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Look inside for:

President's Message	1
Save the date!	2
2017 Annual Board Meeting Highlights	2
2017 Annual Business Meeting Highlights.....	3
Call for Candidates	3
2017 Annual Meeting Award Winners	4
2017 Best Paper.....	5
Committee Updates.....	8
Section and Chapter Updates	9
MiteY Race Update.....	11
ITE International Constitutional Amendments	12
Thank You!	12
Student Leadership Summit.....	16
Positions Available	17
Professional Services Directory.....	18



President's Message

By Mark Spencer, P.E., ITE Western District President

In mid-September the Board officers met and set out our program for the coming year. We reviewed the FY '18 budget to ensure not only fiscal responsibility, but that all five goals of the District's Strategic Plan are being supported (student initiatives, career development, technical excellence, social/networking, and promoting the profession). Among the initiatives for this year is a review of Committee Chair duties for several of our committees. Over the years the way our Committee Chairs perform their responsibilities has changed, sometimes leading to more work instead of less. We want to make sure that the work is balanced and equitable, and provide support where needed. This year the Board will continue our focus on increasing our levels of engagement with our members, including how the Board

interacts with the Sections and Chapters, and how members engage with one another. Throughout the year the Western District communicates with our members in several ways, including social media such as Twitter and Facebook; electronic media such as the E-News, the ITE International Community, and our website westernite.org; and traditional media with our bi-annual printed editions of WesternITE. But of course, there is no substitution for meeting people in person. Since our Annual Meeting this past June in San Diego, our Board have attended several Section meetings, the Idaho Chapter Annual Conference, and visited with Student Chapters.

We're looking forward to another great year for ITE as we make our way to the 2018 Joint Western District/TexITE Annual Meeting in Keystone, CO!



NorCal Section Officers (L to R): Past President Dave Stanek, Secretary Jana Cervantes, Treasurer Ravi Narayanan, Vice President Cameron Shew, President Doug Maas, with Western District President Mark Spencer

Save the date!

June 24-27, 2018

THE PEAK OF TRANSPORTATION



SAVE THE DATE!!

2018 Joint Western and Texas Districts Annual Meeting
June 24 - 27, 2018



Keystone Resort and Conference Center

www.itekeystone2018.com



Keystone, Colorado

2017 Annual Board Meeting Highlights

By Neelam Dorman, P.E., ITE Western District Vice President

On June 18, 2017, Western District Board members, committee chairs, section leaders and guests met in San Diego, CA for the 2017 Western District Annual Board Meeting.

President Mark Spencer discussed the reassignment of the Vice President duties for the remainder of the year and the effect on the election of officers for 2017-18. He also announced the appointment of Erica Jensen as WesternITE Managing Editor.

Secretary-Treasurer Neelam Dorman provided an update on the District's accounting. The District's year-to-date income (10/1/2016 – 6/16/2017)

is \$108,000. Year-to-date expenses included \$18,000 of travel expenses for International Directors and District Officers, \$1,300 of travel expenses for Committee Chairs, \$12,000 in WesternITE expenses, \$2,000 advance to the 2018 Keystone LAC, and a \$3,000 contribution to LeadershipITE.

Past President Cathy Leong presented the Lifetime Achievement Award and Individual Achievement Award winners. She reported that we have received our California tax exemption status and filed paperwork for California 2016 taxes.

International Directors Reports The

District's three International Directors, **Alyssa Rodriguez, Walter Okitsu, and Karen Aspelin**, provided summaries of their recent activities. A key topic addressed was the development of a Leadership Orientation tool for the District and an initiative to normalize dues structure at the District and Section levels.

ITE International Representative ITE International Executive Director **Jeff Paniati** and International Vice President **Michael Sanderson** provided updates on ITE International initiatives. Key topics involved the 2017 membership drive, financial stability and tracking, and streamlining the dues structure.

District Administrator Dalene Whitlock presented the approved SF Bay Area Section bylaws. She also provided additional information regarding insurance coverage for sections and chapters and will investigate this further.

WesternITE Managing Editor Joey Pasky, Advertising Manager Robert Sweeting, Website Manager Justin Link, Technical Committee Chair Amit Kothari, Membership Chair Joe De La Garza, Legislative Committee Chair Tom Mericle, Career Guidance Committee Chair Josh McNeill, Vendor Committee Chair Janna McKhann, Student and Faculty Initiatives Committee Chair Danielle Scharf, Student Endowment Fund Committee Chair Kimberly Leung, Traffic Bowl Committee Chair Ken Ackeret, LAC Liaison Chair Randy McCourt, and Public Relations Committee Chair Paul Stanis provided updates on their respective committee status and goals.

2022 Annual Meeting Presentations
Three LAC teams were invited to pres-

ent bids for the 2022 Meeting. Based on the presentations, Palm Springs, California was selected for 2022 and Boise, Idaho was selected for 2023.

San Diego 2017 LAC Chair Joe De La Garza provided an update on the current meeting. The meeting has 370 full registrants with \$40,000 in sponsorships. The LAC is projecting to be in the positive by the end.

Keystone 2018 LAC Co-Chair Ben Waldman reported that the LAC would like to have registration open in September.

Monterey 2019 LAC Co-Chairs Kimberly Leung and Justin Link presented the preliminary program.

Hawaii 2020 LAC Co-Chairs Cathy Leong and Neelam Dorman have signed a contract for the hotel, with the Annual Meeting to be held

6/28/2020 - 7/1/2020. The preliminary space plan was presented.

Portland 2021 LAC update by Randy McCourt Pam O'Brien will be the LAC Chair the meeting.

Additional items discussed The following items were also discussed:

- Leadership Handbook
- Travel Policy revision
- 2017-2018 budget review and approval

The meeting adjourned at 3:37 pm. The next board meeting will be held in Oakland, CA on Friday 1/26/2018.

Call for Candidates

The Western District Board is seeking nominations of qualified candidates for Secretary-Treasurer and International Director to run in the June 2018 election. Secretary-Treasurer nominations will be accepted for individuals residing in California, while International Director nominations are sought for individuals residing outside California. Anyone who would like to submit a nominee for consideration, or who would like more information about the election process, should contact Western District Past President Cathy Leong at cleong@wilsonokamoto.com. Nominations will be accepted until December 1, 2017.

The Student Endowment Fund has reached its initial goal of \$500,000 and additional initiatives are planned. Mark encouraged continued support. He reported that the Districts financial health is stable.

