical infrastructure.



Why's Automotive Getting So Hard? It's Software's Fault!

Scott Frank, Vice President of Marketing, Airbiquity

New software technologies continue to rock the traditional automotive market with an onslaught of opportunities, challenges, and disruptions. This session highlights a few of the most significant ones from the perspective of a cloud-based connected car services provider competing in a churning market of traditional and non-traditional players.



TECHNOLOGY TRANSFER: Translating Results To Professional Practice

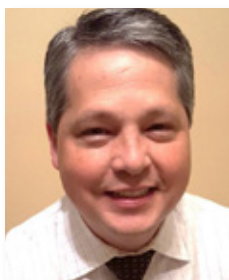


Bruce Haldors, Moderator
President/CEO, Transpo Group

[Watch Video](#)

Bruce Haldors served as the moderator of the technology transfer session. Participating in the session were three speakers with diverse backgrounds and experiences on technology transfer. Bruce serves as the CEO of Transpo Group, an innovative transportation planning, engineering, and technology consulting company based in the Seattle area, with offices in California, the United Arab Emirates, and Saudi Arabia. He championed the creation of an Intelligent Transportation Systems (ITS) Lab within Transpo, as well as a software based solutions, such as, ViaCity and specific operational and planning level tools.

A Technology Transfer (T2) Framework for Research and Development



Santiago Navarro, Program Manager,
Office of the Assistant Secretary for Research & Technology
US Department of Transportation (USDOT)

People define T2 differently. In fact, though, T2 is the same for every situation in this sense: there are core principles that underlie all effective T2. These principles are: (1) Understanding the adopter's needs; (2) Understanding the technology; (3) understanding the barriers to adoption; and (4) communicating the value. T2 is a process that can and should be separated from research and development. The activities conducted in research are different than those conducted in

T2. In fact, there are specific T2 activities that should be aligned with specific projects. Digging deeper into these principles may lead to identifying and engaging appropriate stakeholders at different points in time of the research and development process. Not surprisingly, some successful research projects have shown that researchers needed support from outside the research program to identify and perform such T2 activities.

CoMotion: Technology Commercialization at the University of Washington

Forest Bohrer, Manager Innovation Development, CoMotion
University of Washington

The mission of UW CoMotion (formerly C4C) is to deliver tools and connections that the UW community needs to accelerate the impact of their innovations. CoMotion is expanding beyond IP and startups to promote entrepreneurial thinking, innovation, creative problem-solving, and experiential and team-based project learning throughout UW. The commercialization services offered by CoMotion include intellectual property protection, gap funding, continued education, and team and company formation. Among the topics discussed was commercialization strategy, intellectual property options, and commercialization case studies.



TECHNOLOGY TRANSFER

Research, Communicate, Repeat: An Iterative Model for Technology Transfer to Improve Road Safety

Ian J. Reagan, PhD

Senior Research Scientist

Insurance Institute for Highway Safety (IIHS)

The Insurance Institute for Highway Safety has over 50 years of demonstrated technical expertise in research and effective communication of research. The presentation, *Research, Communicate, Repeat: An Iterative Model for Technology Transfer to Improve Road Safety*, highlighted safety data related to frontal crash research. IIHS strives to produce research that is communicated effectively, in a translatable way aimed at improving highway safety. IIHS is attuned to engaging car manufacturers to take up voluntary support by applying safe automobile designs that accentuate market demands.



IIHS is an independent, nonprofit scientific and educational organization dedicated to reducing the losses — deaths, injuries and property damage — from crashes on the nation's roads.

HLDI shares this mission by analyzing insurance data representing human and economic losses from crashes and other events related to vehicle ownership.

Both organizations are wholly supported by auto insurers.



