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## Technovations in Transportation

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## Vandal Engineering Clean Snowmobile Team Wins Annual Challenge Founder's Trophy

by Rob Patton

On March 9<sup>th</sup>, 2015 the University of Idaho Clean Snowmobile team returned from a grueling weeklong annual competition in Houghton, Michigan, where the average temperature was 10 degrees Fahrenheit and this year's snowfall is still rising above 170 inches. This year's international competition included 22 teams from the U.S., Canada, and even Finland.

The Vandal engineering team has been competing in the SAE International Clean Snowmobile Challenge (CSC) for the past 15 years. In nine of those years, the Vandal team has placed in the top three overall positions, winning over 50 awards in total, and taking first place three times in 2002, 2003 and 2007.

This year UI accomplished what no other school has done in the 15-year history of the competition. For the third time the Vandal team was awarded the Bill Paddleford Memorial Award for Most Sportsmanlike Conduct, also known as the "Founder's Trophy" or "Paddle." Named after challenge co-founder, Teton County, Wyoming, commissioner Bill Paddleford, whose goal was to set college engineering students to the task of creating cleaner and quieter snowmobiles and in turn address years of controversial sled use in Yellowstone National Park. The sportsmanlike trophy winner is based on votes by other CSC teams. UI also won the "Paddle" in 2007 and 2011.

"The 'Paddle' has been a white whale of sorts for my tenure here at UI," said Dillon Savage, CSC team member and senior mechanical engineering major. "To understand what it means to get this award you have to understand the culture that the CSC has developed and the culture of our Idaho team. Every team wants to beat you at their best. At competition, you talk with other teams, see



Acceleration Event - Image Courtesy of KRC/MTU

their innovation and understand the sleepless nights that went into developing their snowmobile. The literal blood and sweat that goes into these designs. The quirk with all of this is every team is more than willing to share every spare part in their trailer to make sure you will run and compete against them. This award is one of the accomplishments I am most proud to put on my resume. It is a true team accomplishment.”

The Vandal team members’ dedication to the spirit of the CSC competition and their peers helped earn them the respected award.

“On multiple occasions the Vandal team stayed late helping other teams even when they could have left early,” said Zak Parker, captain of the team from the University of Wisconsin-Platteville. “They are always willing to lend a hand, lend out tools, and their expertise. They make the competition a more relaxing and fun place to be.”

“We are very proud of our team,” said Joe Law, UI College of Engineering’s associate dean for undergraduates. “Winning the Most Sportsmanlike award speaks highly of the team’s work ethic, the hands-on experience they have developed and their commitment to professionalism.”

The Vandal team’s high standard of sportsmanship exemplifies the winning tradition the team has nurtured and established over the past fifteen years.

“We know that many teams have problems during competition,” said Crystal Green, CSC team member and senior mechanical engineering major. “Anything we can do to help them fix that, the better. We don’t want to watch another team fail over something we could have done to help them.



2015 UICSC Team - Image Courtesy of KRC/MTU

There are a bunch of great teams at competition doing all they can for other teams. It is a value our former advisor, (UI emerita faculty member) Karen Den Braven instilled in us about the competition. She always said, ‘If you only come home with one award, make sure it’s the Paddleford.’”

Overall the Vandal CSC team placed fifth this year largely due to disqualifying emissions scores.

Despite this, in addition to the Founder’s Trophy, the team drove away from the competition winning the best handling award, sponsored by Polaris, and the award for best engine design, sponsored by global automotive parts manufacturer Mahle, which was accompanied by a \$500 prize.

# 94<sup>th</sup> Annual Transportation Research Board Meeting Held in Washington, D.C.

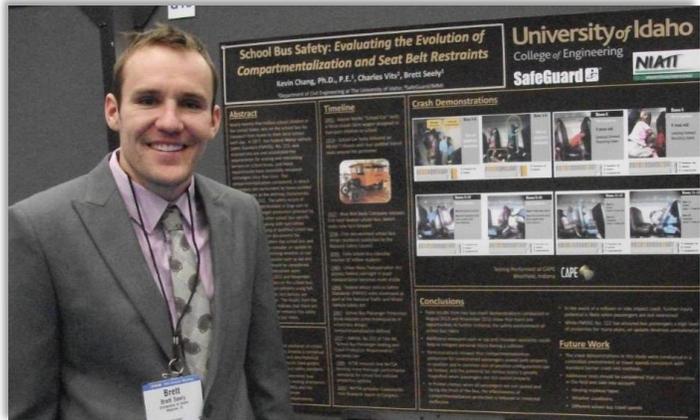
by Heloise Abtahi

The 94<sup>th</sup> Annual Transportation Research Board (TRB) Meeting was held January 11-15, 2015 at its new venue, the Walter E. Washington Convention Center, in Washington, D.C. Over this five day period, the massive conference held more than 5,000 presentations in almost 750 sessions and workshops with the spotlight theme “Corridors to the Future: Transportation and Technology.” Larger special events were held throughout the week, starting with a Welcome & Attendee Orientation Session and a Young Professionals Reception and culminating in the Chairman’s Luncheon, which attracts an audience of nearly 750 leaders in transportation. NIATT students Sherief Elbassuoni and Brett Seely both presented at the event (see former NIATT student Jacob Preston’s personal perspective on the meeting below).



