

VIRGINIA TECH
TRANSPORTATION
INSTITUTE

ANNUAL REPORT / FISCAL YEAR

2014



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WELCOME

MISSION VISION

The Virginia Tech Transportation Institute (VTTI) conducts research to save lives, save time, save money, and protect the environment. Researchers and students from multiple fields are continuously developing the techniques and technologies to solve transportation challenges from vehicular, driver, infrastructure, and environmental perspectives.

As one of seven premier research institutes created by Virginia Tech to answer national challenges, VTTI has effected significant change in public policies for driver, passenger, and pedestrian safety and is advancing the design of vehicles and infrastructure to increase safety and reduce environmental impacts.



MESSAGE FROM THE DIRECTOR

Transportation research is a forward-thinking field. As the needs of the transportation user continually change, we as transportation researchers must evolve to answer the challenges ahead. During a relatively short period of time, next-generation vehicular technology has progressed from cruise control to active safety systems that provide blind-spot monitoring, lane departure warnings, and forward collision warnings. Earlier this year, the U.S. Department of Transportation announced plans to move forward in the realm of connected vehicles, a form of technology that will allow vehicles, infrastructure, and devices to essentially “talk” to each other. Such communication has the potential to increase safety and mobility while reducing negative environmental impacts. Intermingled within these discussions about the future of transportation is automated-vehicle technology that will facilitate some aspect of hands-off driving.

And woven throughout each of these national and international conversations about transportation is the Virginia Tech Transportation Institute (VTTI).

It has been 25 years since VTTI was founded. Then called the Center for Transportation Research, we encompassed 15 employees. Today, we stand at more than 400 employees and house the largest group of driving safety researchers in the world. Sometimes working quietly in the background, sometimes making headlines, this research community has effected a tremendous amount of change. We pioneered the use of naturalistic driving studies, a research method that involves equipping voluntary participants’ vehicles with unobtrusive cameras and instrumentation that record driver behavior and performance in real-world conditions. The resulting data (approximately 2.5 PB housed at VTTI so far, with 2 PB resulting from the largest naturalistic driving study undertaken to date and sponsored by the Second Strategic Highway Research Program) have helped VTTI researchers and external clients such as federal and state agencies answer questions about driver risks that include distraction, fatigue, inattention, and impairment. Our data, which are reduced and analyzed by a trained team located on site, provide answers that influence national policies designed to enhance driver safety, such as bans placed on text messaging while driving and reducing the number of on-duty hours of truck drivers in an effort to mitigate fatigue and drowsiness. Just this spring, we were awarded a Federal Motor Carrier Safety Administration (FMCSA) contract with a ceiling of \$30 million for a five-year period to further study safety efforts for commercial truck drivers using the naturalistic driving technique. VTTI researchers work with major vehicle manufacturers to test, and oftentimes develop, new vehicle technology. In most cases, before a new

vehicle even hits the road, the safety systems featured in the model are first tested at VTTI. We study infrastructure aspects that include pavement, determining methods to improve such characteristics as road friction (poor pavement conditions that include inadequate texture/friction can contribute to up to 30 percent of annual fatalities). We study the biomechanics of vehicular crashes, determining ways to mitigate and prevent injuries. We partner with national organizations to determine, and ultimately mitigate, the greatest risks faced by overrepresented drivers such as teens and seniors. We feature the only equipment in the world designed to test tires at up to 200 mph under realistic combined loading conditions, maximizing tire performance and undertaking efforts to produce more environmentally friendly tires.

And we are leading efforts into connected-automation. Rather, we continue to take that lead. Before connected and automated vehicles became such a hot topic, VTTI researchers began nearly a decade ago developing the facilities and research necessary to study these transportation innovations. At that time, we were actively designing, developing, and testing a prototype collision avoidance system to predict stop-sign- and signal-controlled intersection violations and warn the driver. To date, we have had \$30 million in connected-vehicle work, collaborating with federal, state, and local agencies and major auto companies and suppliers to determine the feasibility of and human factors issues relative to connected vehicles. VTTI researchers are also using connected-vehicle technology to enhance mobility and lighting, developing such strategies as intersection management to significantly reduce intersection crashes and travel times and adaptive lighting systems that can be tailored to the needs of the environment. During the spring, we were awarded a contract with the National Highway Traffic Safety Administration (NHTSA) worth up to \$25 million across a five-year period to study issues related to automated vehicles, including driver acceptance of and interaction with such systems and cybersecurity factors.

It is rare to have a career in which one feels they are truly making a difference. It is rarer still to work with others who are dedicated to such a daunting endeavor. But that is what makes VTTI unique: this is a community with a voracious desire to dig deep, to find the answers that will ultimately ensure the safety of others, from truck and car drivers to motorcyclists, bicyclists, and pedestrians. What the VTTI community has accomplished is nothing short of transformative. What we will continue to accomplish is nothing short of our core mission: to save lives, save time, save money, and protect the environment.

Virtual

We house

90%

of the naturalistic driving data in the world

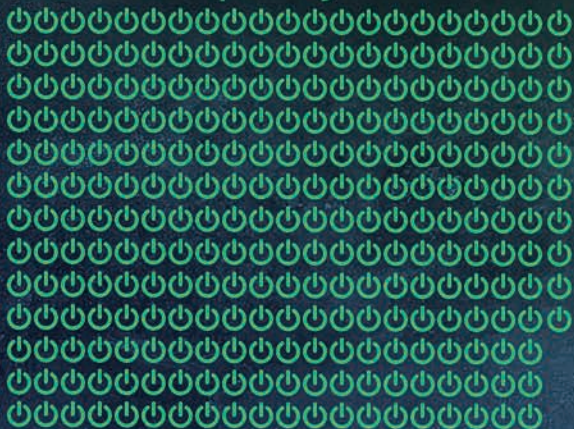
[2.5 petabytes]



which is more than **40** million miles of data
enough to drive from Earth to Mars at their closest point

270+

active projects



450 employees
[368 in 2013]



at a glance



2100 hours
of Smart Road use
during FY14
[The highest since its inception]



\$36,000,000+
in sponsored
research expenditures
[includes VTT, LLC]

FACILITIES / EQUIPMENT



INSTITUTE INFRASTRUCTURE

VTTI has a \$105 million infrastructure that includes **three test beds** used extensively for real-world, impactful transportation research; **more than 90,000 square feet of building space** located on-site in Blacksburg, Va.; and **more than 60 owned and leased instrumented vehicles**, including connected-automated Cadillac SRXs and a new International Lone Star tractor-trailer that will soon be instrumented for automation research.

01. TEST BEDS

Headquartered at VTTI, the Virginia Smart Road is a 2.2-mile, controlled-access facility managed by the institute and owned and maintained by the Virginia Department of Transportation. The road itself is built to Federal Highway Administration specifications and features seven roadside equipment units and two mobile roadside equipment sites that facilitate connected-vehicle communications; an optical fiber communication system; Ethernet fiber transceivers and Ethernet switches; a connected-vehicle-compatible intersection controller model; varying pavement sections and in-pavement sensors; 75 weather-making towers capable of producing snow, rain, and fog; a differential GPS base station for precise vehicle locating; a signalized intersection with complete signal phase and timing control; a wireless mesh network variable control system; and variable pole spacing designed to replicate 95 percent of national highway lighting systems.

The Northern Virginia Connected-vehicle Test Bed was opened during 2013 and supports real-world connected-vehicle/infrastructure research on a larger scale along the most congested roadway in the United States. The test bed is a Virginia Department of Transportation facility developed in partnership with VTTI, the University of Virginia, and Morgan State University as part of the Connected Vehicle/Infrastructure University Transportation Center funded by the U.S. Department of Transportation. The facility features: 44 wireless roadside equipment units that enable connected-vehicle communications along Interstate 66, Interstate 495, U.S. 29, and U.S. 50 (with plans to add 22 wireless roadside units during 2014); two mobile roadside equipment sites; and variable traffic conditions and roadway types, including four major merge/diverge locations, two metro stations, high-occupancy toll lanes, and major roadway construction.

The Virginia International Raceway in Alton, Va., was established as a cooperative agreement through which VTTI can conduct projects in a multi-use testing environment that includes both closed-course and open traffic conditions. On site at the raceway is a resort that features a 12-unit complex of residential villas, a lodge, a club house, a full-service restaurant and tavern, administrative offices, and a spa. The raceway track can be configured to five different courses ranging from 1.1 miles to 4.2 miles and includes such topography as hairpin curves and blind passes. The Virginia International Raceway is also home to the Virginia Motorsports Technology Park, which contains the Global Center for Automotive Performance Simulation, an affiliated company of VTTI that features the globe's premier force-and-moment tire test facility.



02. BLACKSBURG FACILITIES

The traditional laboratories at VTTI are housed in two buildings totaling more than 52,000 square feet. Building I is 30,000 square feet and houses office, laboratory, and garage facilities. Low-service laboratories include facilities dedicated to driver interface development, eyegance data reduction, lighting research, accident analysis, accident database analysis, pavement research, and traffic simulation. The National Surface Transportation Safety Center for Excellence building comprises 22,000 square feet of office and laboratory space and was occupied in July 2006. VTTI expanded its on-site capacity by 7,000 square feet of warehouse space and housing for a shock tube lab, a paint booth facility, and a lighting lab. An additional 24,400 square-foot annex was opened during August 2013. This addition eliminated most of the flex space rented in Research Building 7 and the Moss Building at the Virginia Tech Corporate Research Center.

To supplement and support the focused transportation research of the institute, facilities feature a fully staffed garage and machine shop to instrument experimental vehicles. Technicians and engineers use full-scale machine and welding shops, electronics laboratories, and garage facilities to customize transportation hardware and software designed to collect large amounts of data. These facilities are also used to support the maintenance and expansion of the Smart Road systems and capabilities. Additionally, VTTI occupies an adjacent four-bay, 7,200-square-foot garage. This facility is used to store the VTTI instrumented vehicle fleet and the equipment necessary for research and Smart Road operations.

03. VTTI VEHICLE FLEET

The VTTI vehicle fleet is uniquely instrumented for specific experiments. Researchers use the vehicle fleet for Smart Road tests; experimental test vehicles are used to develop new instrumentation packages. Several of the vehicles are long-term loaners from vehicle manufacturers, the Virginia Department of Transportation, and other partnering organizations.

All vehicles are maintained in-house when possible with fully functional garages and a machine shop. Loaned vehicles are maintained in cooperation with the organization that provided the vehicle.