Secretary-Treasurer **Neelam Dorman** summarized the state of the District's accounts for 2016-2017 and introduced the draft budget for FY 2017-2018. The budget was approved by the membership.

The final order of business was the announcement of the winners of the 2017 election: President **Mark Spencer**, Vice President **Neelam Dorman**, Secretary-Treasurer **Paul Barricklow**, and International Director **Carlos Ortiz**. The meeting was then adjourned.

2017 Annual Business Meeting Highlights

By Neelam Dorman, P.E., ITE Western District Vice President

The 2017 Annual Business Meeting for ITE's Western District was called to order on 6/20/2017 by President **Mark Spencer**. The meeting commenced with the Pledge of Allegiance and a moment of silence for deceased members **Roger Allington, Jack Anderson, Clifford Nohara, Richard Thomas, Edward Tobey, and Mel Hirayama**.

Awards were presented by the Student Initiatives Committee, Student Endowment Fund Committee, Technical Committee, and Career Guidance Committee. The final call for ballots was followed by the convening of the tellers committee by President **Mark Spencer**.

International Vice President Candidates **Ken Ackeret** and **Bruce Belmore** addressed the members. District President **Mark Spencer** provided a recap of the past year's highlights including the locations of the upcoming Annual Meetings: 2021 joint with ITE International in Portland, OR; 2022 in Palm Springs, CA; and 2023 in Boise, ID.

2017 Annual Meeting Award Winners

Award	2017 Recipient
Endowment Fund Contributor Recognition	Nazir Lalani, Steven Colman, and Central Coast Section
Endowment Fund Highest Contribution per Member Award	Central Coast Section
Endowment Fund Highest Overall Contribution Award	Intermountain Section
Section/Chapter Activities Award (Large)	Southern California Section
Section/Chapter Activities Award (Small)	San Diego Section
Wayne T. Van Wagoner Award (best paper by a District member published in ITE Journal in prior calendar year)	"Unlocking Human Behavior to Build a Better Transportation System", Scott Kuznicki
Employer Recognition Award	Iteris
Student Chapter Award Winner	Cal Poly San Luis Obispo
Student Chapter Award Honorable Mention	Oregon State University
Student Paper Competition	Mohammadreza Hashemi, "Exploratory Analysis of Roadway Departure Crashes Contributing Factors Based on Classification and Regression Trees", University of Hawaii at Manoa
Outstanding Undergraduate Student	Natalia Brown, Brigham Young University
Outstanding Graduate Student Award	Travis Low, Cal Poly San Luis Obispo
Outstanding Transportation Educator	Xiaoyue Cathy Liu, University of Utah
Young Professional Achievement Award	Kimberly Leung
Individual Achievement Award	Robert Sweeting
Lifetime Achievement Award	Ransford S. McCourt
Annual Meeting Best Paper Award	Sam Morrissey, "Agency Implications of Connected and Autonomous Vehicles".
Annual Meeting Best Paper by a Young Professional Award	Ian Barnes, "Getting There on Time: Why Travel Time Reliability isn't Just for Drivers"
MiteY Race Awards	Family/Friends: 1. Mighty Montanans, 2. MiteY Minions, 3. 5.75 Moore Students: 1. Cal State Fool Roundabout (Cal State Fullerton), 2. Hasta La Vista, Prima Fascie (Cal State Fullerton), 3. Schwifty Aztecs (San Diego State Univ.)
William C. Kloos Traffic Bowl	1. Southern California Section 2. #Mustangs Revenge 3. Green
Best Web Site Award	Washington Section
Student Chapter Web Site Award Winner	Cal Poly Pomona
Wisest and Windiest Scribe Award	Colorado-Wyoming Section
Student Traffic Bowl	1. Cal Poly - San Luis Obispo, 2. Oregon State University, 3. Northern AZ Univ.
James H. Kell Student RFP	University of California, Berkeley, "Rush Hour"
Membership Award Highest Number Gain	Southern California Section
Membership Award Highest Percentage Gain	Hawaii Section
Student Chapter Annual Meeting Award	Cal Poly - San Luis Obispo

2017 Best Paper

Agency Implications of Connected and Autonomous Vehicles

By Sam Morrissey, PE, TE; Iteris, Inc.

The District's Annual Meeting Best Paper Award is one of the most prestigious presented each year. The winning paper is presented here:

EXECUTIVE SUMMARY

This paper provides a brief summary of the roles and current activities undertaken by agencies from the national to local levels in relation to connected and autonomous vehicles (CAVs). Given the rapidly changing environment and technologies surrounding CAVs, the challenges of planning, prioritizing, constructing, maintaining, and operating transportation infrastructure will only become more complex. This paper identifies specific challenges posed for public agencies, and lays out immediate action items for transportation professionals so that they can start preparing now for the future.

INTRODUCTION

With the rapid advancement of connected and autonomous vehicle (CAV) technologies, transportation professionals are scrambling to stay ahead of the curve. Agency staff from local to national levels are wondering what they need to do today, tomorrow, and in the future to ensure for the safe and equitable movement of all users of the transportation network. This paper provides a brief summary of the current roles and activities of local, County, MPO, State, and Federal agencies across the US. Specifically, this paper lays out immediate action items for transportation professionals so that they can start preparing now for the future. The paper highlights tools and approaches utilized by the USDOT to plan at the national level; planning strategies being undertaken at the State, County, and MPO levels; and infrastructure needs and challenges being addressed at the local level to ensure safe movement for all users of their transportation infrastructure today, tomorrow, and into the future.

OVERVIEW OF CONNECTED/AUTONOMOUS VEHICLES

Before engaging in a discussion of connected and autonomous vehicles (CAVs), and the implications these vehicles present for agencies with a role in transportation, we must establish a baseline. For the purposes of this paper, the baseline will identify the current state-of-the-practice in terms of the levels of connectivity/automation for vehicles, the generally accepted benefits that are expected from vehicle connectivity/automation, the current anticipated timeframe for the deployment and integration of connected /automated vehicles into the existing fleet, and the general concepts for connectivity and communication.

Levels of Connectivity/Automation

This paper will use the Society of Automotive Engineers (SAE) recognized levels of autonomy, shown below:

- *Level 0:* The human driver does everything.
- *Level 1:* An automated system on the vehicle can sometimes assist the human driver conduct some parts of the driving task.
- *Level 2:* An automated system on the vehicle can actually conduct some parts of the driving task, while the human continues to monitor the driving environment and performs the rest of the driving task.
- *Level 3:* An automated system can both actually conduct some parts of the driving task and monitor the driving environment in some instances, but the human driver must be ready to take back control when the automated system requests.
- *Level 4:* An automated system can conduct the driving task and monitor the driving environment, and the human need not take back control, but the automated system can operate only in certain environments and under certain conditions.
- *Level 5:* The automated system can perform all driving tasks, under all conditions that a human driver could perform them.