IIHS success from credibility built with traffic safety community and driving public

- ▶ Other organizations with goal of improved highway safety
 - Regulation — Federal Motor Vehicle Safety Standards (e.g., air bags, NHTSA crash test program, electronic stability control)
 - Advocacy and legislation: seat belts laws and use, 0.08 percent impaired driving laws, graduated driver licensing, automated enforcement
- ▶ IIHS: 50+ years of demonstrated technical expertise in research and effective communication of results
 - Always looking for ways to improve highway safety — vision zero
 - Use transparency and multiple communication methods to affect change
 - Market forces: manufacturers use top ratings to sell cars



Example of technology transfer: crashworthiness and development of small overlap front crash test



IIHS Crashworthiness Evaluations
40 mph, 40% overlap



From real-world to crash test program



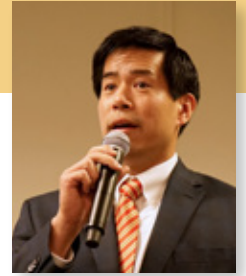
- ▶ Identified three main crash configurations and replicated in lab
- ▶ Tested group of mid-size vehicles
- ▶ Evaluated different barrier shapes and sizes to determine optimal representation of real world crash configurations



WORKFORCE DEVELOPMENT

Kevin Chang, PhD, Moderator

Assistant Professor of Civil Engineering, College of Engineering, University of Idaho



[Watch Video](#)

Prof. Kevin Chang moderated the session on Workforce Development. He stated that workforce development is a real and critical piece of the overall discussion. He added that it takes all the good research and information that everyone is involved with, and bringing the results to the people who often need them the most. One of the goals of transportation policies is enhancement of a region's economic stability, with a focus on training people for the next generation of transport challenges.

Development and Testing Process for the Training for the AASHTO Highway Safety Manual



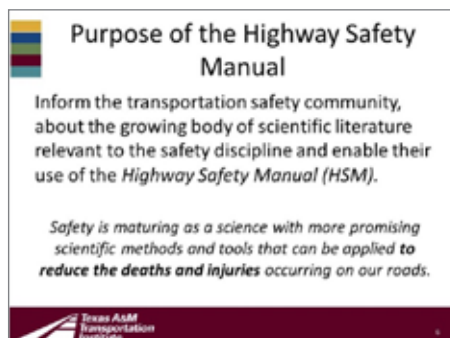
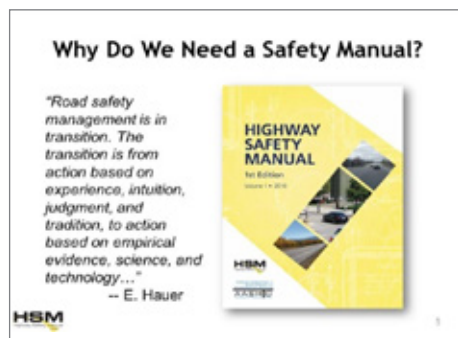
Karen Dixon, PhD, PE, Sr. Research Engineer & Program Manager, Roadway Safety Program Texas A&M Transportation Institute (TTI)

Dr. Dixon discussed the development and testing process for the training for the

AASHTO Highway Safety Manual. In particular, she reviewed key issues, such as, preparing for differing target audiences, developing and integrating practical application-based tools, and effectively communicating the breadth and depth of key issues related to the newly evolved safety assessment procedures. The *Highway*

Safety Manual (HSM), 2nd edition has been under development since 2010. Dixon's presentation on the development of the HSM was titled *Workforce Development, Lessons Learned*. Developing a safety manual is no small feat; it involves an evolution of training material and the readership (audience). That is why the first edition took 10 years to develop! Professional support contributions were made, including a joint sub-committee, taskforce, thousands of volunteer hours and organizational insight from NCHRP, AASHTO, FHWA,

TRB, among others. The target audience was geared to meet the considerations of Transportation Professionals involved in planning, design, operations, maintenance, systems management, and administration – everyone! Quantitative safety information included both driving and restraining forces. For example, one driving force of the HSM was to consider how federal and local laws are interpreted to influence safety. She concluded with a summary of lessons learned.