VTTI PROJECT HIGHLIGHTS



GROUNDBREAKING STUDIES

01. VTTI won two federal contracts worth a combined potential \$55 million to further study safety efforts for commercial truck drivers and break new ground in the field of automated vehicles. The contracts are being awarded by the Federal Motor Carrier Safety Administration (FMCSA) with a ceiling of \$30 million for a five-year period and the National Highway Traffic Safety Administration (NHTSA) at a maximum of \$25 million during a five-year period. Collectively, the contracts are the largest of their kind awarded to the institute in its 25-year history.

02. Data collection was recently completed for the Second Strategic Highway Research Program Naturalistic Driving Study (SHRP 2 NDS). The three-year study, which was the largest of its kind, covers more than 35 million miles of data and 3,100 participants. The study resulted in 2 petabytes of video, kinematic, and audio data that are being used by internal and external clients to analyze real-world driver behavior and performance.

03. VTTI was awarded \$3 million by NHTSA for the evaluation of human factors relative to connected vehicles. Since 2005, VTTI has conducted more than \$30 million in research and facility development in the field of connected vehicles.

04. NHTSA has contracted VTTI to perform the Field Study of Heavy-Vehicle Collision Avoidance Systems (CAS) study. Two CAS suppliers will install their technologies on approximately 75 trucks each. Each truck will be equipped with the VTTI Mini Data Acquisition System (MiniDAS), which records video of the roadway and the driver; it also records parametric data from the CAS and vehicle network. This study will generate an unprecedented amount of insight into CAS reliability, driver response performance when using the CAS, and fleet acceptance of the technology.

05. VTTI recently completed data collection for the first large-scale naturalistic motorcycle study, comprising 100 participant years and approximately 400,000 miles of riding. The study, sponsored by the Motorcycle Safety Foundation, will provide information that could lead to countermeasures developed to protect this driver population overrepresented in crash risks. A complementary naturalistic study sponsored by NHTSA will include 160 motorcycle riders in Southern California.

06. VTTI is conducting the Human Factors Evaluation of Level 2 and Level 3 Automated Driving Concepts project, which aims to answer some of the most fundamental human factors research questions focused on the issue of drivers transitioning into and out of automated driving states enabled by Level 2 and Level 3 automated vehicles.

The Virginia Tech Transportation Institute (VTTI) experienced myriad successes during Fiscal Year 2014, ranging from groundbreaking transportation projects that ensure we meet our overall goal of saving lives, saving time, saving money, and protecting the environment; to developing innovative technologies that address the greatest transportation challenges of today and into the future. The Institute continually seeks to diversify its research opportunities, engaging in new partnerships and sponsorships while strengthening its outreach endeavors and engaging the next generation of transportation researchers.

THE FOLLOWING ARE HIGHLIGHTED ACHIEVEMENTS OF THE VTTI COMMUNITY DURING **FY14.**



07. FMCSA, in conjunction with the American Transportation Research Institute (ATRI) and VTTI, performed a study about the safety benefits of speed limiters in commercial motor vehicles (CMVs). Researchers found that trucks with speed limiters experienced a 50 percent lower speed limiter-related crash rate. Informed by this research, a federal rule is currently pending that will require speed limiters on newly manufactured heavy-duty trucks and the retrofitting of current heavy vehicles in service. A joint Notice of Proposed Rule Making was issued by FMCSA and NHTSA during September 2013.

08. A year-long study conducted by VTTI for FMCSA found that trucks with electronic hours-of-service recorders (EHSRs) had a significantly lower total crash rate (11.7 percent reduction) and a significantly lower preventable crash rate (5.1 percent reduction) than trucks not equipped with an EHSR. Informed by these results, FMCSA announced on May 12, 2014, that this report had been placed in the docket on the proposed rule related to electronic

logging devices and supporting documents for hours-of-service compliance. The rule would establish minimum performance standards for electronic logging devices and requirements for the mandatory use of the devices.

09. VTTI is currently conducting the Onboard Monitoring System (OBMS) for CMV study. Sponsored by FMCSA, the objective of the study is to determine if onboard monitoring will reduce at-risk behavior among CMV drivers and improve driver safety performance. Upon completion of the project, continuous naturalistic driving data will be available to answer future heavy-vehicle research questions.

10. VTTI is developing algorithms to predict travel times for the Virginia Department of Transportation (VDOT) "Reach the Beach" program. A paper about this topic was awarded the "Best Scientific Paper Award" in North America at the ITS World Congress in Tokyo during October 2013.



11. VTTI is one of six universities in the TranLIVE University Transportation Center (UTC). As part of this effort, VTTI has developed and tested eco-routing algorithms, eco-adaptive cruise control systems, eco-drive systems in the vicinity of signalized intersections, and has developed a number of fuel consumption and emission models, including the VT-Micro and VT-CPFM models.

12. During the fiscal year, the VTTI Center for Injury Biomechanics received new proposed research funding worth a combined total of more than \$16.5 million from such sponsors as the National Science Foundation (NSF), original equipment manufacturers, U.S. Army, and NHTSA. The center continues to perform innovative research investigating human tolerance to impact loading, with applications in automobile safety and military restraints.

EXPANDING COLLABORATIONS

01. The VTTI-led Human Factors Evaluation of Level 2 and Level 3 Automated Driving Concepts project includes collaborations with General Motors (GM), Google, Southwest Research Institute, Battelle Memorial Institute, and Bishop Consulting. This team will ensure that the issues addressed by the project are those resulting from emerging real-world applications and system concepts. This effort will help identify the fundamental human factors research questions related to automated driving and further the community's understanding of the education, development, deployment, and assessment needs of automated-vehicle systems.

02. The newly awarded Electronic Systems Safety contract designed to support NHTSA in investigating various aspects of vehicle electronic systems safety was submitted by VTTI in collaboration with 30 organizations, including Auburn University, Carnegie Mellon University, BMW, Chrysler, Google, GM, TORC Robotics, and the Virginia Tech Hume Center. This team was organized to answer all aspects of the NHTSA project, including electronics safe reliability, cybersecurity, vehicle automation, and the related human factors considerations.

03. VTTI researchers collaborated with leading researchers at the University of Alabama at Birmingham Department of Ophthalmology to successfully apply for a National Institutes of Health (NIH) R01 proposal for the Older Drivers and Vision Impairment: NDS project. The study will entail conducting an NDS of a select group of senior drivers demonstrating a range of visual and information processing capabilities in the Birmingham area. Data collection is expected to begin during early 2015.

04. The first VTTI international NDS is ongoing in Saskatoon, Saskatchewan. Data collection began during the summer of 2013 and will be completed during the summer of 2015. The data set is expected to include 125 instrumented vehicles and approximately 175 data years. In addition, 30 heavy trucks will be instrumented for a data collection period of one year each. These heavy trucks will primarily be long-haul trucks traveling across western Canada. Once finalized, these data will be compared with data available from the SHRP 2 NDS database.

PROJECT HIGHLIGHTS



05. The Global Center for Automotive Performance Simulation (GCAPS), an affiliated company of VTTI and Virginia Tech, is working with Goodyear Racing to test a sample of the tires it designs specifically for use on each NASCAR race track. Goodyear Racing is the official supplier of race tires for NASCAR. GCAPS continues to work with dozens of other clients, including tire makers and various motorsports teams and series from around the globe, to help clients gather data critical to creating the best tires and enhancing vehicle performance.

06. VTTI has signed a five-year collaborative agreement with the Paris-based French Institute of Science and Technology for Transport, Development and Networks (IFSTTAR). The agreement allows for sharing of information and collaborative research on such topics as connected-vehicle technology, effects of street lighting on motorists and related light “pollution” along roadways, NDSs, and traffic modeling.

07. VTTI is conducting joint research with the International Islamic University of Malaysia, the University of Twente in the Netherlands, and Queensland University of Technology in Australia in the areas of transportation system mobility and transportation energy and emission modeling.

08. VTTI hosted doctoral students in the field of sustainable infrastructure from the Politecnico de Milano, University of Coimbra, University of Nottingham, and University of Chihuahua.

INNOVATIVE TECHNOLOGIES

01. VTTI recently completed data collection for the Light-vehicle Builds and Model Deployment Support for the Safety Pilot Program. As part of the program, VTTI worked with the Crash Avoidance Metrics Partnership Vehicle Safety Communications 3—a consortium of eight vehicle manufacturers—to lead the efforts to build and evaluate 72 light vehicles equipped with fully integrated vehicle-to-vehicle systems. These vehicles were used throughout the Safety Pilot program and have the potential to further inform the design and assessment of connected-vehicle technologies.

02. VTTI is developing the first instrumented bicycle. The prototype bicycle includes forward roadway and rider-face cameras, as well as multiple kinematic sensors combined in a lightweight, unobtrusive package powered by a removable, integrated, rechargeable battery



pack. Comprehensive bicycle instrumentation will allow the institute to study how cyclists and other road users interact across road features and weather conditions and has the potential to lead to significant improvements in legislation, roadway design, and enhanced bicycle safety systems.

03. VTTI is expanding its connected-vehicle capabilities, adding 22 roadside radios to its Northern Virginia Connected-vehicle Test Bed located along the most congested roadway in the U.S. (Interstate 66, in addition to Interstate 495 and state routes 29 and 50). Along with instrumentation on the Smart Road, this brings the total roadside radio units available to VTTI to more than 70. These roadside radio units facilitate communication between vehicles and the roadway infrastructure, which has the potential to prevent crashes, reduce traffic congestion, improve the sustainability of roadways, and reduce negative environmental effects.

04. VTTI developed a data-mining technique that rapidly and accurately identifies the roads on which participant drivers traveled. The technique associates GPS data with digital map data, providing researchers with a range of roadway-related descriptors available in digital maps. The technique is being applied to the largest data collections at VTTI and reduces by more than 10 times the data needed to describe routes.

05. VTTI developed an eco-drive system that receives signal phase and timing (SPaT) information from a traffic signal controller and optimizes the vehicle trajectories to minimize their fuel consumption levels in the vicinity of signalized intersections.

06. VTTI developed an intersection cooperative adaptive cruise control (iCACC) system that optimizes the movement of automated vehicles traversing roadway intersections. This innovative system receives vehicle requests to proceed through a roadway intersection and controls the vehicle movements to ensure that no collisions occur while minimizing the intersection delay.