*Source: Federal Automated Vehicles Policy;
<https://one.nhtsa.gov/nhtsa/av/av-policy.html>*

The most critical distinction between Levels 4 and 5 is the presence of a steering wheel and other controls – in a Level 5 autonomous vehicle, and in some applications of Level 4, steering wheels and other controls are not necessary. A second critical distinction is the understanding of connectivity in regards to automation – at Levels 2 and above, the vehicle is “connected” to the outside world in some fashion, and uses that connectivity to make decisions and take actions on some or all of the driving activities. While on-board computer systems combined with sensor technology can allow a CAV to understand the world around it and take actions to respond, the connectivity is the key to ensuring that CAVs are receiving correct information and/or are correctly interpreting the world as the CAV sees it. This is particularly relevant in safety applications.

How Vehicles Are Connected

There are two generally accepted types of connectivity discussed in relation to CAVs: Vehicle to Vehicle (V2V) and Vehicle to Infrastructure (V2I). In the case of the former, CAVs communicate directly with other vehicles on the roadway, providing information on speed, the direction of travel, and anticipated maneuvers (e.g., turns). In the case of V2I connectivity, the CAVs communicate directly with the roadway infrastructure (e.g., signals, signs), and vice-versa. There is a third type of connectivity, and that is via an ad-hoc network of sensors and communication devices. This is referred to as V2X connectivity, and could refer to vehicle communicating with a pedestrian's smart phone or wearable device, and vice-versa.

Expected Benefits

There are many reasons for connectivity and automation in vehicles, and one of the most frequently cited reasons is the expected benefits that connectivity and automation will deliver. It is estimated that human error accounts for more than 90% of all road collisions. In recent years the United States averages nearly 40,000 deaths per year from traffic collisions. It is expected that connectivity and automation will directly reduce the frequency and severity of traffic collisions, although this benefit will likely be proportional to the overall percentage of the vehicle fleet that is made up of CAVs.



A secondary benefit of CAVs is making auto travel more efficient, both in terms of roadway capacity and flows as well as productivity. It is estimated that Americans lose almost five billion hours per year due to congested traffic conditions. Delays in freight deliveries due to congestion result in costs of approximately \$33 billion per year, and Americans burn almost two billion gallons of fuel per year due to congested travel. With the advent of CAVs, the levels of congestion could decrease due to improved operating efficiencies, and the time spent in vehicles could be better utilized, resulting in productivity gains.

Timeline for Deployment/Integration

Of course, it is important to use conditional statements when discussing the potential benefits of CAVs, since the amount

of benefit will be proportional to the overall fleet mix on the roadways. Level 4 vehicles are available for purchase today, and many vehicles are currently on the roadway with levels of autonomy between Levels 1 and 3. The United States Department of Transportation (USDOT), via the National Highway Transportation Safety Administration (NHTSA), has issued guidelines regarding CAVs, and many states including California have provided legal and regulatory guidelines regarding the use of CAVs on public roads. The stage is set for the deployment and integration within the vehicle fleet; the question is what is the timeline? Estimates vary across the industry, although there appears to be some consensus that sometime

between 2020 and 2030, possibly by 2025, Americans may see a significant market penetration (e.g., 15%) of CAVs within the general vehicle fleet. Given the recent experiences in the testing of autonomous for-hire vehicles, it is very likely that there will be further legislative and regulatory guidance on where Level 5 autonomous vehicles may operate versus Levels 1 through 4. It is the author's belief that Level 4 and 5 CAVs will most likely be authorized in specified geographic areas and/or dedicated facilities, where the vehicles may travel at low speeds with limited interaction with non-CAVs.

COMPLEXITIES/CONCERNS RELATED TO DEPLOYMENT/INTEGRATION

One of the most complex aspects of CAV technology is the ability for the vehicle to identify potential hazards and make split-second decisions on how to respond to those hazards in a safe manner. The complexity is increased by the density and variation of activity found on roadways – particularly in dense and active urban areas – compounded by the almost infinite variability of human responses and activities – bordering on Heisenberg uncertainty principle levels of complexity.

Take as an example the following scenarios as outlined by Dave Barnett of the United Kingdom's Transport Systems Catapult: A plastic bag drifts into the path of a moving vehicle. A human driver may see the bag, identify it as a non-threatening hazard, and simply drive forward while the bag drifts past the car (or more often than not gets lodged in the grill of the car). An autonomous vehicle, when presented with the same situation, would likely behave in a similar fashion. Now imagine if instead of a bag, it was a circular balloon. In this situation, both the human driver and AV would likely respond in the same way. Last, assume that instead of a circular balloon, the object is a soccer ball.

In this case, the human driver would recognize this not only as a soccer ball, but something that a human being (likely a child) had to kick in order for it to be in front of the vehicle; so the human driver would quickly look to find the human possibly chasing the soccer ball. In the case of an AV, this scenario presents a very complex situation. The soccer ball doesn't look that different from a circular balloon, and the trajectory of the circular balloon would be consistent with that of a plastic bag. How will the AVs algorithms be programmed so that in this case the response is not to continue to proceed straight, as the AV would have with the plastic bag or balloon, and rather to slow in anticipation of a human entering the roadway?

The example above is provided to highlight the complexities surrounding the correct identification of use cases that an AV has to handle. From the author's perspective, the complexities of public roads demand a solution greater than machine learning alone. Rather than waiting for AVs to experience every possible situation that one could experience driving on a road, and then having the AVs learn from those experiences, it is widely accepted that public agencies must play a role in ensuring that the infrastructure itself can help ensure for the safety of all users.

Uncertainty During the Transition Period

For precisely the reasons described previously – the complexities of non-CAV interaction with CAVs, as well as the complexities of active streetscapes in urban areas – the author believes we are entering a critical time in regards to roadway safety and the role of the public sector. With the deployment of CAVs onto public roadways, all roadway users will have to learn to respond to different situations; and the data is fairly clear regarding the limited abilities of motorists to respond to new and uncertain conditions. For all the expected benefits of CAVs, it is the uncertain behaviors and actions of human drivers that may present the greatest uncertainties and threats to safety during the transition period.