WORKFORCE DEVELOPMENT

Overview of West Region Transportation Workforce Center of Excellence



Stephen Albert, *Executive Director, Western Transportation Institute (WTI)*
Montana State University

The West-
ern Region of
the Regional
Transportation
Workforce Cen-
ters (WRTWC)

presented some contemporary challenges to be addressed by a National Network for transportation workforce development: baby boomer retirements, lack of awareness and understanding of career opportunities, rapid pace of technological advancement, new skills sets needed for entry level hires, and the

need for competent staff. WRTWC's mission is to serve as a resource to support, grow and maintain a skilled and career-ready transportation workforce in the West. The Center is network focused and will engage existing regionally based programs, to catalyze new strategic partnerships and to communicate programs and best practices to educators, employers and those on the transportation career pathway. In 2014 the Federal Highway Administration established 5 regional centers funded through SAFETEA-LU and MAP-21 over 4

years, currently being administered through the FHWA Technology Partnership Program. The key national focus areas are Rural Safety, Federal Lands, Mobility Livability, and Tribal. Creating a one stop web portal, utilizing key stakeholders to catalyze strategic partnerships, gleaning better data on transportation workforce priorities, and aligning education and training to fill the workforce gap are all top areas the WRTWC is interested in focusing on.

WRTWC's mission is to serve as a resource to support, grow and maintain a skilled and career-ready transportation workforce in the West.



Institute of Transportation Engineers: Sharing Big Ideas for 85 Years

Shawn Leight, PE, PTOE, PTP, FITE

***ITE Vice President Elect; Vice President, CBB Transportation Engineers + Planners, St. Louis, MO;
Adjunct Professor, Washington University, St. Louis, MO***

Problem solver, practitioners, researchers, and educators make up the 15,000 members of the Institute of Transportation Engineers in 90 countries, 10 districts, 62 sections and 32 chapters. Additionally, there are 150 student chapters involved in transportation networking and sharing. ITE has lead for 85 years through listening, educating, advocating, and disseminating information.

In 2015 ITE started the Complete Streets Council to develop a technical program to respond to communicate the work. ITE works on areas of connected and autonomous vehicles to make sure the membership knows how they will be impacted related to these areas. Students have unique opportunity to be involved the ITE program through the Student Leadership Summit, Traffic Bowl,

TRB Reception and HSIS Paper Contest. *LEADERSHIPITE* identifies engages, and develops leaders. This program holds 3 annual workshops, webinars, and group projects. ITE is looking to expand a younger program membership, with reduced membership fees and volunteering opportunities, plus a Rising Star Award.

ITE works on areas of connected and autonomous vehicles to make sure the membership knows how they will be impacted related to these areas.



RESEARCH SESSION II: SAFE INFRASTRUCTURE



Haifang Wen, PhD, Moderator
Assistant Professor, Civil & Environmental Engineering
Washington State University

[Watch Video](#)

Dr. Haifang Wen moderated Research Session II: Safe Infrastructure. He is currently the Colf Distinguished Professor at Washington State University (WSU) and the Director of the Washington Center for Asphalt Technology (WCAT). Dr. Wen invited three speakers with wide expertise on Safe Infrastructure.

Integrating Preservation and Maintenance at WSDOT



Kim Willoughby, PE, Research Manager
Washington State Department of Transportation (WSDOT)

This presentation is an overview of WSDOT's approach to pavement preservation that integrates capital preservation and maintenance work to extend the pavement life of a roadway section. With budget cuts as far back as about 6 years ago, WSDOT has turned to more preventive maintenance procedures to extend pavement life. In doing so, it was realized that this not only saved money but was also something that planners should be doing more of. WSDOT has developed a program that supplements our planned capital preservation projects with preventive maintenance work.