07. VTTI was awarded a grant from the NSF to develop novel models and algorithms to evaluate tire-road friction levels by fusing smart tire technology, vehicle sensor response measures, and advanced vehicle dynamics algorithms. This technology will provide a real-time solution to identify potential hazards, which can help drivers make better decisions and transportation agencies design effective, proactive response strategies.

ENHANCING OUTREACH AND EDUCATION

01. VTTI has established the Human Factors of Transportation Safety Graduate Certificate Program, a unique multidisciplinary educational opportunity for Virginia Tech graduate students. This program combines the expertise of VTTI faculty with that of the following collaborating Virginia Tech departments: Civil and Environmental Engineering, Industrial and Systems Engineering, and Psychology.

PROJECT HIGHLIGHTS



Plans are underway to include the Statistics Department in the near term. It is anticipated that this program will serve to promote students' professional development and foster their future success in the field of human factors within transportation safety.

02. VTTI researchers traveled to Hartford, Connecticut, to present a series of workshops focused on safety issues for heavy-vehicle drivers. Workshops about distraction, driver drowsiness, hours-of-service, driver health and wellness, and safety technologies were presented to CMV fleet safety managers, agents and brokers, and Travelers and Northland Insurance staff, with the end goal of creating an instructional package that can be disseminated to CMV drivers.

03. GCAPS is creating a program for a simulation degree, with application work at SoVa Motion. GCAPS is also collaborating with Pamplin to create an MBA call project studying local and global outreach methods, as well as providing internships for Virginia Tech mechanical engineering students. Additionally, GCAPS is creating partnerships with Danville Community College and the Southern Virginia Higher Education Center.

04. VTTI co-hosted a two-and-a-half-day international conference entitled "Agent-based Modeling in Transportation Planning and Operations" during October 2013.

05. VTTI hosted the Third Advanced Infrastructure Management Course attended by advanced Ph.D. students from 13 nationalities and taught by professors from eight universities.

06. VTTI is hosting the Fourth International Symposium on Naturalistic Driving Research on August 25-28, 2014, at the Inn at Virginia Tech and Skelton Conference Center. The symposium will gather experts to discuss the future of NDSs and opportunities for global collaboration. A series of workshops will also be held that allow participants to gain hands-on experience using the SHRP 2 NDS database.

07. During September, VTTI will host the Pavement Evaluation 2014, a two-and-a-half-day conference that will cover all aspects related to measuring and analyzing the function and condition of pavement. The conference welcomes representatives from government transportation agencies, academia, and private industry.



08. VTTI hosted the U.S. Department of Energy Next Generation Luminaires (NGL) Solid State Lighting (SSL) Design Competition, sponsored by Battelle. The competition was created to recognize and promote excellence in the design of energy-efficient light-emitting diode (LED) commercial luminaires.

ADDITIONAL ACCOMPLISHMENTS

01. VTTI researchers had articles published in some of the top scientific journals, including *The New England Journal of Medicine*; *The Journal of Pediatrics*; *Journal of the American Medical Association*, Pediatrics; and *Annals of Advances in Automotive Medicine*.

02. VTTI Director Thomas A. Dingus was asked to speak about the risks of inattention and distraction at the Engaged Driving Symposium and was a panel member for a RealClearPolitics discussion about distracted driving. He was also an invited blogger for the Huffington Post special series Don't Look Away From the Roadway.

03. VTTI has received several awards for its 25-year celebration and recent publications. The 25-year event won gold in the Special Event category of the 2014 Hermes Creative Awards. The VTTI 25 publication produced in conjunction with the event also won gold in the Hermes Creative Award category of Publications/Corporate Social Responsibility. The 25-year celebration and event materials won a Virginia Public Relations Award. The VTTI connected-automation publication, *The Future is Now*, won the Offset Color category from the Association of College and University Printers.

INSTITUTE ORGANIZATION RESEARCH AND NATIONAL CENTERS

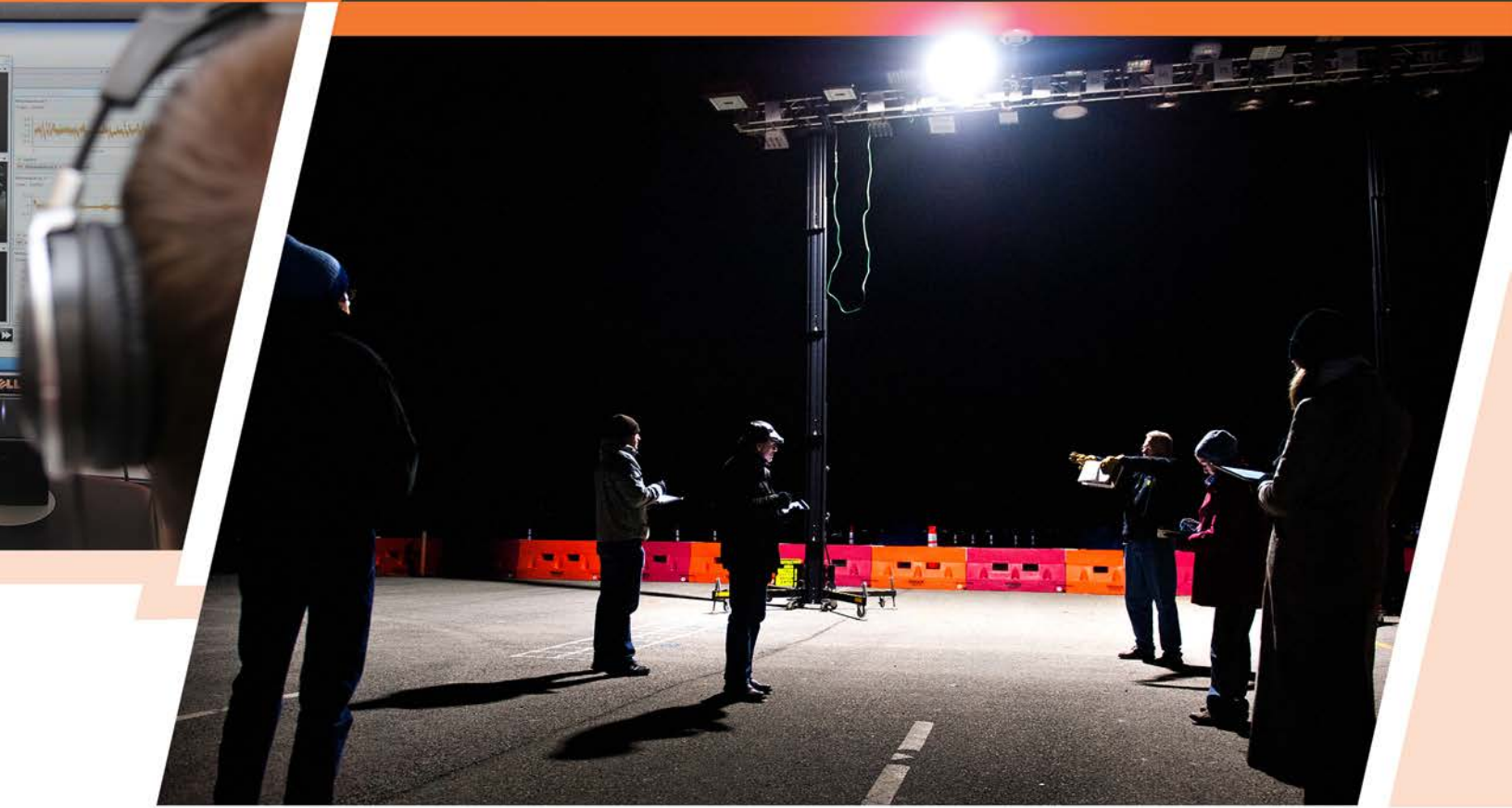
Center for Advanced Automotive Research (Dr. Zachary Doerzaph, Director)

The center focuses on the research, development, and evaluation of next-generation automotive systems to improve the safety and efficiency of our nation's transportation system. Primary research areas include crash warning/avoidance/mitigation, connected vehicles, driver-vehicle interfaces, crash causation, and vehicle automation. The center comprises the Advanced Product Test and Evaluation group and the Connected & Advanced Vehicle Systems group.

Center for Automated Vehicle Systems (Dr. Myra Blanco, Director)

The center pursues an interdisciplinary approach to studying all aspects related to the automation life cycle in the transportation field. The center is anchored in applied research and is strengthened by collaborations with national and international partners in vehicle automation. Center partners include groups involved in research, planning, and policy, as well as the production of automated vehicles. The growth and variety of automated vehicles should be anchored in a scientific approach that emphasizes safety, security, reliability, and user acceptance. Research projects focus on collision warning interfaces, collision avoidance systems, and drivers transitioning into and out of automated driving states.

INSTITUTE ORGANIZATION



Center for Data Reduction and Analysis Support

(Dr. Miguel Perez, Director)

The center supports standardized access to and analysis of numerous naturalistic driving study data sets (currently 2.5 PB) housed at VTTI for researchers internal and external to the institute. Services include coding of video and audio data, data quality assurance, data standardization, data mining, event selection, and data analysis. The center actively supports data analysis collaborations with external institutions.

Center for Infrastructure-based Safety Systems

(Dr. Ron Gibbons, Director)

The center focuses on roadway-based safety systems, such as lighting, visibility treatments, pavement markings, signage, signals, barriers, the interaction of visibility with roadway design, and weather considerations. The center is conducting research into myriad topics that include increasing active sign legibility during foggy conditions; evaluating the impact of lighting source, type, and power on driver performance; assessing airport garage lighting; and determining the durability of pavement markings. The center comprises the Virginia Green Highway Initiative, which is conducting studies that include an investigation into the potential use of paired types of commercially available vehicle detection technologies designed to reduce false readings at intersections that

result in inefficient traffic flow. The center received a large Federal Highway Administration Indefinite Quantity Contract that reflects growth in the area of infrastructure safety.

Center for Injury Biomechanics

(Dr. Warren Hardy, Director)

The center is a partnership between VTTI, the Virginia Tech Department of Mechanical Engineering, and the Virginia Tech-Wake Forest University School of Biomedical Engineering and Sciences. The center conducts research into injury biomechanics, injury modeling, and transportation-related injury biomechanics. The center is conducting an in-depth study of 1,000 road-departure crashes at 24 sites across the U.S. to determine conditions such as speed and topography. Other transportation-related injury research includes car crash tests, large-scale tissue testing, NASCAR-Indy restraint testing, advanced restraint tests, guardrail evaluations, child seat evaluations, airbag-induced eye injuries, development of a synthetic eye, elbow joint injuries from side airbags, wrist injuries, upper extremity dummy design, posterior rib fractures from side airbags, child dummy neck evaluations, small female neck interactions with side airbags, airbag out-of-position testing, and the development of a pregnant occupant model.