Sherief Elbassuoni

Brett was involved in two presentations: “School Bus Safety: Evaluating the Evolution of Compartmentalization and Seat Belt Restraints” and “Using a Responsive Interactive Program to Enhance Daily Travel Feedback.” “I believe both presentations went very well,” Brett said. He noted that the poster session on school bus safety interested many participants: “[They] were very interested [in] debating things they had heard on the news vs. our knowledge [and] research in the area.” Sherief gave a presentation titled “Evaluation of the Impacts of Differential Speed Limits (DSL) on Interstate Highways in Idaho.” He too was pleased with the response to his work, which garnered the interest of researchers and transportation engineers alike.



Brett Seely with his poster on School Bus Safety

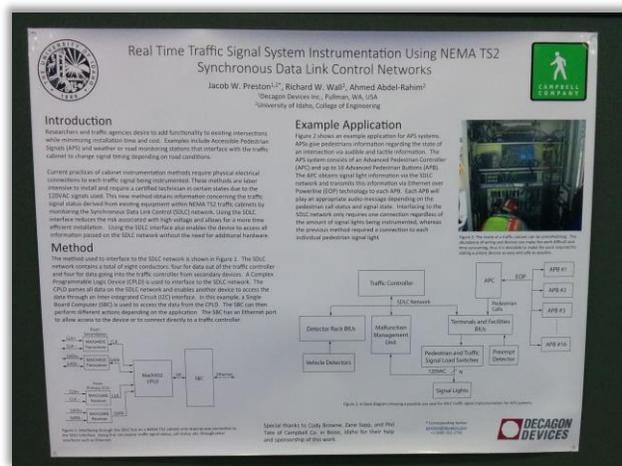
Both Brett and Sherief noted the networking opportunities of attending the conference—a difficult thing to cultivate at such a large meeting (Sherief estimated that about 12,000 people were in attendance). Brett in particular noted that the conference allowed “many people of niche passions to communicate in one place,” though the scale of the event created scheduling issues that sometimes made it difficult to attend everything of interest. Nonetheless, it did allow for easier connection between multiple institutions and transportation corporations, and Sherief cited the “valuable discussions” he had with other attendees as part of the “great experience” he had at TRB.



# Former NIATT Undergraduate Research Assistant Presents at Transportation Research Board Annual Meeting

by Jacob W. Preston

Attending the Transportation Research Board (TRB) Annual Meeting was an absolutely fantastic experience. My current employer, Decagon Devices, sent me there to exhibit a prototype magnetic traffic sensor for temporary road usage studies that had been started by Dr. Mike Dixon. Other than exhibiting for Decagon, I also had the opportunity to present on my work for NIATT in the form of a poster session. The work I presented during my poster session was on my thesis that I finished in July of 2014. I was working with Dr. Richard Wall on Advanced Accessible Pedestrian Systems (AAPS) and submitted a paper to TRB. The paper was essentially a condensed version of my thesis entitled "Real Time Traffic Signal Instrumentation Using NEMA TS2 Synchronous Data Link Control Networks". The main focus of my work was creating an interface to NEMA TS2 traffic cabinets to add functionality not already defined by the TS2 standard. The method I presented was particularly useful for Dr. Wall's pedestrian systems. The interface I designed has become of further interest to researchers like Dr. Ahmed Abdel-Rahim to create a new Controller Interface Device for Hardware-in-the-Loop simulations and pre-deployment verification of signalized intersections.



Preston's Poster at TRB

I greatly enjoyed working for NIATT, and would not be in my position today if I hadn't been picked up as an Undergraduate Research Assistant by Dr. Wall back in 2011. I look forward to collaborating on projects with NIATT in the future.

## Faculty at a Glance

by Heloise Abtahi

### Mike Lowry, Assistant Professor, Civil Engineering



Mike Lowry has been with University of Idaho since 2009. In addition to serving as Research Faculty for NIATT, he also serves as an Assistant Professor in Civil Engineering and Bioregional Planning. Last spring, he was awarded the 2014 Outstanding Young Faculty Award in the College of Engineering, and more recently, he was awarded a three-year appointment to the Transportation Research Board's (TRB) standing committee on Bicycle Transportation. The TRB is a division of the National Research Council and works through standing committees and task forces to promote advances in the field of transportation.

This appointment follows in the footsteps of Lowry's work on multimodal transportation systems, city mapping, and bioregional planning. His specialty is in GIS (Geographic Information System) mapping, which Lowry defines as the analysis of a community. Sustainable transportation systems

have been and continue to be a large part of Lowry's work, and as bioregional planning gains more and more popularity (in part as a result of sustainability and climate change issues also becoming more popular), more and more students at UI have come to Lowry seeking information about how to work on problems they see every day. Indeed, a Master's student working with Lowry saw her project effect positive change on the UI campus. After creating a list of spaces that needed to be improved for pedestrians and recommending potential approaches for improvement, the University was able take action and drastically improve the pedestrian crossing located in front of the Student Union Building. Lowry also recently received an Earth Day Award from the City of Moscow as a result of his and his students' work on a project working on middle school traffic safety issues in the area. Lowry says these projects ground him and make his research and academic outlook more practical.