For example, in September 2016 a driverless car (operated by Google) was struck by a non-CAV. In this specific collision, the driverless vehicle was proceeding through an intersection

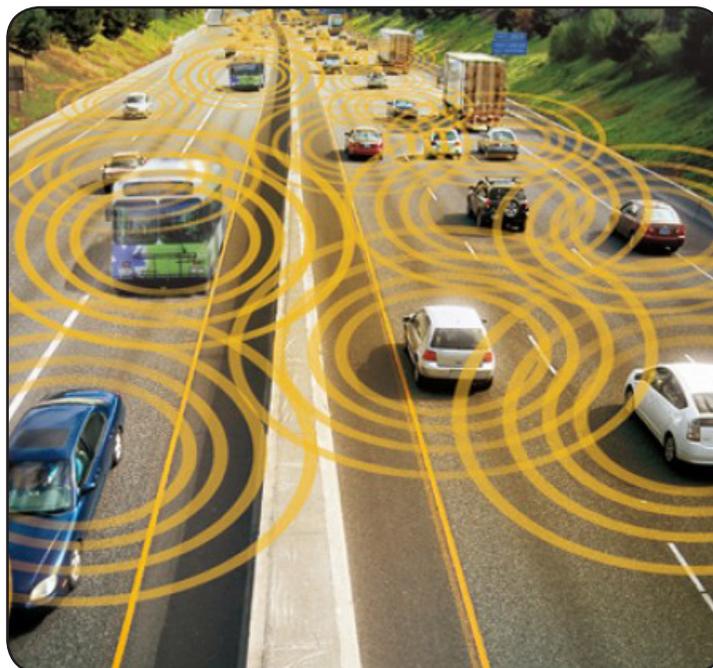
after receiving a green signal indication. A van approached from the perpendicular direction, and although the van was approaching a red signal indication, the van proceeded through the intersection and struck the driverless vehicle. The public safety responders cited the human driver in the collision; however, this collision highlights the exact challenge facing the transition period of CAV integration into the vehicle fleet.

The remaining sections of this paper will discuss the roles of public agencies as they relate to CAVs, and how public agencies can leverage their roles to minimize the challenges associated with the transition period of CAV integration.

ROLES OF PUBLIC AGENCIES

All CAVs need transportation infrastructure to operate, and transportation infrastructure is almost exclusively the realm of the public sector. The federal government establishes national standards; develops national policies, guidelines, and regulations; provides funding; and supports implementation of transportation infrastructure and related components. State agencies play similar roles, at the statewide level, and have greater roles in the planning, implementation, operation, and maintenance of transportation infrastructure. Counties play nearly every role in transportation infrastructure, from the development of standards through operations and maintenance. At the Municipal Planning Organization (MPO) level – and for the purposes of this paper we will define an MPO as inclusive of agencies with planning, funding, and prioritization authority over multiple local agencies, which could include MPOs, County Transportation Commissions, Congestion Management Agencies, Port Authorities, etc. – the role of the MPO is generally in the planning,

funding, and prioritization of transportation infrastructure. Last, local agencies play the most direct role in the implementation, operation, and maintenance of transportation infrastructure. The chart below presents a summary of agency roles. The following sections present a summary of some of the activities underway at each level in relation to the agency-specific role. Note that this discussion is limited to public agencies, and does not include Universities or other non-profit research entities.



Committee Updates

Student Endowment Fund

By Kimberly Leung, PE, Committee Chair

The Western District Endowment Fund now supports over \$18,000 in Student Initiatives annually. Four students were awarded the inaugural Regional Travel Scholarship, the District's newest Student Initiative, which provides financial support to one student from each of four regions (North, East, South, and West). This year's recipients were **Joseph Claveria** from Oregon State University; **Monirehalsadat Mahmoudi** from Arizona State University; **Vanessa See** from California Polytechnic State University, San Luis Obispo; and **Jianqing Wu** from University of Nevada, Reno. Starting this fall, the Data Collection Fund will include additional funds to support a sixth student data collection project for the academic school year. More information about all of the District's Student Initiatives are available at westernite.org/endowment-fund.

Student Initiatives

By Danielle Scharf, PE, PTOE, LEED AP, Committee Chair

Student Chapter Award Congratulations to Cal Poly SLO on being selected for Student Chapter Award; this is their 4th year in a row winning this award! They were also selected as the winner of the International award for the third time in the last four years!

Student Paper Award The Student Paper Award, which encourages students to conduct and report on independent research and investigation of transportation engineering subjects, was awarded to Mohammadreza Hashemi from University of Hawaii at Manoa for his paper entitled "Exploratory Analysis of Roadway Departure Crashes Contributing Factors Based on Classification

and Regression Trees." Mohammadreza received a plaque and a \$500 award at the annual meeting.

Student Traffic Bowl Cal Poly SLO won the student Traffic Bowl and thus received the traveling trophy and \$1000 from the Western District for travel assistance to participate in the Collegiate Traffic Bowl Grand Championship in Toronto, Canada. Cal Poly SLO represented the District very well and won the Grand Championship, becoming the first two-time champion of the ITE International Student Traffic Bowl!

James H. Kell RFP The James H. Kell Student Competition gives student members an opportunity to apply traffic engineering classroom knowledge to a specific "real-world" problem. The District issues a request for proposals inviting student chapters to define and run the student competition at the annual meeting. The winner of the RFP this year was Cal Berkeley for their "Rush Hour" challenge. Over 40 students from across the District participated in the event.

Student Chapter Annual Meeting

Award The purpose of the Student Chapter Award is to recognize overall participation by a student chapter in all of the annual meeting activities. The winner of the Student Chapter Annual Meeting Award for 2017 was Cal Poly San Luis Obispo.

The Student Initiatives Committee is currently seeking volunteers to serve on the review committees for the various student and faculty awards for the coming year. If you are interested in volunteering, or would simply like more information about these awards and activities, please contact Danielle Scharf, Student Initiatives Chair at dscharf@sandersonstewart.com.

Technical Committee

Amit Kothari, Committee Chair

There were 11 ITE Journal articles written by Western District members that were eligible for consideration for the Wayne T. Van Wagoner award. Five proposals were selected from student chapters for data collection projects. We received nine Section Activity Awards with the San Diego Section being selected for the small section and the Southern California Section for the large section

Membership Committee

Joe De La Garza, Committee Chair

ITE Western District gained 100 members over the last year but had 76 less student members. The Hawaii Section had the highest percentage gain with 30 members while the Southern California Section had the highest number gain of 88 members.