Center for Sustainable Mobility

(Dr. Hesham Rakha, Director)

The center conducts research relevant to society's transportation mobility, sustainability, and safety needs. The center translates the results of research into realistic and workable applications, creates and provides tools needed to apply developed knowledge and processes, and educates qualified engineers to meet today's transportation demands and tomorrow's transportation challenges in the areas of transportation system mobility, sustainability, and safety. The center has worked on projects for the Mid-Atlantic Universities Transportation Center, including characterization of vehicle dynamics for the enhancement of traffic simulation models and a study of driver behavior at signalized intersections conducted on the Smart Road. The center is developing eco-routing strategies that combine energy and emission models with navigation programs to help consumers make "greener" choices about their routes.

Center for Sustainable Transportation Infrastructure

(Dr. Gerardo Flintsch, Director)

The center focuses on asset management; pavement design, analysis, rehabilitation, and safety; infrastructure management; civil engineering materials; nondestructive testing; and life-cycle cost analyses. It houses the Infrastructure Management group and the Sensing, Modeling and Simulation group. The center initiated a consortium of state highway agencies and equipment manufacturers dedicated to enhancing pavement surfaces. Examples of research include testing a product that extends the life of the road surface and retains de-icing chemicals on the surface, thus providing road crews time to deploy during inclement weather. The center also developed a way to include the environmental impact of road materials in the decision process for road construction.

Center for Technology Development

(Mr. Andy Petersen, Director)

The center specializes in developing, implementing, and maintaining innovative systems for transportation research. The center includes the Mechanical Systems Group, which is responsible for mechanical fabrication to suit the needs of all research projects; the Data Acquisition Group, which is responsible for electronic hardware design; and the Advanced Development Group, which is responsible for software development. The Data Acquisition Group is a pioneer in distributed data acquisition systems. The Advanced Development Group includes specialists in machine vision, road tracking, and data analysis.

Center for Truck and Bus Safety

(Dr. Richard Hanowski, Director)

The center focuses on the research, development, and evaluation of heavy-vehicle systems. It is dedicated to the design, delivery, and implementation of leading-edge research and development efforts aimed at improving the health and safety of heavy-vehicle drivers. The center comprises the Behavioral Analysis and Applications Group, the Human Factors and Advanced System Testing Group, and the Safety and Human Factors Group. Center research includes refining and testing rear-lighting configurations to reduce the number and severity of rear-end crashes, determining safe hours of service for commercial motor vehicle drivers, evaluating causes of drowsiness and providing countermeasures, and developing education programs to keep drivers healthy and alert. Center researchers are conducting the largest field test of an onboard monitoring system designed to record truck and bus driver behavior with the aim of improving driver safety performance.

INSTITUTE ORGANIZATION



Center for Vulnerable Road User Safety

(Dr. Jon Antin, Director)

The center conducts research and outreach designed to enhance safety for all vulnerable road users, including senior and teen drivers, bicyclists and other vehicle riders, and pedestrians. Vulnerable road users comprise all age groups and a variety of demographics. Their one shared trait is an increased risk of suffering a traffic-related crash or injury. The center includes the Teen Risk and Injury Prevention group and the Senior Mobility Awareness, Safety, and Health group. Research includes a naturalistic driving study of novice teen drivers with the aim of providing real-time feedback, gathering information for driver training, and keeping teens' parents informed. The center has undertaken outreach initiatives designed to provide recommendations for coordinating public and private services for the aged, disabled, and indigent populations. The center is performing a proof-of-concept naturalistic driving study in Australia and is advancing the state of knowledge about issues specific to older drivers, including visual acuity and brain fitness training.

Connected Vehicle/Infrastructure University Transportation Center

(Dr. Thomas A. Dingus, Director)

Virginia Tech/VTTI, the University of Virginia, Morgan State University, and the Virginia Center for Transportation Innovation and Research teamed to develop a Tier 1 University Transportation Center headquartered at VTTI. Robust vehicle-to-vehicle, vehicle-to-infrastructure, and vehicle-to-device communication will enable applications addressing the U.S. Department of Transportation strategic goals of safety, state of good repair, economic competitiveness, livable communities, and environmental sustainability. The center conducts connected-vehicle research using two instrumented test beds. The Southwest Virginia test bed resources include the Smart Road for closed-circuit testing. The Northern Virginia Connected-vehicle Test Bed is located along Interstates 66 and 495 and state routes 29 and 50. All test beds are equipped with wireless roadside communication technology. The center has 18 active research projects that include in-vehicle notifications of a stopped school bus ahead, especially when the bus is stopped over a hill or around a blind curve, and communication devices installed in safety vests worn by road workers to alert workers and vehicle operators when an on-foot worker is in danger of being struck.



National Surface Transportation Safety Center for Excellence (Dr. Jon Hankey, Director)

The center was established by the Federal Public Transportation Act of 2005 to develop and disseminate advanced transportation safety techniques and innovations in rural and urban communities. Research focus areas are safety devices and techniques that enhance driver performance, evaluations of the built roadway environment and infrastructure-based safety systems, safe mobility for vulnerable road users, and solutions to driver impairment. The center is supporting research projects that include an analysis of the effectiveness of visibility aides for bicycles and pedestrians, automated detection of driver drowsiness and driver attention away from the forward roadway, and improving the health of commercial motor vehicle drivers. The center includes a stakeholders' committee that shares a vision for improving road-user safety locally and nationally. The committee comprises the Federal Highway Administration, General Motors Corporation, the Virginia Department of Transportation, the Virginia Center for Transportation Innovation and Research, the Federal Motor Carrier Safety Administration, and Travelers.

Global Center for Automotive Performance Simulation (Mr. Frank Della Pia, Director)

The center was created by VTTI in partnership with the Institute for Advanced Learning and Research, General Motors, Virginia Tech, and the Virginia Tobacco Indemnification and Community Revitalization Commission. The center encompasses the National Tire Research Center, which provides the transportation industry the research and testing capabilities needed to engineer and develop tires that will provide greater fuel economy and lower emissions while meeting federal vehicle requirements and customer expectations. This level and breadth of research, development, and testing in one location does not currently exist anywhere else for automotive and tire manufacturers. A custom-built, force-and-moment tire test machine provides data about torque and braking capabilities, including tire performance on wet road conditions. Lab results can be further tested on the adjacent Virginia International Raceway, a closed-course circuit. General Motors and its suppliers committed to conducting tire testing at the center for two years from commencement of operation. Allocable machine time beyond these needs is available for third-party or Virginia Tech projects. The center also includes the Southern Virginia Vehicle Motion Labs, which features an 8-post Test Rig, Wheel Force Transducers, and a Cruden's Simulator. This equipment encompasses the tools needed to address virtual components prior to conducting ride and handling tests on the Virginia International Raceway world-class circuit and designated local roads. A third tier of the center is the Virtual Design and Integration Laboratory, which emphasizes the commitment of GCAPS to expand efforts towards a world-class facility with the addition of a state-of-the-art simulation environment for tire model parameterization, vehicle model creation, and tire and vehicle simulations.

INSTITUTE ORGANIZATION



GROUPS AND INITIATIVES

I-81 Corridor Coalition

(Mr. Kevin Cole, Interim Director)

The coalition includes state, local, nonprofit, and private organizations committed to making Interstate 81 a safe, efficient, environmentally sensitive, economically viable, and intermodal transportation corridor. Research interests include freight movement, truck safety, intermodal relationships, environmental planning, and corridor-wide information and coordination efforts.

International Center for Naturalistic Driving Data Analysis at Virginia Tech

(Mr. Clark Gaylord, Chief Information Officer)

The International Center for Naturalistic Driving Data Analysis incorporates Virginia Tech's petabyte-scale, high performance data storage system into the VTTI data infrastructure. This allows data from multiple naturalistic driving studies to be analyzed using high performance computational systems to perform more complex computational algorithms and data mining.

The 48-node compute cluster of the Institute moves data between the field and the data center, decrypts data, prepares data files for ingestion to a 500-terabyte scientific data warehouse, processes video files, and provides a platform for advanced analytical

processing. A peta-scale archive file system will ultimately facilitate the long-term storage of numerous petabytes of data while maintaining data in an online state.

VTTI data center features include a computational cluster, the application of the Virginia Tech High Performance Computing Storage System, and a significant upgrade to the storage system supporting the scientific data warehouse environment at VTTI. These systems compose the foundation for data-intensive scientific research programs conducted at VTTI, particularly the Second Strategic Highway Research Program Naturalistic Driving Study.

Motorcycle Research Group

(Dr. Shane McLaughlin, Group Leader)

The group was born from a history in transportation research; concern about increasing numbers of motorcyclist fatalities and injuries; and the excitement of a large number of VTTI engineers, staff, researchers, and family who are riders. The group focuses on riders and their machines while considering other factors in the surrounding transportation system. Group researchers recently completed the first large-scale naturalistic driving study of motorcycles, the aim of which was to explore motorcycle crash causation and to develop crash countermeasures. A complementary study is being conducted with 160 motorcycle riders in California.