Lowry is currently working on several different projects, including "Bicycle Safety Analysis: Crowdsourcing Bicycle Travel Data to Estimate Risk Exposure and Create Safety Performance Functions" for PacTrans and a bicycle facility project for the state of Idaho.

Lowry will be receiving a promotion to Associate Professor at the beginning of the 2015-2016 academic year. More information about Mike Lowry can be found at his website: <http://www.uidaho.edu/engr/ce/faculty/lowry>.

### **Kevin Chang, Assistant Professor, Civil Engineering**



Kevin Chang is a recent addition to University of Idaho—he arrived in Moscow in the fall of 2013. Having previously worked for the King County Department of Transportation in western Washington as a supervising engineer, Chang brings an element of practical experience to his work here at UI, something he says most students find appealing in his teaching style. In his work with King County Department of Transportation, Chang was often required to communicate with the general public as a part of neighborhood meetings and community forums. He says this experience with a kind of teaching with such a different audience added another dimension to his teaching without necessarily changing it. Chang says his practical experience influences discussion in the classroom with undergraduate and graduate students who want to know more about being an engineering professional.

NIATT too, Chang says, plays a key role in student involvement at UI. With both undergraduate and graduate involvement with NIATT, Chang says working on practical, innovative research projects serves graduate students well in building up experience and drums up interest in undergraduates for attending graduate school.

Outside of his involvement with transportation education, Chang is also working on several new projects for NIATT and UI, including a project examining the safety of mixed use facilities (i.e. facilities that are utilized by modes of transportation besides vehicles) and another project looking at the safety of passing lanes. He also serves as Chair of the Intstitute of Transportation Engineers' (ITE) Transportation Education Committee and chairs the Transportation Research Board's School Transportation Subcommittee. Chang is currently serving as the faculty advisor for UI's American Society of Civil Engineers' (ASCE) student chapter. UI will play host to the ASCE student conference for the Pacific Northwest region in 2016. More information on Kevin Chang can be found at <http://www.uidaho.edu/engr/ce/faculty/chang>.

## 2014 TranLIVE Student of the Year Rory Lilley



TranLIVE selected Rory Lilley the 2014 TranLIVE Student of the Year. As a Mechanical Engineering master's student at the University of Idaho, Rory has served as an effective leader/organizer/technical consultant to our undergraduate Formula Hybrid SAE team. This project has been sponsored by TranLIVE as an educational outreach since the inception of the TranLIVE center and by the Idaho Engineering Works in the senior design program. Rory worked his way up through the student ranks, as an undergraduate team member, as a senior design student, as a UTC intern, and as a UTC graduate student. Currently, he is an excellent role model in terms of his dedication to hard work, his recruiting of new inter-disciplinary talent to the team, his ability to organize training sessions/design experiences that capture and retain important vehicle design knowledge, his rapport with faculty advisors, his familiarity with manufacturing equipment in our machine shop, his ability to deploy testing equipment in our small engines laboratory, his ability to accurately simulate engine/powertrain systems, and his high standards in the authorship of project reports/technical papers. The impact of his efforts, coaching, and all-around vehicle knowledge can be seen in the FHSAE team success at the 2014 International Formula Hybrid Competition. This included 1st place overall, the Chrysler Innovation Award, and the GM Hybrid Electric Design Award. Rory has been an integral part of the UI FHSAE legacy for many years and his efforts continue to pay it forward to future vehicle platform teams as well as engine design/ engine testing research projects. Contributions in both areas are closely aligned with DOT UTC mobility, sustainability, and human resource missions.



Rory received the award at the annual Council of University Transportation Centers (CUTC) banquet in Washington D.C., January 10, 2015.

## 2014 Michael Kyte Outstanding Student of the Year Award

by Elysse Reyna (PacTrans)



Jennifer Warner, second year MS student at Oregon State University, was presented with the 2014 Michael Kyte Outstanding Student of the Year award at the PacTrans Reception during the 94th Transportation Research Board annual meeting. A photo capturing the award presentation includes members of the PacTrans universities from left to right: Maria Bayya (UW), Ahmed Abdel-Rahim (UI), David Hurwitz (OSU), Jennifer Warner (OSU), Billy Connor (UAF), and Yinhai Wang (UW).

Each year, Federal Region 10 UTCs give out the Michael Kyte Outstanding Student of the Year Award to awardees based on accomplishments in three areas: technical merit and research, academic performance, and professionalism and leadership.

“Jennifer Warner has worked tirelessly to achieve excellence in her professional endeavors, and I could not be more proud to count her as a member of the transportation engineering graduate program at Oregon State University,” said Dr. David Hurwitz, Jennifer’s adviser.



**May 1, 2015**  
**Bruce Pitman Center**  
**(formerly the Student Union Building)**  
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# University of Idaho

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