Career Guidance

Josh McNeill, Committee Chair

There were three Career Development Sessions at the 2017 Annual Meeting: Resume Review Workshop, Workplace Situation Skits, and 21 Century Workplace Panel.

The Best Annual Meeting Paper Award by a Young Professional was awarded to Ian Barnes for the "Analysis of Pedestrian Travel Time Reliability Near Fixed Guideway Transit Stations."

Kimberly Leung was selected as the winner of the Young Professional Achievement Award. The Employer Achievement Award was awarded to Iteris.

Section and Chapter Updates

Alaska Section

By Heather Estabrook, Secretary/Treasurer

The ITE Alaska Section recently awarded scholarships to 4 students. The successful candidates are Alaskan Residents who are full-time, undergraduate students enrolled in an accredited engineering program. Congratulations to our 2017 winners!

- \$2000 Melissa Frey
- \$1500 Patricia Jackson
- \$1500 Kelly Yanoshek
- \$1000 Mohamed Niagne

Funding is made possible by the successful Beer, Wine, and Cider Tasting and Silent Auction event held each fall.



The Alaska Section Board and Scholarship Winners

Colorado/Wyoming Section

By Devin Joslin, Scribe

Some highlights of recent activities:

- The 14th Annual Spring Transportation Symposium was held in April in Downtown Denver. The record crowd of 425 attendees enjoyed a technical program that included opening remarks from Denver’s Mayor Michael Hancock.
- The 2017 section golf tournament was held June 9 in Castle Rock, CO. It was a great event with 116 players who raised over \$3,500 for the CO/WY ITE Scholarship Fund.
- The section stuck held its annual business meeting on September 22nd at Topgolf in Centennial, CO.

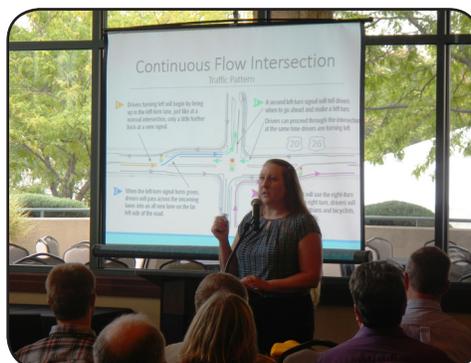


CO/WY Section president, Ryan Germeroth, begrudgingly wore a red hawk costume to enhance the golf tournament atmosphere.

Idaho Chapter

By Crystal Grasmick, Secretary/Treasurer

We’ve had an eventful last few months for the Idaho Chapter of ITE. First, at this year’s District Annual Meeting, the Idaho ITE Chapter put in a bid to host the District Annual Meeting in Boise in 2022. Our chapter president, George VanHorn, presented to the ITE Western District Board in San Diego. I’m happy to say that The Idaho Chapter was successful in our bid and we were selected to host the Western District meeting in 2023! The last time the meeting was held in Boise was 1990. We are currently busy taking volunteers for Local Arrangements Committee and starting the planning process!



Last week, on September 19th, we hosted our 10th Annual Idaho ITE Statewide Conference. It was a great success with 6 great speakers and about 60 people attending.

Montana Chapter

By Lisa Fischer, Secretary/Treasurer

Some highlights of recent activities:

- ITE Montana is sponsoring 11 sessions at the state’s Joint Engineer’s Conference in November featuring transportation related topics such as diverging diamond interchanges, OpenRoads and 3D modeling, and safety analysis in Montana.
- Montana ITE was able to contribute a total of \$2,250 to the Western District General Fund, Intermountain Section, and the Western Transportation Institute for their annual Summer Transportation Camp to promote transportation related careers for high school students by sparking their interest through creative problem-solving and hands-on activities.
- ITE Montana Chapter currently has 53 members, and growing.

NorCal Section

By Cameron Shew, NorCal Section President-Elect

In addition to holding monthly lunch meetings, the Northern California Section puts on two large annual events: our fall Oktoberfest Golf Tournament and our spring Vendors' Night Showcase and Banquet. Both events provide great networking opportunities, a delicious meal, and raise money for the Richard T. Romer Student Endowment Fund.



Oregon Section

By Molly McCormick, Scribe

Some highlights of recent activities:

- March 30th: Oregon ITE Happy hour, where members enjoyed the beginning of Spring in Portland and nerd-ed over a round of beer
- July 14th: GOITE hosted their annual event in Ashland this year. The event offered four PDHs, great presentations, networking, lunch, and happy hour. The schedule also included rafting for those who wanted to make it a weekend in Ashland.



- September 29th: Oregon ITE again hosted a “Golf for People that Don’t Golf” tournament. This was about having fun and socializing with other great members of Oregon ITE. This year was a foot golf style round - 18 holes of soccer golf!
- We are reaching out to student traffic bowl teams for the upcoming annual 26th Annual Bill Kloos Traffic Bowl, which includes both the competition and student activities to connect students to transportation professionals.
- November 16th: everyone’s favorite trivia night: The 26th Annual Bill Kloos Traffic Bowl! The evening includes a nice dinner and a chance to watch transportation engineering and planning students from Oregon and Washington go toe-to-toe in a test of trivial transportation knowledge. Which university will take home the awesome trophy and a huge, non-cashable novelty check?

San Diego Section

By Mohammad Amin

The spotlight event this year for the San Diego section was the 2017 Western District Annual Meeting in San Diego. The San Diego section organized and hosted the meeting, held at the Hilton Hotel in Mission Bay. It was a great location to enjoy sunny San Diego in the middle of summer.

We included Western District Meeting attendees in our section’s summer social, which was held right next to the hotel. Many attendees from the meeting came to join the summer social. They made our summer social extra fun this year and it was a great summer day in Mission Bay in beautiful San Diego.

The technical sessions over the 4-day event were well received and participants were able to tour San Diego on a biking tour. Family night at the hotel was entertaining for both adults and kids.

San Francisco Bay Area Section

By Bahnu Kala, President

Some highlights of recent activities:

- This year, we will transition to a calendar year term for the elected board, from the current mid-year to mid-year term. This will streamline the tax filing process by aligning the Board’s term with the tax period.



Swearing in this year’s officers

- Our section will be starting a vendor spotlight series at the lun-

cheons, allowing vendors to discuss the latest innovations in transportation-related technologies. These vendor spotlights are intended to be a focused opportunity to hear more about developing technologies straight from the experts, without requiring travel or conference expenses.