SPONSORS, CLIENTS, AND PARTNERS

THE INSTITUTE'S CONTINUED SUCCESS IS DUE, IN LARGE PART, TO ITS SPONSORS, CLIENTS, AND PARTNERS. VTTI WOULD LIKE TO ACKNOWLEDGE THE CONTRIBUTIONS AND SUPPORT OF THE FOLLOWING ORGANIZATIONS:

3M
AAA FOUNDATION FOR TRAFFIC SAFETY
AAA MID-ATLANTIC
ACF
AMERICAN ASSOCIATION OF MOTOR VEHICLE ADMINISTRATORS
AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS
AMERICAN TRANSPORTATION RESEARCH INSTITUTE
AMOCO
ARLINGTON COUNTY, VA
ATLANTIC CONSTRUCTION FABRIC
ATRI
ATTENTION TECHNOLOGIES, INC.
AUBURN UNIVERSITY
AUTOMOTIVE EVENTS
BATTELLE
BEAM BROTHERS
BEDFORD COUNTY, VA
BEKAERT
BISHOP CONSULTING
BMW
BOOZ ALLEN HAMILTON
BOSCH
CALIFORNIA DEPARTMENT OF TRANSPORTATION (DOT)
CALSPAN
CAMBRIDGE SYSTEMATICS
CANADIAN COUNCIL OF MOTOR TRANSPORT ADMINISTRATORS
CARNEGIE MELLON ROBOTICS INSTITUTE
CARNEGIE MELLON UNIVERSITY
CARPI USA
CENTER FOR INNOVATIVE TECHNOLOGY
CHRYSLER
CISCO SYSTEMS
CLEAN AIR TECH INTERNATIONAL
CLEAR ROADS
COHDA WIRELESS
CONTINENTAL AUTOMOTIVE SYSTEMS, INC.
CORNING CABLE SYSTEMS
CRACK SEALANT CONSORTIUM
CRASH AVOIDANCE METRICS PARTNERSHIP (CAMP)
DELAWARE DEPARTMENT OF MOTOR VEHICLES
DELAWARE TECHNICAL AND COMMUNITY COLLEGE
DENSO
DGE INC.
DLA PIPER
DONOVAN HATEM
DRAPER LABORATORY
DUKE UNIVERSITY
DUNLAP AND ASSOCIATES, INC.
DYNAMIC RESEARCH, INC.
EATON
ENERCON SERVICES, INC.
ERGONOMIC ANALYSIS, INC.
ESCRYPT
FAIRFAX COUNTY TRANSIT
FAIRFAX COUNTY, VA
FEDERAL HIGHWAY ADMINISTRATION
FEDERAL MOTOR CARRIER SAFETY ADMINISTRATION
FEV
FLUOR, VA
FORD MOTOR COMPANY
FOUNDATION FOR OUTDOOR ADVERTISING RESEARCH AND EDUCATION
GENERAL MOTORS
GENERAL MOTORS ONSTAR DIVISION
GEORGE MASON UNIVERSITY
GEORGIA DOT
GOOGLE
GUARD RAIL OF ROANOKE, INC.
HOWARD/STEIN-HUDSON ASSOCIATES, INC.
HUBBELL LIGHTING, INC.
HUMAN FACTORS NORTH
HYUNDAI MOTOR COMPANY
ICTAS
IDEA PROGRAMS
INSTITUTE FOR TRANSPORTATION RESEARCH AND EDUCATION AT NORTH CAROLINA STATE UNIVERSITY
INTERACTIVE DESIGN AND DEVELOPMENT
JACOBS, EDWARDS, AND KELCEY, INC.
JOHNS HOPKINS UNIVERSITY
KAPSCH TRAFFICOM
KIMLEY-HORN AND ASSOCIATES
LAST RESOURCE
LISBOA, INC.
LITTON NETWORK ACCESS SYSTEMS
LORD CORPORATION
MACCAFERRI
MAINEWAY SERVICES
MCI FEDERAL
MERCEDES-BENZ
MERITOR WABCO
MICHELIN
MINNESOTA DOT
JAMES A. MISENER (CONSULTANT)
MISSISSIPPI DOT
MODCOMP
MONTANA STATE UNIVERSITY - WESTERN TRANSPORTATION INSTITUTE
MONTEREY TECHNOLOGIES, INC.
MOTOR COACH INDUSTRIES
MOTORCYCLE SAFETY FOUNDATION
NATIONAL ACADEMY OF SCIENCES
NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
NATIONAL INSTITUTES OF HEALTH
NATIONAL PARKS
NATIONAL PRIVATE TRUCK COUNCIL
NATIONAL SCIENCE FOUNDATION
NATIONAL TRANSIT INSTITUTE
NATIONAL TRANSPORTATION RESEARCH CENTER, INC.
NAVTEQ
NEW RIVER VALLEY PLANNING DISTRICT COMMISSION
NISSAN
NISSAN RESEARCH CENTER, SILICON VALLEY
NORFOLK SOUTHERN RAILROAD
NORTH AMERICAN FATIGUE MANAGEMENT PROGRAM
NORTH CAROLINA STATE UNIVERSITY

OILCOM
OMNI WEIGHT CORPORATION
OSRAM SYLVANIA
OUTDOOR ADVERTISING ASSOCIATION OF AMERICA
PACCAR, INC.
PACIFIC-SIERRA RESEARCH
PARSONS BRINCKERHOFF
PB FARRADYNE, INC.
PB WORLD
PELTON TECHNOLOGY
PENN STATE UNIVERSITY
PENNSYLVANIA DOT
PERFORMANCE FUELS SYSTEM
PHILIPS LIGHTING
PITT OHIO
PROFESSIONAL TRUCK DRIVING INSTITUTE
PSMJ RESOURCES, INC.
QUALCOMM
REALTIME TECHNOLOGIES, INC.
REI SAFETY SERVICES, INC.
RESEARCH AND SPECIAL PROGRAMS ADMINISTRATION
RGS ASSOCIATES, INC.
RICARDO, INC.
ROHO INC.
ROWAN UNIVERSITY
RUTGERS UNIVERSITY
SAE INTERNATIONAL
SAVARI
SCHNEIDER
SCIENCE APPLICATIONS INTERNATIONAL CORPORATION
SCIENCE MUSEUM OF WESTERN VIRGINIA
SCIENTEX
SECURITY INNOVATION COMPANY
SHENANDOAH TELEPHONE
SHENTEL SERVICE COMPANY
SIECOR/CORNING
SIEMENS
SNOW ECONOMICS
SOFTWARE TECHNOLOGY, INC.
SOUTH CAROLINA DOT
SOUTHWEST RESEARCH INSTITUTE
SYSTEMS TECHNOLOGY, INC.
TEXAS DOT
TEXAS TRANSPORTATION INSTITUTE
TNO DEFENSE, SECURITY AND SAFETY
TOM TOM
TORC ROBOTICS
TOYOTA
TRANSANALYTICS
TRANSECURITY
TRANSPORTATION RESEARCH BOARD
TRAVELERS
TUV RHEINLAND MOBILITY, INC.
UNITED DEFENSE, L.P.
UNIVERSITY OF ALABAMA AT BIRMINGHAM
UNIVERSITY OF CALGARY
UNIVERSITY OF CENTRAL FLORIDA
UNIVERSITY OF IOWA
UNIVERSITY OF MARYLAND
UNIVERSITY OF MASSACHUSETTS/AMHERST

UNIVERSITY OF MICHIGAN TRANSPORTATION RESEARCH INSTITUTE
UNIVERSITY OF MINNESOTA
UNIVERSITY OF NEW SOUTH WALES
UNIVERSITY OF NORTH CAROLINA-CHAPEL HILL
UNIVERSITY OF PENNSYLVANIA
UNIVERSITY OF SOUTH DAKOTA
U.S. AIR FORCE
U.S. DEPARTMENT OF AGRICULTURE CHOOSEMYPLATE.GOV PROGRAM
VALEO COMFORT AND DRIVING ASSISTANCE SYSTEMS NORTH AMERICA
VEHICLE SAFETY COMMUNICATIONS 3 (VSC3)
VERIDIAN
VIRGINIA CENTER FOR TRANSPORTATION INNOVATION AND RESEARCH/-
VIRGINIA DOT OPERATIONS AND SECURITY DIVISION
VIRGINIA DEPARTMENT OF CONSERVATION AND RECREATION
VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY
VIRGINIA DEPARTMENT OF MOTOR VEHICLES
VIRGINIA DEPARTMENT OF RAIL AND PUBLIC TRANSPORTATION
VIRGINIA DOT
VIRGINIA RAIL POLICY INSTITUTE
VIRGINIA TECH PARKING AUXILIARY
VIRGINIA TOURISM COMMISSION
VISTEON CORPORATION
VOLVO
VOLVO TRUCKS NORTH AMERICA
WEIGH-IN-MOTION
WESTAT
WESTERN RESEARCH INSTITUTE
WINDWALKER CORPORATION
WISCONSIN DOT

OUTREACH SUMMARY

- » Morgan State Outreach Event, July 17, 2013, Blacksburg, Va.: This event included presentations, demonstrations, and tours of VTTI's Blacksburg facilities and the Virginia Tech campus. Attendees included 30 students in grades K-12 who participated in Virginia Tech's orientation and an education-based scavenger hunt coordinated by VTTI.
- » Safety Day at the Virginia Museum of Transportation, August 17, 2013, Roanoke, Va.: This event included a live demonstration of one of VTTI's connected vehicles and an informational booth at the Virginia Museum of Transportation. VTTI was among several exhibitors highlighting transportation safety.
- » Google, Goodlatte, and Griffith visit, September 3, 2013, Blacksburg, Va.: This press event focused on spreading awareness of automated-vehicle research being conducted at VTTI and in the Blacksburg area. Congressmen Morgan Griffith and Bob Goodlatte received a live demonstration on the Smart Road of the Google car and its "hands-free" technology and spoke to the press about their experiences immediately after the ride.
- » Virginia Tech Family Weekend, September 27, 2013, Blacksburg, Va.: During this event, families and prospective students visiting Virginia Tech were offered tours of the Smart Road.
- » Virginia Department of Transportation (VDOT) Career Fair, October 3, 2013, Washington, D.C., area: This event included a live demonstration of one of VTTI's connected vehicles and an informational booth at VDOT'S Career Fair in Prince Edward County, Va. VTTI was among several exhibitors highlighting job opportunities in transportation to students in grades K-12.
- » VTTI's 25th Anniversary Celebration, November 15, 2013, Blacksburg, Va.: To celebrate 25 years of advancing transportation through innovation, VTTI opened its doors to the public for live demonstrations of connected- and automated-vehicle technologies; tours of the Smart Road, including its active weather towers; the Simulation Bay; a "newseum" room; and the Smart Road Control Room. The event was capped by keynote speeches from John Capp (General Motors), Virginia Tech President Charles W. Steger, and Deborah Hersman (former chairman of the National Transportation Safety Board). The event and commemorative publication have since won three awards: 2014 Public Relations Society of America Award of Merit for Brief Events, Hermes Creative Award for Special Events and Hermes Creative Award for Corporate Social Responsibility.
- » Institute for Industrial Engineers Conference (IIE), February 23, 2014, Blacksburg, Va.: For this event, 200 IIE conference members received tours of VTTI's Blacksburg facilities, including the Smart Road Control Room, the Simulation Bay, and "newseum."
- » Kids Tech University, March 22, 2014, Blacksburg, Va.: This event included a live demonstration of one of VTTI's connected vehicles and an informational booth at Cassell Coliseum on the campus of Virginia Tech. VTTI was among several exhibitors highlighting science and technology.
- » School Day, April 10, 2014, Blacksburg, Va.: More than 400 students, grades K-12, toured VTTI's Blacksburg campus facilities, including the Smart Road Control Room, the Simulation Bay, and the Smart Road. The latter included a demonstration of the road's active weather towers that are capable of producing rain, snow, and fog. VTTI researchers also discussed future safety technologies for which they are leading testing and development efforts.
- » Open House, April 10, 2014, Blacksburg, Va.: Members of the general public were invited to tour VTTI's Blacksburg facilities, including the Simulation Bay and the Smart Road. The latter included a demonstration of the road's active weather towers that are capable of producing rain, snow, and fog. VTTI researchers also discussed future safety technologies for which they are leading testing and development efforts. Several external organizations donated prizes and participated in the event, including Audiotronics, Across-the-Way Productions,

Youth of Virginia Speak Out (YOVASO), Carilion Trauma Clinic, and the Blue Ridge Regional Crash Team.