Pavement Preservation Expenditures

WSDOT (M) and (P) Pavement Expenditures

Pavement Work Type	Cost (\$) 2009-11	Cost (\$) 2011-13	Cost (\$) 2013-15	Cost (\$) 2015-17
HMA Projects (P1)	163,050,837	305,432,401	346,015,414	235,751,055
Chip Seal Projects (P1)	44,921,211	67,535,557	74,259,928	76,473,374
Strategic Preservation (P1)	2,375,878	3,947,999	4,903,536	12,812,645
Emerging Needs Preservation (M2)	19,627,304	23,643,321	26,990,435	28,834,230
Reactive Preservation (M2)	4,594,315	4,093,796	6,747,608	7,208,557
Statewide Total	234,571,635	404,658,072	458,916,921	361,079,861

FHWA Preventive Maintenance Definition

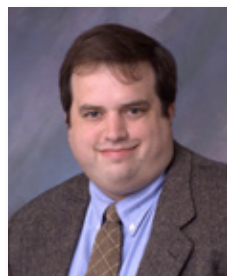
- **Preventive Maintenance** is "a planned strategy of cost-effective treatments to an existing roadway system and its appurtenances that preserves the system, retards future deterioration, and maintains or improves the functional condition of the system (without substantially increasing structural capacity)."
- **Effective preservation** addresses assets while they are *still in good condition* and before the onset of serious damage.
- The **goal** is to postpone costly rehabilitation and reconstruction, *without significant enhancement on structural strength or traffic load capacity*.

Source: <http://www.fhwa.dot.gov/pavement/preservation/>
www.fhwa.dot.gov/bridge/preservationguide/

Expected Bridge Program – 2017

- Washing of steel bridges
 - Currently have a program in place to annually wash all 275 steel bridges
 - Priority: (1) trusses (2) girder
- Program will have components for structural, painting, decks and expansion joints
- Plan is to integrate the maintenance and preservation programs
 - Integration of pavement and bridge assets for capturing expansion joint and deck work

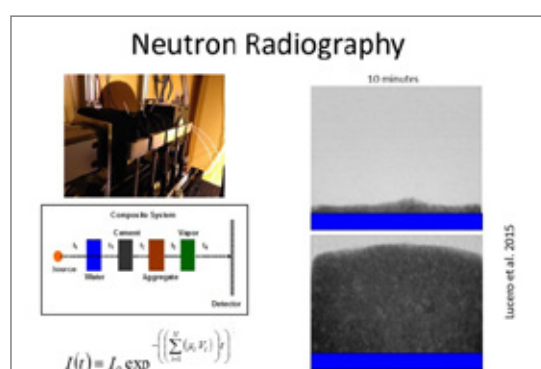
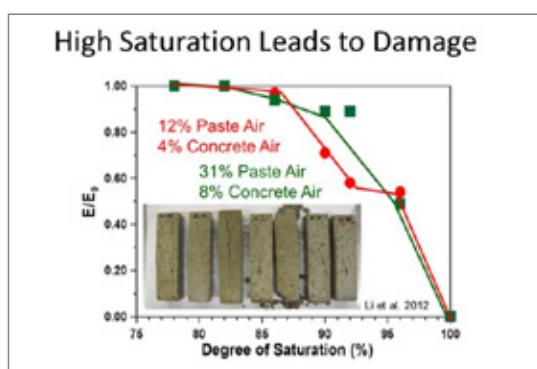
Infrastructure Materials Safety, Durability, and Service Life



Jason Weiss, PhD

*The Miles Lowell and Margaret Watt Edwards Distinguished Chair in Engineering
Director, Kiewit Center for Infrastructure and Transportation Research, Oregon State University*

Dr. Jason Weiss discussed the problems plaguing pavements. Causes of damage are over vibration, poor mixture designs, and insufficient air; super salts “eat” pavements; bad air systems; hand placement vs. machine placement; too much steel, poor drainage; too thick pavement; sulfates and ettringite; anti icing deicing practices; D cracking; saw cutting crews/techniques; and saw cutting vs. forming. With neutron radiography, water saturation over several years was determined. Calcium Oxychloride (salts) is a contributing factor in concrete damage regardless of the environmental condition. Samples are being collected from fifteen states to determine ways to solve the Calcium oxychloride problem. Innovative solutions (using new type of concrete) are also being implemented.