- Last year, we reactivated the Students in Transportation Engineering and Planning (STEP) mentoring program. This program is designed to benefit students by pairing them with transportation professionals as mentees. Last year, we had seven mentor-mentee pairs and it was a great success. We plan to continue it this year.
- Starting this year, our section plans to organize resume building workshops in San Jose State University and University of California, Berkeley campuses to assist students.

Utah Chapter

By Brent Turley

The Utah Chapter wrapped up several activities over the summer. One highlight was sponsoring trip generation studies conducted by the local student chapters. The Brigham Young University, University of Utah, and Utah State University ITE student chapters conducted studies at an Intermodal Station (bus, commuter rail, and park-and-ride), a Grocery Store within a Transit Oriented Development, and a 540-student Charter School. Along with providing valuable experience to students, the data will be available to ITE members in the near future.

Another highlight was our annual Chapter summer gathering at the Salt Lake Bees baseball game to enjoy baseball, food, and fireworks.

MiteY Race Update

By Cathy Leong, P.E., ITE Western District Past President

Thank you to all of the teams that participated in the MiteY Races in San Diego, CA and Toronto, Canada! This year, the Western District once again hosted TWO MiteY Race events. The first race was held in conjunction with the Western District Annual Meeting in San Diego CA as a fundraiser for the Western District Student Endowment Fund. We kicked off the race entitled “MR8: Mission (Bay) Impossible” on Saturday with 8 family/friends and 6 student teams completing fun, but challenging tasks around the Hilton San Diego Resort.

The top family & friends teams were:

- **1st Place: Mighty Montanans – Michael and Quinn Sanderson**
- **2nd Place: MiteY Minions – Mark and Alex Spencer**
- **3rd Place: 5.75 Moore – Devin, Karina, Becca, Avery, and Toby Moore**



Winning Family/Friends teams (San Diego), from L to R: 5.75 Moore, MiteY Minions, Mighty Montanans

The top student teams were:

- **1st Place: Cal State Fool Around – Joseantonio Hernandez & Maniriam Phoummatthep-Winspear, Cal State Fullerton**
- **2nd Place: Hasta La Vista, Prima Fascie – Emilio Murga and Elizabeth Gonzalez from Cal State Fullerton**
- **3rd Place: Schwifty Aztecs – Matthew Zipagan and Alexis Ramos from San Diego State University**

In addition to the San Diego MiteY Race, we also held the second International MiteY Race in conjunction with the Joint ITE/CITE Annual Meeting in Toronto, Canada. The Toronto MiteY Race (entitled “On Thin Ice”) was held on August 1st as part of Hockey Night in Canada. We had 11 family/friends and 7 student teams racing through pit stops located around the Sheraton Centre Toronto. The 1st place family & friends team was the Canadian team of Angela Gibson and Vanessa Skelton. The 1st place student team was from the University of Alberta: Matt Woo and Brian Tran. We were so pleased to be able to once again share this Western District tradition with the rest of ITE!



Winning Family & Friends team from Toronto



Winning Student Team (San Diego) from Cal State Fullerton



Winning Student Team from Toronto

ITE International Constitutional Amendments

The results of the ITE International Balloting of Constitutional Amendments was released October 2nd. The full article can be found here: <http://campaign.r20.constantcontact.com/render?m=1102470515092&ca=af1185c8-b51c-44b1-9610-6913ab4dab02>

Amendment 1, Article II: Remove barriers to membership in ITE in order to include other professionals outside the traditional transportation engineering. Resulting vote: **YES**

Amendment 2, Article IV: Give the International Board greater flexibility to appoint an individual to fill the position of ITE Vice President in the event of a vacancy. Resulting vote: **YES**

Amendment 3, Article V: Create a process to better educate prospective candidates on the responsibilities and commitments involved in being an International Officer; create a streamlined and more cost effective election process. Resulting Vote: **YES**

Amendment 4, Article VII: Give the International Board greater flexibility in its selection of dates for the Annual Meeting in order to partner with District Meetings. Resulting vote: **YES**

Amendment 5, Article IX: The Transportation Industry Division is currently inactive. Rather than eliminate this element of ITE, the Board may establish a Transportation Industry Forum, but this is not required. Resulting vote: **YES**

Amendment 6, Article XI: minor wording change to more clearly define the action that is being taken with members to solicit their votes. Resulting vote **YES**

Thank You!

for Attending the 2017 Western District Annual Meeting!

The 2017 ITE Western District Annual Meeting in San Diego was an amazing success!! The 2017 Local Arrangements Committee (LAC) and the Western District Board would like to thank all of the attendees, exhibitors, speakers, and volunteers who made the meeting memorable and rewarding! A special thank you goes to all of our sponsors without whom we would not have been able to provide all of the great events and programs during the meeting. We had over 300 attendees and over 80 students attend the meeting at the beautiful San Diego Hilton Resort and Spa.



We'd also like to thank our notable contributors: **Michael Baker, Kittelson & Associates, Linscott Law & Greenspan Engineers, STC Traffic, Kimley Horn, Fehr & Peers, MaxCell, IBI Group, W-Trans, DKS, NDS, Lin Consulting, KOA Corporation, Lee Engineering, and VRPA Technologies.**

For more information about PDHs and a link to the compendium, please visit www.sandiegoite2017.com.

I would like to personally thank all of the LAC members and volunteers from the San Diego Section who put in many hours, hard work, and dedication to make the San Diego Meeting special!

Joe De La Garza, 2017 Annual Meeting LAC Chair

Best Paper, continued from page 7

Agency Roles in Relation to CAV Infrastructure & Operations Paper

ROLE	AGENCY				
	Federal	State	County	MPO	Local
Standards	X	X	X	X	
Funding	X	X	X	X	X
Planning Prioritization		X	X	X	X
Implementation	X	X	X		X
Operation Maintenance		X	X		X

Current Agency Activities

-> Federal

At the Federal level, the USDOT has initiated efforts to establish standards, provide funding, and direct the implementation for CAVs. The Connected Vehicle Reference Infrastructure Architecture (CVRIA)¹ identifies standards for connected systems, and standardized communications for 97 unique applications. To further ensure the goals of the CVRIA are achieved, the USDOT has created the Systems Engineering Tool for Intelligent Transportation (SET-IT)². This tool is freely available to agencies, and can be used to develop project architectures for pilots, test beds and early deployments of CAVs.

The USDOT has also provided direct grant funding to public agencies for the CAV pilot deployments. On September 1, 2016, the USDOT awarded three cooperative agreements collectively worth more than \$45 million to initiate a Design/Build/Test phase of the CV Pilot Deployment Program in three sites: Wyoming, New York City, and Tampa³. The goals of this program are to encourage partnerships of multiple, deploy applications utilizing data captured from multiple sources across all elements of the surface transportation system, and to support improved system performance and enhanced performance-based management⁴.