- » Connected-vehicle Derby, May 1, 2014, Blacksburg, Va.: Representing a collaboration between Virginia Tech's Institute for Creativity, Arts, and Technology (ICAT) and VTTI, this event was geared towards students in grades 6-12 and included demonstrations of one of VTTI's connected vehicles and an informational table. Participants also saw the unveiling of a distracted driving app created by ICAT.
- » Rally for Road Safety, May 17, 2014, Salem, Va.: This event included a live demonstration of one of VTTI's connected vehicles and an informational booth in the Tanglewood Mall parking lot. VTTI was among several exhibitors highlighting road safety.

OVERVIEWS/TOURS:

THE FOLLOWING COMMUNITY GROUPS, BUSINESSES, POLICYMAKERS, AND ACADEMIC GROUPS RECEIVED GIVEAWAY DONATIONS, TOURED THE SMART ROAD, AND/OR RECEIVED PRESENTATIONS ABOUT VTTI'S RESEARCH AND DISCOVERIES:

AMERICAN SOCIETY OF HIGHWAY ENGINEERS
BLACKSBURG TRANSIT EMPLOYEES
DRIVE SMART VIRGINIA
HOMESTEAD STEM STUDENTS
YOUTHS OF VIRGINIA SPEAK OUT (YOVASO)
STATE FARM INSURANCE
ROTARY CLUB
LEAD VIRGINIA
VIRGINIA DRIVER EDUCATION AND TRAFFIC SAFETY (VADETS)
TRAVELERS INSURANCE
LEADERSHIP NEW RIVER VALLEY
VIRGINIA TECH'S RESEARCH EXPERIENCES FOR UNDERGRADUATES (REUS) AND SCIENEERING PROGRAMS
SPOUSES OF THE VIRGINIA TECH BOARD OF VISITORS
ALEXANDRIA UNIVERSITY (EGYPT) ACADEMICS
ENTERPRISE RENT-A-CAR
VIRGINIA DEPARTMENT OF TRANSPORTATION
VIRGINIA DELEGATE AND CONGRESSMEN
VOLVO
FORD
BLUE RIDGE TRANSPORTATION SAFETY BOARD
SPECIAL OLYMPICS
PRINCETON SENIOR HIGH SCHOOL
TOUCH A TRUCK: CHRISTIANSBURG
VIRGINIA TECH STAFF APPRECIATION DAY
NORTH CAROLINA HIGH POINT POLICE DEPARTMENT

MEDIA HITS

THE FOLLOWING IS A LIST OF MEDIA OUTLETS AND PUBLICATIONS THAT FEATURED OR MENTIONED VTTI DURING FY14

4 TRADERS
ABC 13 NEWS (4)
ABC 7
ACKERMAN TOYOTA
ADAM GOLDFEIN
AGRI-VIEW
AILEENQ.ORG
AL.COM
AMERICAN MOTORCYCLIST ASSOCIATION.COM
AMERIQUEST BLOG
APP.COM
ASSOCIATED PRESS
AUTOMOBILEMAG.COM
AUTOMOTIVE WORLD
BBC
BETTER ROADS
BEVERLY REVIEW
BOB GOODLATTE WEBPAGE
BOSTON.COM
BUSINESS STANDARD
BUSINESS WIRE
BUSINESSSOLUTIONS
CAPE BRETON POST
CAPE GAZETTE
CAPITAL BAY
CATHOLIC HERALD
CBC NEWS(2)
CHICAGO CAR ACCIDENT LAWYER BLOG
CHICAGO TRIBUNE
CIVIL ENGINEERING PATENT LAW
CLAIMS JOURNAL (3)
CLOVIS NEWS JOURNAL
CNBC
CNN (2)
COLLEGIATE TIMES (3)
COMMERCIAL CARRIER JOURNAL
COMMERICAL NEWS
COMP7777.COM
CONSUMER ELECTRONICS
CT POST
CYCLE WORLD
DAILY FUSION (2)
DAILY MAIL ONLINE
DAILY PLANET
DAILYNEWSEN.COM
DALLAS NEWS
DEALER NEWS.COM
DELAWARE ONLINE
DENVER POST
DESMOINESREGISTER.COM
DIE WELT
DIGITAL JOURNAL (5)
DRIVERLESS TRANSPORTATION BLOG (2)
EDMONSUN.COM
ENG.VT.EDU
ERIE MUTUAL INSURANCE WEBSITE
EUREKA ALERT
EXAMINER
EXPOSINGTHETRUTH.TODAY
FEDERAL NEWS SERVICE
FLEET OWNER (4)
FLORIDA TRUCKING ACCIDENT LAWYER BLOG
FMTLAW.CA
FORBES (2)
FORT MILL TIMES
FOX & FRIENDS
FOX 43
FOX NEWS
FREAKONOMICS.COM
FREE MALAYSIA TODAY
GATELINE.COM
GIRLGIRL.ESY.ES
GIZMAG.COM
GNOMES NATIONAL NEWS
GO UPSTATE
GODANRIVER.COM
GOVERNMENT TECHNOLOGY
GPSWORLD.COM
GRAY AND WHITE LAW
GREEN CAR CONGRESS
GREENVILLEONLINE.COM
GUARDIAN.COM
HEALIO (2)
HEALTH DAY
HERALD TRIBUNE
HR.BLR.COM
HTC BUSINESS
HUFFINGTON POST (4)
IEEE INTELLIGENT VEHICLES SYMPOSIUM (3)
INNOVATION AND TECHNOLOGY
INNOVATIONS REPORT
INSURANCE JOURNAL
INTHECAPITAL (2)
INVERSTORPLACE
ITS WORLD CONGRESS
ITS AMERICA
ITSS
JAMAICA OBSERVER
JAY'S MOVING BLOG
KTSAM
KUSHNER.COM
LA PRESSE
LA TIMES
LAND LINE
LAPLATAFIREDEPARTMENT.COM
LEGAL EXAMINER
LEVIN TIRE & RESEARCH CENTER
LISA JOHNSON FOUNDATION
LIVEINSURANCENEWS.COM
MAIL ONLINE
MARION CO. NEWSPAPERS, INC. (2)
MARKET WATCH (2)
MEDICAL DAILY
MEDICALRESEARCH.COM
MICHIGAN AUTO LAW
MILWAUKEE COURIER
MIT TECHNOLOGY REVIEW
MLIVE
MOBILE ENTERPRIZE
MOBILE MARKETER
MOMMY CONNECTIONS
MONTHLY PRESCRIBING REFERENCE
MOTOR-EXCLUSIVE.DE
MOTORSPORT
MOUNTIAN NEWS
MOVING INSIDER
MY DIGITAL FC
MY SAN ANTONIO (2)
MY SASK
NBC 12
NBC 2
NBC SPORTS
NEW ENGLAND JOURNAL OF MEDICINE
NEWS AND ADVANCE (2)
NEWS CHANNEL 5
NEWS4JAX
NEWSFACTO
NEWSOK.COM (OKLAHOMAN) - ONLINE
NEWSPLEX
NEWSTALK650
NEWSWISE
NY TIMES
OODA
ORDOH NEWS
OREGON LIVE
PEKIN TIMES
PETOSKY NEWS
PH MOTORCYCLES
PHYS.ORG (3)
PILOTONLINE
POST-GAZETTE.COM
POSTY AND COURIER
POUGHKEEPSIE JOURNAL
PR WEB
PR-BG.COM
PRATTTRIBUNE.COM
PROPERT CASUALTY
PRWEB.COM
RACE CAR ENGINEERING
RAFU.COM
RAPID CITY JOURNAL
REAL CLEAR POLITICS (3)
REALRADIO804

RED ORBIT
REFORMER
REUTERS
ROANOKE STAR (6)
ROANOKE TIMES (14)
RSS PUMP
SAN FRANCISCO CHRONICLE
SAN JOSE MERCURY NEWS
SAVANNAH CAR ACCIDENT ATTORNEYS
SCIENCE CODEX
SCIENTIFIC AMERICAN
SCITECH TODAY
SEACOAST ONLINE
SENTINAL STANDARD
SIDOMI NEWS
SIERRA SUN TIMES
SMITHSONIAN EAGLE
SOUTHWEST TIMES
ST GEORGE UTAH
STAFFORD CO. SUN
STAR TRIBUNE
SW TIMES
TARGETED NEWS SERVICE
TAYLOR & FRANCIS ONLINE
TECHNOLOGY TELL
TELEMATIC UPDATE (2)
TEXAS PUBLIC RADIO
THE BOSTON GLOBE
THE COLUMBUS DISPATCH
THE COURANT (2)
THE DAILY HELMSMAN
THE DENVER POST
THE DIGITAL JOURNAL
THE EPOCH TIMES (2)
THE GAZETTE
THE GLOBE AND MAIL (3)
THE HERALD
THE JOURNAL (2)
THE LEGAL EXAMINER (2)
THE MORNING SUN
THE NEWS REVIEW (2)
THE OMINUS BUS
THE PUEBLO CHIEFTAIN
THE REPUBLIC
THE REPUBLICAN
THE SPECTRUM
THE STAR PHOENIX
THE STATE JOURNAL REGISTER
THE TIMES
THE TIMES HERALD (2)
THE WALL STREET JOURNAL (4)
THE WASHINGTON POST (4)
TIMES DISPATCH (3)
TIMES OF INDIA