Landslide Hazard Assessment Along Transportation Corridors

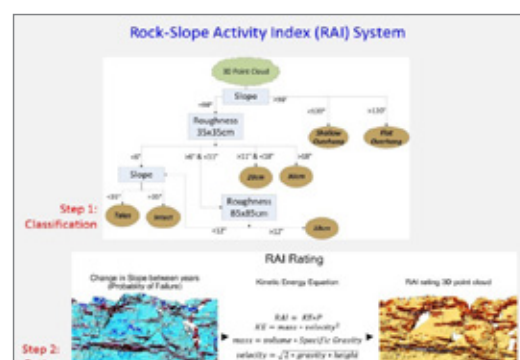
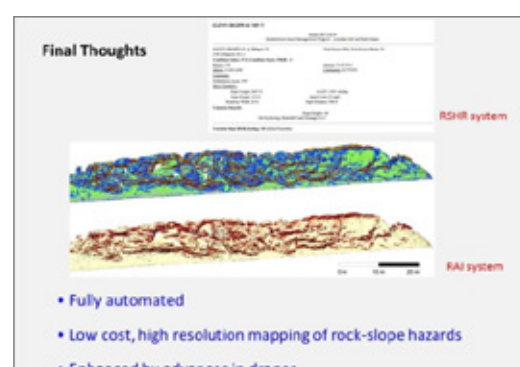


Joseph Wartman, PhD

*H.R. Berg Associate Professor
of Geotechnical Engineering
Civil & Environmental Engineering,
University of Washington*

**Co-Authors: Michael Olsen (OSU) and
Keith Cunningham (UAF)**

Landslides pose significant challenges and life-safety risks for transportation networks. They are a chronic concern for infrastructure managers and across the United States, in general, and specifically in the Pacific Northwest. This presentation discussed PACTRANS-supported research to enable low-cost high-resolution mapping and quantification of landslide hazards (specifically, rockfalls). We first discussed the use of new tools and field methods—including lidar, structure from motion photogrammetry, and unmanned aerial vehicles (“drones”)—to capture slopes at unprecedented detail. We then introduced the Rockfall Activity Index (RAI), a point cloud-derived automated system that utilizes high-resolution field data to map active slope processes and landslide hazards posed to roadway users.



BOARD MEETING

The PacTrans External Advisory Board (EAB) members, together with the Board of Directors (BOD), convened a meeting on October 15. The EAB and the BOD normally hold an annual meeting one day prior to the Regional Transportation Conference. Discussed were research activities of the five consortium-member Universities, the administrative structure of PacTrans, education and workforce developments, the 2015-2016 implementation plan, with a focus on partnerships, strategic planning, and operations.

The Board of Directors

Yinhai Wang, PhD

Professor of Transportation Engineering
Department of Civil & Environmental Engineering; *Director*, Pacific Northwest Transportation Consortium (PacTrans) Smart Transportation Application and Research (STAR) Laboratory, University of Washington

Linda Boyle, PhD

Professor and Chair, Industrial & Systems Engineering; *Professor*, Civil & Environmental Engineering Assoc. *Director of Research*, Pacific Northwest Transportation Consortium (PacTrans), University of Washington

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The External Advisory Board Members

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Ned Parrish

Research Program Manager, Idaho Transportation Department (ITD)

Jerry Whitehead

President & Owner, Western Trailers Boise, Idaho



CONFERENCE SCENES



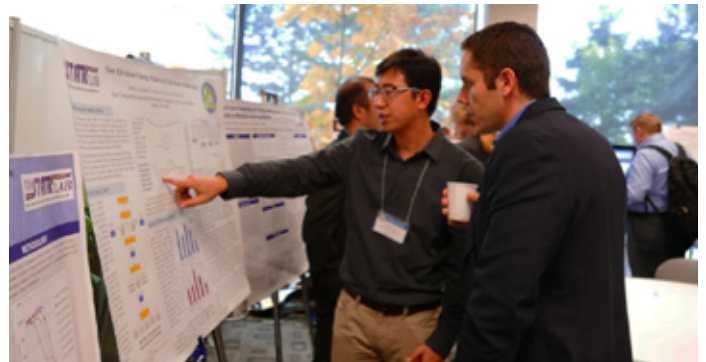
Conference Poster Exhibit



Conference attendees milling around with poster exhibitors.