In September 2016 NHTSA released its Federal Automated Vehicles Policy⁵. The policy addresses numerous topics related to vehicle performance and provides guidance in terms of deployment and operations. The policy provides a model state policy, for reference and use by states when developing their own specific CAV policies. One of the most interesting aspects of the policy, from the standpoint of the role of a federal agency, is in the discussion of NHTSA's current regulatory tools. The policy outlines the current tools available to

NHTSA for regulating vehicle activities on public roads, and also outlines a number of new tools and authorities NHTSA may pursue in the future, to address potential future issues created by the deployment of CAVs.

One authority that should raise some concerns is in the area of software updates – NHTSA indicates a potential desire to approve software updates before public release, which could create a major hurdle in terms of quick fixes to software bugs.

-> State

At the state level, the approaches have varied. Many states, including ITE Western District states California, Nevada, and Utah, have recently updated Department of Motor Vehicle (DMV) guidelines and regulations to address CAVs. In September 2016 California released its first set of DMV regulations for CAVs, and at the time the regulations expressly restricted the testing of fully driver-less (Level 5) CAVs on public roads. In March 2017, the regulations were revised to allow for the testing of Level 5 CAVs, with specific requirements requiring the regular reporting of safety information and the presence of a human in the vehicle to take control if-needed.

Across the state of California, vehicle manufacturers, technology firms, and on-demand transportation providers have been testing CAVs on public roadways. These tests have generally been without incident; however, anecdotal reports circulate quickly on the internet regarding CAVs making improper turns and/or unsafe maneuvers. There have been a few documented collisions involving CAVs (operating at Level 4), including the collision in September 2016 as described earlier in this document.

1 <http://local.iteris.com/cvria/>
 2 <http://local.iteris.com/cvria/html/forms/setitform.php>
 3 <https://www.its.dot.gov/pilots/>
 4 Ibid.
 5 <https://one.nhtsa.gov/nhtsa/av/av-policy.html>

-> MPOs

In California, a number of activities have been occurring at the MPO level, led by the pioneering efforts of the Contra Costa Transportation Authority (CCTA) in their acquisition of a decommissioned Naval facility and the creation of the GoMentum Station CAV testing facility. This was the first facility in the state to receive legislative approval (via AB 1592) to test Level 5 CAVs on public roads in California. The

5,000-acre facility has been in operation since 2015 and is testing CAVs under a variety of roadway conditions.

In 2016 the Metropolitan Transportation Commission of the San Francisco Bay Area (MTC) initiated its Future Mobility Research effort. This effort includes participation from the largest MPOs in California – the Sacramento Area Council of Governments (SACOG), the Southern California Association of Governments (SCAG), and the San Diego Association of Governments (SANDAG). The purpose of this research effort is to evaluate the potential impacts to MPOs related to CAVs and other new transportation technologies, and to provide guidance on how MPOs can adjust their planning, programming, and budgeting practices to better address CAVs and new transportation technologies.



Last, the Orange County Transportation Authority (OCTA) recently initiated a project to address V2I challenges. The purpose of this project will be to perform a technology review of connected vehicle technology, both V2V and V2I, with an emphasis on V2I technologies and requirements that may be incorporated into the Authority's signal synchronization program. A key goal is to determine OCTA's current and future roles (e.g., monitor, shape, or implement) related to V2I technologies, considering OCTA's current authority as a planning and funding agency for streets and highways⁶.

-> Local

U.S. Supreme Court Justice Louis Brandeis is attributed to have coined the term "laboratories of democracy," and this could be modified to say that "local government is the laboratory for new transportation technology." It is at the local level that the daily challenges of CAV integration will be most prevalent. In California a number of local agencies have identified CAVs and new transportation technology as potentially game changing, and are taking steps to proactively respond.

The City and County of San Francisco, via a grant awarded by the USDOT, is initiating its Advanced Transportation and Congestion Management Technologies Deployment Initiative (ATCMTD) program. This program is part of a broader Smart City initiative, and includes elements related to CAVs (as autonomous shuttles), tolling, signal synchronization, Vision Zero implementation (via improved metrics and new infrastructure), and an overall improvement in data collection and monitoring⁷.

The City of West Hollywood is initiating a Smart Cities Strategic Plan. The purpose of this plan will be to implement smart city technologies to enhance service delivery, improve municipal operations, improve residents' quality of life, and serve as a catalyst for accelerating the City's mobility and sustainability ambitions. This plan will address areas such as Sustainability, Mobility, Accessibility, Resilience, and Transparency⁸.

Other Southern California cities are taking similar steps. The City of Los Angeles released its Transportation Technology Strategy in August of 2016, and is currently working on initial implementation steps. The City of Beverly Hills has openly declared its intention to develop and deploy a driverless taxi system and the City of Santa Monica has expressed a desire to develop CAV pilot deployments. As entities with control of both the public rights-of-way and associated transportation infrastructure, local agencies will literally be where the rubber hits the road in terms of CAV deployment.

INFRASTRUCTURE NEEDS AND CHALLENGES

With the various activities underway at all levels of public agencies, there are aspects of the transportation infrastructure in dire need of attention, in order to ensure that CAVs are safely integrated into local transportation networks.

⁶ Request for Proposals (RFP) 7-1526, Vehicle-to-Infrastructure State of the Practice Review; January 26, 2017.

⁷ City of San Francisco Advanced Transportation and Congestion Management Technologies Deployment Initiative (ATCMTD), Notice of Funding Opportunity #DTFH6116RA00012; September 2016.

⁸ Request for Proposals; Smart City Strategic Plan; January 24, 2017.

CAV Infrastructure Requirements

As noted earlier, CAVs – particularly Level 4 and 5 vehicles – are outfitted with extensive sensor technology to view the world. These vehicles use any numbers of sensor technologies to map, measure, and assess what is occurring in real-time around the vehicle. In a closed system, with no other operators aside from the CAV, these sensor technologies would be sufficient to allow the CAV to safely navigate the world. In real-world settings, particularly in dense urban environments, CAV sensing technology is limited by what it sees and how it sees. In some cases, sensor technology is only as effective as the supporting infrastructure it is sensing. CAVs depend on clear signage and clear roadway markings to understand where to locate within a roadway and what to do at intersections and decision points. Like human drivers, CAVs generally depend on traffic signal indications for guidance on when to stop or proceed through an intersection. Lastly, CAVs require outside information to understand the nature of temporary road blockages and what their duration will be – for example, how to tell the difference between a large pothole and an excavation, or how to tell the difference between a collision and a planned closure for construction.