TINKER AIR FORCE BASE
TINKER TAKE OFF
TODAY'S TRUCKING
TOP NEWS
TOP TECH NEWS
TOTAL TELECOM MAGAZINE
TRAFFIC 21
TRAFFIC TECHNOLOGY TODAY(2)
TRANLIVE
TRANSPORTATION COMMUNICATIONS NEWSLETTER
TRANSPORTATION RESEARCH NEWS
TRAVEL AND LEISURE
TRB
TRIBLIVE
TRICITIES.COM
TRUCKINGINFO (7)
TRUTH DIVE
TULSA WORLD
TWO RIVERS TRIBUNE
UNION LEADER (2)
USA TODAY (4)
UX MAGAAZINE
VAENG (2)
VIRGINIA BUSINESS
WALL ST. CHEAT SHEET
WARWICK BEACON
WAVE 3 NEWS
WBTV
WCSC - LIVE 5
WDBJ 7 (2)
WECT 6
WFIR
WHBY
WHSV.COM
WLTX
WN.COM
WNEW-FM
WOMENRIDERSNOW.COM
WORK IT SOVA
WSET-TV GOOD MORNING VIRGINIA
WSLS (5)
WVTF.ORG
YAHOO NEWS (4)
YOUNG DRIVERS BLOG
YOUR HOUSTON NEWS
YUMA SUN (2)

PRESENTATIONS, HONORS, MEDIA, AND AWARDS



FOR MULTI-AUTHOR PRESENTATIONS, THE PRESENTER IS UNDERLINED.

KYOUNGHO AHN

AHN, K. & RAKHA, H. (2014, JANUARY). ECO-LANES APPLICATIONS: PRELIMINARY TESTING AND EVALUATION. PAPER PRESENTED AT THE 93RD TRANSPORTATION RESEARCH BOARD ANNUAL MEETING, WASHINGTON, DC, JANUARY 12-16. (PAPER 14-3784).

JON ANTIN

ANTIN, J. F. (2013). SHRP 2 TECHNICAL COORDINATION & QUALITY CONTROL (S06) UPDATE PRESENTATION AND PROGRAM UPDATE PANEL DISCUSSION PARTICIPANT. 8TH ANNUAL SHRP 2 SUMMER SAFETY SYMPOSIUM, WASHINGTON, DC.

ANTIN, J. F. (2013, SEPTEMBER). SENIOR DRIVING FITNESS-TO-DRIVE MODELING USING NATURALISTIC DRIVING DATA. PRESENTATION GIVEN AT THEY EYE, THE BRAIN, AND THE AUTO CONFERENCE, DETROIT, MI.

ANTIN, J. F. (2014, JANUARY). CONNECTED VEHICLE TECHNOLOGIES ACROSS THE GENERATIONS. PRESENTATION AT HUMAN FACTORS SENIOR MOBILITY WORKSHOP, TRANSPORTATION RESEARCH BOARD ANNUAL MEETING, WASHINGTON, DC.

JOHNATHAN BARRY

VTTI'S STAFF, ADMIN, FACULTY, AND ALL EMPLOYEES TEAM RECOGNITION AND INCENTIVE PROGRAM (SAFE TRIP) (IT SUPPORT TEAM; SUMMER 2013)

RAJARAM BHAGAVATHULA

BHAGAVATHULA, R. & GIBBONS, R. B. (2013, SEPTEMBER). ROLE OF EXPECTANCY, MOTION AND OVERHEAD LIGHTING ON NIGHTTIME VISIBILITY. PAPER PRESENTED AT HUMAN FACTORS AND ERGONOMICS SOCIETY ANNUAL MEETING.

ALEX BIER

VTTI'S STAFF, ADMIN, FACULTY, AND ALL EMPLOYEES TEAM RECOGNITION AND INCENTIVE PROGRAM (SAFE TRIP) (TECHNICIAN/INSTALLERS IN HEL/CTD: FALL/WINTER 2013)

MYRA BLANCO

BLANCO, M. (2013, AUGUST). AUTOMATED DRIVING: NAVIGATING THE ROAD AHEAD. PANELIST, AUVSI'S UNMANNED SYSTEMS CONFERENCE, WASHINGTON, DC.

BLANCO, M. (2014, JANUARY.) COMMERCIAL VEHICLE OPERATIONS: MOVING AHEAD WITH AUTOMATION. PAPER PRESENTED AT TRANSPORTATION RESEARCH BOARD 93RD ANNUAL MEETING, WASHINGTON, DC.

BLANCO, M. (2014, APRIL). CONOPS AND HUMAN FACTORS: L2/L3 CONCEPTS OF OPERATION OVERVIEW. PAPER PRESENTED AT SAE WORLD CONGRESS, DETROIT, MI.

BLANCO, M. (2014, JUNE). EXPERIMENTAL METHODS, PROCEDURES, SCENARIOS, AND METRICS. PAPER PRESENTED AT ISO WORKSHOP ON AUTOMATION & HMI, LONDON, ENGLAND.

BREAKOUT SESSION LEADER: AUTOMATED COMMERCIAL VEHICLE OPERATIONS. TRANSPORTATION RESEARCH BOARD'S SECOND ANNUAL WORKSHOP ON ROAD VEHICLE AUTOMATION; STANFORD, CA. JULY 2013

ORGANIZER: AUTOMATED COMMERCIAL VEHICLE OPERATIONS SESSION. TRANSPORTATION RESEARCH BOARD'S SECOND ANNUAL WORKSHOP ON ROAD VEHICLE AUTOMATION; STANFORD, CA. JULY 2013

MODERATOR: FIELD OPERATIONAL TEST SESSION AT ITS WORLD CONGRESS; TOKYO, JAPAN. OCTOBER 2013

GREG BROWN

VTTI'S STAFF, ADMIN, FACULTY, AND ALL EMPLOYEES TEAM RECOGNITION AND INCENTIVE PROGRAM (SAFE TRIP) (TECHNICIAN/INSTALLERS IN HEL/CTD: FALL/WINTER 2013)

JAMES BRYCE*

BRYCE, J., KATICHA, S., FLINTSCH, G., SIVANESWARAN, N., & SANTOS, J. (2014, JANUARY). PROBABILISTIC LIFECYCLE ASSESSMENT AS A NETWORK-LEVEL EVALUATION TOOL FOR THE USE AND MAINTENANCE PHASES OF PAVEMENTS. PAPER PRESENTED AT TRANSPORTATION RESEARCH BOARD 93RD ANNUAL MEETING, WASHINGTON, DC.

JARED BRYSON

VTTI'S STAFF, ADMIN, FACULTY, AND ALL EMPLOYEES TEAM RECOGNITION AND INCENTIVE PROGRAM (SAFE TRIP) (TECHNICIAN/INSTALLERS IN HEL/CTD: FALL/WINTER 2013)

MINDY BUCHANAN-KING

2014 PRODUCTION AWARD FOR OFFSET COLOR, ASSOCIATION OF COLLEGE & UNIVERSITY PRINTERS, THE FUTURE IS NOW

2014 GOLD WINNER FOR PUBLICATIONS/CORPORATE SOCIAL RESPONSIBILITY, HERMES CREATIVE AWARDS, VTTI 25

VIRGINIA PUBLIC RELATIONS AWARD, VTTI 25

VTTI'S STAFF, ADMIN, FACULTY, AND ALL EMPLOYEES TEAM RECOGNITION AND INCENTIVE PROGRAM (SAFE TRIP) (PROPOSAL TEAM: FALL/WINTER 2013)

HAO CHEN*

CHEN, H. & RAKHA, H. (2014, JANUARY). AGENT-BASED MODELING APPROACH TO PREDICT EXPERIENCED TRAVEL TIMES. PAPER PRESENTED AT THE 93RD TRANSPORTATION RESEARCH BOARD ANNUAL MEETING, WASHINGTON DC, JANUARY 12-16 (PAPER 14-3851).

CHEN, H. & RAKHA, H. (2014, JANUARY). DATA-DRIVEN PARTICLE FILTER FOR MULTI-STEP LOOK-AHEAD TRAVEL TIME PREDICTION. PAPER PRESENTED AT THE 93RD TRANSPORTATION RESEARCH BOARD ANNUAL MEETING, WASHINGTON, DC, JANUARY 12-16 (PAPER 14-0824).

CHEN, H., RAKHA, H., & MCGHEE, C. (2013, OCTOBER). DYNAMIC TRAVEL TIME PREDICTION USING PATTERN RECOGNITION. PAPER PRESENTED AT THE 20TH ITS WORLD CONGRESS, TOKYO, JAPAN, OCTOBER 14-18 (PAPER: 4108). RECEIVED BEST PAPER AWARD.

CARL COSPEL

VTTI'S STAFF, ADMIN, FACULTY, AND ALL EMPLOYEES TEAM RECOGNITION AND INCENTIVE PROGRAM (SAFE TRIP) (TECHNICIAN/INSTALLERS IN HEL/CTD: FALL/WINTER 2013)

EDGAR DE LEÓN IZEPPÍ

DE LEÓN IZEPPÍ, E. & FLINTSCH, G.W. (2013, SEPTEMBER). PROFILER CERTIFICATION PROCESS AT THE VIRGINIA SMART ROAD. ROAD PROFILER USER GROUP MEETING, SAN ANTONIO, TX.

JOSEPH DEROMA*

DEROMA, J., BAZDAR, A., BOSACK, J. B., & SMITH, R. C. (2014, APRIL). THE EFFECTS OF ALCOHOL ON FACIAL EMOTION RECOGNITION. PAPER PRESENTED TO THE SEMI-ANNUAL MEETING OF THE VIRGINIA PSYCHOLOGICAL ASSOCIATION, NORFOLK, VA.

TOM DINGUS

DINGUS, T. A. (2014). ESTIMATES OF PREVALENCE AND RISK ASSOCIATED WITH INATTENTION AND DISTRACTION BASED UPON IN SITU NATURALISTIC DATA. STATE FARM/AAAM ENGAGED DRIVING SYMPOSIUM, WASHINGTON, D.C.