Poster Exhibit invited interesting conversations.



Zhibin Li engaged with Prof. Don MacKenzie.



Post Conference Fellowship



Engaging Event. Until next year.



Transportation faculty, professionals, and graduate students gather at PacTrans 2015 Regional Transportation Conference, UW Haggett Hall.

Innova Dash – Sustainability, Innovation, Technology

Sustainability and carbon reduction planning is integrated at the institutional level at the University of Washington (UW) guided by the Environmental Stewardship Committee. UW first developed a Climate Action Plan in 2009 that outlines a strategic framework to reduce greenhouse gas emissions. A small selection of ongoing and planned sustainability research projects at the UW would be implemented as the supports of Sustainability and Climate Action plan. Numerous projects will use the Innova UEVs in projects dealing with design of sensors and sensor systems; design of electrical vehicle systems; and design of real-world sustainable transportation solutions.

We foresee that instrumented and connected Innova UEVs will:

1. Demonstrate a “connected” low-carbon-footprint transportation alternative within an overall ‘smart campus’ environment;
2. Act as technology enablers for our projects, many of which have commercial potential.
3. Deepen our understandings of the emerging Internet of Things phenomenon and lead to new ideas in this domain.

A high-tech, all electric mini car—the Innova Dash—was displayed at the conference. It was delivered to UW as one of the four Universities (together with Colorado State University, University of Pittsburgh, and University of Wisconsin-Madison)

that was chosen to have this car as a tool for research with combined efforts by Payman Arabshahi, Daniel Kirschen, and Yinhai Wang. Arabshahi is Associate Professor of Electrical Engineering and principal scientist at the Applied Physics Laboratory (APL). Kirschen is Professor of Electrical Engineering and Dr. Wang is Professor of Transportation Engineering and Director of the Pacific Northwest Transportation Consortium and of the STAR lab at Civil & Environmental Engineering. The car sharing concept will reduce congestion, both on the road and at parking. This vehicle is fully equipped with wireless network technology to track its speed, gather data for its performance, and the driver to stay connected.

The car sharing concept will reduce congestion, both on the road and at parking.



STUDENT CONFERENCE

By John Ash • October 17, 2015 • Husky Union Building, UW

The 2015 PacTrans Student Conference was held October 17 at the Husky Union Building (HUB), University of Washington campus. Attendees included more than fifty students and faculty members from the University of Washington, Washington State University, the Oregon State University, and the University of Idaho. This was the conference's largest turnout in recent years!

The conference started with a keynote speech by Dr. Michael Kyte, Professor of Civil Engineering, University of Idaho. Dr. Kyte discussed the complex set of processes that influence traffic signal operations. He also focused on the types of tools needed to solve signal timing problems as they grow increasingly more complicated.

Following Dr. Kyte's talk was a panel session. Recent graduates who are now practicing transportation engineers/planners discussed their transition from school to the working world. The engineers on the panel all work in the Pacific Northwest and studied at schools in the PacTrans consortium. Students asked the panel questions about their job search process, their daily work, the kinds of projects they work on, and their career paths into the future. This was an especially productive session as students felt at ease asking questions to their peers in a less-formal yet structured setting that might not be available at a conference not designed to cater specifically to students.

After the panel session, the second keynote speech was delivered by Mr. Bruce Haldors, President of Transpo Group, an engineering firm based in Washington with

offices around the world. Mr. Haldors spoke about some of the interesting projects his firm is working on. He also touched on the skills that are necessary for young engineers in the workforce. As a long-time supporter of PacTrans, Mr. Haldors not only delivered a great talk but also pledged \$1000 funds on behalf of Transpo Group to help sponsor the student conference. Additional sponsorship of \$500 came from DKS Associates. Conference organizers are extremely grateful to both sponsors!

Lunch break was followed by the research poster session. Students could present the results of research projects they have been working on. This provided a great opportunity for students to discuss their work with each other, and everyone was given the chance to vote for their favorite posters in a contest with prizes for the winners. One student from the University of Washington, two from Oregon State University, and a University of Washington visiting student from Italy were winners.