Infrastructure Needs

First and foremost, CAVs require infrastructure and traffic control devices that display clear messages and direction. Deteriorating pavement conditions (e.g., potholes) present hazards that CAVs must avoid. Roadway striping and markings let CAVs know where they should locate themselves within the roadway, and if those markings are not clearly visible, the CAVs will be challenged.

Most modern traffic signals operate using in-roadway or overhead sensors to detect the presence of vehicles. Most modern signal systems have communication capabilities to send and receive real-time information. Many City-wide connected signal systems, such as those used in the City of Los Angeles, include “system” detectors placed mid-block to determine average roadway speeds. With modest investment, traffic signal systems could be upgraded to provide real-time information to CAVs, on both the status of the signal and the movement of vehicles in opposing directions. This exact investment would prevent collisions like the one described earlier from September 2016, where a CAV was struck by a vehicle running a red light. Imagine if the signal system had detected a vehicle moving at a high rate of speed towards a red light – the system could alert the CAV and prevent the collision.

Temporary closures are a necessity for infrastructure maintenance, ongoing economic activities (e.g., deliveries, construction), as well as incident response. Agencies struggle with the monitoring and messaging of temporary closures, as

anyone who has spent any time in a congested urban core can agree. Users of route planning applications like Waze are familiar with the routing dilemmas presented by unexpected roadway closures. Some agencies are partnering with Waze and/or other private sector firms to disseminate real-time information on temporary closures in addition to agency operated systems such as 511. This continues to be an area of active development.

Agency Challenges

Given the infrastructure needs described above, the largest challenge is funding. Agencies from the federal level down to the local level struggle with regular maintenance and maintaining a “state of good repair” for transportation infrastructure. Combined with the challenge of funding labor-intensive monitoring and enforcement activities; there is much work that needs to be done to elevate the importance of providing adequate budgets for maintenance and operations. Unfortunately; infrastructure maintenance doesn’t have the political appeal of a ribbon cutting at a new park, or the announcement of the opening of a new homeless shelter.

Even if the underfunded maintenance gap can be filled, there will still be a need for investment in transportation infrastructure to support the mass deployment of CAVs. As mentioned previously, modest investments in traffic signal systems can create a communications and sensor backbone to support the safe interaction of CAVs with other roadway users. Agencies at all levels should understand the infrastructure investment needed, and take actions to ensure that they can make those investments to fulfill the responsibilities given their specific roles.

Agency Recommendations

The author recommends the following actions for planning and operational agencies, in order to support the safe integration of CAVs on the nation’s transportation network.

CONCLUSION

In conclusion, the advancement of CAV technology promises to change the landscape of public roadways. Although the long-term benefits of CAVs could be significant in terms of improved safety and efficiency, the near-term implications of a partially integrated fleet could present serious safety and operational challenges. These challenges will be faced on a daily basis by local agencies, who bear the majority of the responsibility for maintaining safe and efficient transportation networks across the US. Some activities are being carried out at the various agency levels, from Federal to local, and more needs to be done. At the MPO level, the author recommends that CAVs be incorporated immediately into Regional Transportation Planning and related processes, to ensure that funding can be programmed to ensure for consistent infra-

structure deployment across an MPO. At the local level, the author recommends agencies recognize the need to elevate the priority of infrastructure maintenance and upgrade, and increase the funding allocated for basic infrastructure maintenance like signing, markings, and traffic signal maintenance. These activities should be addressed immediately, while also pursuing other activities related to CAV deployment - needs assessments, learning through pilot projects, and establishing the ability to collect and analyze data as the CAV infrastructure develops and expands.

AGENCY LEVEL	RECOMMENDATIONS	
	Near-term (0-5 Years)	Long-term (5+ Years)
State	<ul style="list-style-type: none"> • Ensure consistent infrastructure deployment via STIP programming, etc. • Integrate CAVs into statewide plans 	<ul style="list-style-type: none"> • Ensure statewide standards for regulations and traffic control devices are consistent
County	<ul style="list-style-type: none"> • Complete inventory of all traffic signal, ITS, Signage, and Markings • Develop CAV Strategic Plan • Increase funding for maintenance and enforcement 	<ul style="list-style-type: none"> • Upgrade all infrastructure equipment for standard communications
MPO	<ul style="list-style-type: none"> • Integrate CAVs into Regional Transportation Plans & modeling • Upgrade Congestion Monitoring Programs to utilize better data sources • Ensure standard infrastructure deployment via grant funding opportunities 	<ul style="list-style-type: none"> • Coordinate planning activities across states/nation to ensure consistency
Local	<ul style="list-style-type: none"> • Complete inventory of all traffic signal, ITS, Signage, and Markings • Develop CAV Strategic Plan • Increase funding for maintenance and enforcement • Identify and deploy CAVs in designated areas where Level 5 CAVs can be supported with dedicated infrastructure 	<ul style="list-style-type: none"> • Continue to identify and deploy CAVs in designated areas where Level 5 CAVs can be supported with dedicated infrastructure • Upgrade all infrastructure equipment for standard communications • Use data-driven approaches to identify new infrastructure needs

Student Leadership Summit

January 19th - 21st, 2018, Oregon State University, Corvallis, OR

The Oregon State University (OSU) ITE Student Chapter is excited to host the 5th Annual Western District ITE Student Leadership Summit (SLS), an event designed to promote the development of professional and leadership skills among students in the Western District.

OSU ITE will present the unique challenges and opportunities facing the transportation industry and how to incorporate existing and emerging technologies to resolve these issues. To convey this technical knowledge and develop professional and leadership skills, the 2018 SLS will include a key note speaker, technical presentations,

panel discussions, speed interviews, resume workshops, and team activities.

OSU ITE is currently looking for help from members across the Western District! We need professionals for speed interviews, resume workshops, mentors, panel members, and presenters.



OSU ITE is also looking for company sponsors and donations for this event. SLS would not be possible without the generous contributions of sponsors and professionals. Any donation would be a valuable investment in developing future transportation engineers.

If you are interested in volunteering or your company is interested in sponsoring SLS (or you just want more information about SLS), please check out our new website www.oregonstateite.com. You can also get in touch with us about the 2018 SLS at itesls2018@gmail.com or through OSU ITE President Kayla Fleskes (fleskesk@oreognstate.edu).

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