Overall, the 2015 PacTrans Student Conference was a huge success! It brought together students from all over the Pacific Northwest at a conference planned specifically for students. Speakers from both academia and practice were in attendance and students were provided with a great networking opportunity. We look forward to next year's student conference!



***Thanks to Transpo Group and DKS
for sponsoring the 2015 Region 10
Student Conference.***



STUDENT CONFERENCE

Uncovering Complex Processes Using Visualization Tools: How We Can Better See and Understand Signalized Intersections

Michael Kyte, PhD
Professor of Civil Engineering
University of Idaho

The purpose of Dr. Michael Kyte's presentation was to show how students and practicing engineers can better understand how signalized intersections function by using tools that uncover some of the complex processes involved in signalized intersections. Examples of both static and dynamic representations will be provided to illustrate processes of traffic flow, traffic control, railroad preemption, signal coordination, and complex intersections.



And the Winners Are...

First Place Mobility of the Family: Sustainable Transportation in a Busy Everyday Life
By Anna Gjoertz Bovbjerg, UW

Second Place Post-Earthquake Mobility: Portland By Shangjia Dong, OSU

Third Place (1) Methodology for Evaluating Roadway Geometric Design Consistency by Using Speed and Safety Data By Salvatore Antonio Biancardo, University of Naples "Federico II" (2) Holistic and Iterative Development and Dissemination of Conceptual Traffic Signal Questions By Masoud Ghodrat Abadi, OSU

(L-R) Anna Gjoertz Bovbjerg, UW; Shangjia Dong, OSU; Salvatore Antonio Biancardo, University of Naples "Federico II"; and Masoud Ghodrat Abadi, OSU.



STUDENT CONFERENCE



2015 PacTrans Student Conference at UW Campus



2015 PacTrans Student Conference coordinators
– Wenbo Zhu and John Ash, UW



Prof. Michael Kyte talked about how we can better see and understand signalized intersections.

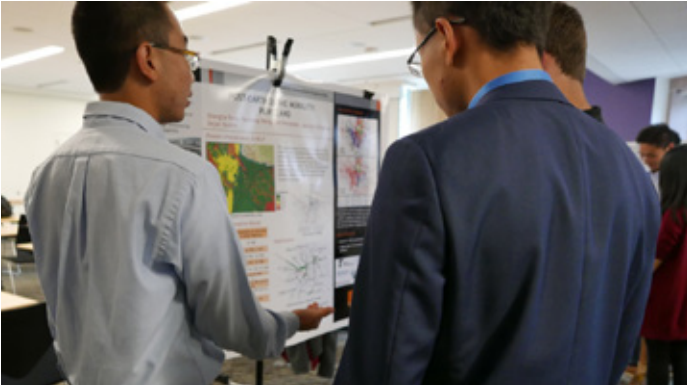


Bruce Haldors on Full-Spectrum Multimodal Solutions for Smart Communities



Panel Session – 2015 PacTrans Student Conference

STUDENT CONFERENCE



Shanjia Dong of Oregon State University (OSU), Second Place winner of the Poster Contest at the 2015 PacTrans Student Conference, did tackle a lot of questions from conference attendees.



"Mobility of the Family: Sustainable Transportation in a Busy Everyday Life" by Anna Gjoertz Bovbjerg of University of Washington, was the First Place winner of the Poster Contest during the 2015 PacTrans Student Conference.



At the 2015 PacTrans Student Conference, Salvatore Antonio Biancardo of University of Naples "Federico II" would rather attend to questions about his poster. He garnered as one of the Third Place winners of the Poster Contest.



Masoud Ghodrat Abadi, Oregon State University (OSU), tackling some questions about his poster, one of the two 3rd place winning entries during the PacTrans Student Conference, UW campus.

PacTrans 2015 Organizing Committee

John Ash, Graduate Student, Transportation Engineering, UW

Wenbo Zhu, Graduate Student, Transportation Engineering, UW

Masoud Ghodrat Abadi, Graduate Student, Transportation Engineering, OSU