FITCH, G. M., GUO, F., YANG, Y., SOCCOLICH, S., PEREZ, M., HANOWSKI, J., HANKEY, J., DINGUS, T. (2013, SEPTEMBER). THE IMPACT OF HAND-HELD AND HANDS-FREE CELL PHONE USE ON DRIVING PERFORMANCE AND SAFETY-CRITICAL EVENT RISK. PRESENTATION GIVEN AT THE 3RD INTERNATIONAL CONFERENCE ON DRIVER DISTRACTION AND INATTENTION, GOTHENBURG, SWEDEN.

INVITED PANELIST, "DISTRACTED DRIVING: PANEL DISCUSSION," REALCLEARPOLITICS, 2013

INVITED TO THE GOVERNOR'S MANSION FOR A RECEPTION CELEBRATING INNOVATE VIRGINIA AS AN OUTSTANDING INNOVATOR, 2013

INVITED BLOGGER FOR HUFFINGTON POST, DON'T LOOK AWAY FROM THE ROADWAY, NOVEMBER 12, 2013

ELECTED TO THE INTELLIGENT TRANSPORTATION SOCIETY OF AMERICA BOARD OF DIRECTORS, 2013

CONNECTED VEHICLES: OUR FUTURE IS HAPPENING NOW, ITS AMERICA, MAY 22, 2014

ZAC DOERZAPH

HOLMES, L. M., HARWOOD, L. C., KLAUER, S. G., & DOERZAPH, Z. R. (2014, JANUARY). CONNECTED VEHICLE SYSTEMS: EVALUATION OF DISPLAY LOCATION AND APPLICATION TYPE ON DRIVING PERFORMANCE. POSTER PRESENTED AT THE TRANSPORTATION RESEARCH BOARD 93RD ANNUAL MEETING, WASHINGTON, DC.

SARKAR, A., ABBOTT, L., & DOERZAPH, Z. (2014, APRIL). ASSESSMENT OF PSYCHOPHYSIOLOGICAL CHARACTERISTICS OF DRIVERS USING HEART RATE FROM NATURALISTIC FACE VIDEO DATA. PAPER PRESENTED AT MID-ATLANTIC COMPUTER VISION (MACV) WORKSHOP, BLACKSBURG, VA.

CRISTIAN DRUTA

DRUTA, C., WANG, L., & LANE, D. S. (2014, JANUARY). ACCELERATED POLISHING OF ASPHALT MIXTURES CONTAINING CARBONATE AGGREGATES. PAPER PRESENTED AT THE 93RD ANNUAL MEETING OF THE TRANSPORTATION RESEARCH BOARD, AFP 70 MINERAL AGGREGATES COMMITTEE, WASHINGTON, DC.

STEFAN DUMA

ALPHONSE, V. D., KEMPER, A. R., & DUMA, S. M. (2014). BLAST SIMULATOR CONSIDERATIONS FOR BIOLOGICAL SPECIMENS. PAPER PRESENTED AT 40TH ANNUAL NORTHEAST BIOENGINEERING CONFERENCE, BOSTON, MA.

WILLIAM EDWARDES*

EDWARDES, W., & RAKHA, H. (2014, JANUARY). VIRGINIA TECH COMPREHENSIVE POWER-BASED FUEL CONSUMPTION MODEL: MODELING DIESEL AND HYBRID BUSES. PAPER PRESENTED AT THE 93RD TRANSPORTATION RESEARCH BOARD ANNUAL MEETING, WASHINGTON, DC (PAPER 14-3863).

LISA EICHELBERGER

VTTI'S STAFF, ADMIN, FACULTY, AND ALL EMPLOYEES TEAM RECOGNITION AND INCENTIVE PROGRAM (SAFE TRIP) (SPRING, 2014)

MOHAMMED MAMDOUH ELHENAWY*

ELHENAWY, M., & RAKHA, H. (2014, JANUARY). CONGESTION PREDICTION USING ADAPTIVE BOOSTING MACHINE LEARNING CLASSIFIERS. PAPER PRESENTED AT THE 93RD TRANSPORTATION RESEARCH BOARD ANNUAL MEETING, WASHINGTON, DC (PAPER 14-0830).

ELHENAWY, M., RAKHA, H., & EL-SHAWARBY, I. (2014, JANUARY). ENHANCING DRIVER BEHAVIOR MODELING AT SIGNALIZED INTERSECTIONS USING A DRIVER AGGRESSIVENESS MEASURE AND MACHINE LEARNING TECHNIQUES. PAPER PRESENTED AT THE 93RD TRANSPORTATION RESEARCH BOARD ANNUAL MEETING, WASHINGTON, DC (PAPER 14-3879).

CECI ELPI

VTTI 25-YEAR CELEBRATION, GOLD, SPECIAL EVENT CATEGORY OF THE 2014 HERMES CREATIVE AWARDS

VTTI 25-YEAR CELEBRATION, VIRGINIA PUBLIC RELATIONS AWARD, 2014

IHAB EL-SHAWARBY

ELHENAWY M., RAKHA, H., & EL-SHAWARBY, I. (2013, SEPTEMBER). ENHANCING DRIVER BEHAVIOR MODELING AT SIGNALIZED INTERSECTIONS USING A DRIVER AGGRESSIVENESS MEASURE AND MACHINE LEARNING TECHNIQUES. PAPER PRESENTED AT CONFERENCE ON AGENT-BASED MODELING IN TRANSPORTATION PLANNING AND OPERATIONS, BLACKSBURG, VA.**

RAKHA, H., BAIRD, M., & EL-SHAWARBY, I. (2014, JANUARY). DESIGNING TRAFFIC SIGNAL YELLOW AND CHANGE INTERVALS CONSIDERING TRUCK IMPACTS. PAPER PRESENTED AT THE 93RD TRANSPORTATION RESEARCH BOARD ANNUAL MEETING, WASHINGTON, DC (PAPER 14-0285).

KARIM FADHLOUN*

FADHLOUN, K., RAKHA, H., & LOULIZI, A. (2014, JANUARY). COMPREHENSIVE FRAMEWORK FOR ESTIMATING MOVING BOTTLENECK TRAFFIC STREAM PASSING RATES. PAPER PRESENTED AT THE 93RD TRANSPORTATION RESEARCH BOARD ANNUAL MEETING, WASHINGTON, DC (PAPER 14-0284).

GREG FITCH

FITCH, G. M. (2013, AUGUST). DRIVING WITH SAFETY TECHNOLOGIES. PAPER PRESENTED AT TRUCK SAFETY AND EDUCATION SYMPOSIUM, HARTFORD, CT.

FITCH, G. M. (2013, OCTOBER). HUMAN FACTORS IN TRANSPORTATION SAFETY. PAPER PRESENTED AT THE 5TH ANNUAL U.S. DOT-CHINA TRANSPORTATION DISASTER ASSISTANCE FORUM, RUTGERS UNIVERSITY, NEW BRUNSWICK, NJ.

FITCH, G. M. (2014, FEBRUARY). INVESTIGATING DRIVER DISTRACTION USING NATURALISTIC DRIVING DATA. PAPER PRESENTED AT THE AIG TRANSPORTATION ADVISORY BOARD MEETING, CHARLOTTE, NC.

FITCH, G. M. (2014, APRIL). INVESTIGATING DRIVER DISTRACTION AND DROWSINESS USING NATURALISTIC DRIVING DATA. PAPER PRESENTED AT THE SEMINAR ON THE IMPACT OF DISTRACTED DRIVING AND FATIGUE ON ROAD SAFETY, PARIS, FRANCE.

FITCH, G. M., GUO, F., YANG, Y., SOCCOLICH, S., PEREZ, M., HANOWSKI, J., HANKEY, J., DINGUS, T. (2013, SEPTEMBER). THE IMPACT OF HAND-HELD AND HANDS-FREE CELL PHONE USE ON DRIVING PERFORMANCE AND SAFETY-CRITICAL EVENT RISK. PRESENTATION GIVEN AT THE 3RD INTERNATIONAL CONFERENCE ON DRIVER DISTRACTION AND INATTENTION, GOTHENBURG, SWEDEN.

SOCIAL MEDIA COORDINATOR: TRANSPORTATION RESEARCH BOARD'S SECOND ANNUAL WORKSHOP ON ROAD VEHICLE AUTOMATION: STANFORD, CA. JULY 2013

SESSION ORGANIZER: HUMAN FACTORS AND HUMAN-MACHINE INTERACTION. TRANSPORTATION RESEARCH BOARD'S SECOND ANNUAL WORKSHOP ON ROAD VEHICLE AUTOMATION: STANFORD, CA. JULY 2013

GERARDO FLINTSCH

BORIACK, P.C., KATICHA, S.W., & FLINTSCH, G.W. (2014, JANUARY). LABORATORY STUDY ON EFFECT OF HIGH RAP AND HIGH ASPHALT BINDER CONTENT ON STIFFNESS, FATIGUE RESISTANCE, AND RUTTING RESISTANCE OF ASPHALT CONCRETE. PAPER PRESENTED AT THE TRANSPORTATION RESEARCH BOARD 93RD ANNUAL MEETING, WASHINGTON, DC.

D'APUZZO, M., EVANGELISTI, A., DE LEÓN IZEPPI, E.D., & FLINTSCH, G.W. (2013, NOVEMBER). ESTIMATION OF PAVEMENT MACROTEXTURE FROM HOT-MIX ASPHALT PROPERTIES. 17TH INTERNATIONAL ROAD FEDERATION WORLD MEETING & EXHIBITION, RIYADH, KINGDOM OF SAUDI ARABIA.

DEHGHANISANIJ, M., FLINTSCH, G.W., & MCNEIL, S. (2013, NOVEMBER). VULNERABILITY, RESILIENCY, AND RISK ASSESSMENT OF DETERIORATING ROADWAY INFRASTRUCTURE NETWORKS. 17TH INTERNATIONAL ROAD FEDERATION WORLD MEETING & EXHIBITION, RIYADH, KINGDOM OF SAUDI ARABIA.

FLINTSCH, G.W. (2013, DECEMBER). SOME LESSONS LEARNED FROM SURFACE PROPERTIES RESEARCH AT THE VIRGINIA SMART ROAD. 2013 H.W. KUMMER LECTURE, ASTM COMMITTEE E17 ON VEHICLE - PAVEMENT SYSTEMS, JACKSONVILLE, FL.

FLINTSCH, G.W., BRYCE, J., KATICHA, S., & DE LEÓN IZEPPI, E.D. (2013, NOVEMBER). NUEVA GENERACIÓN DE DEFLECTÓGRAFOS DE MEDICIÓN CONTINUA Y SU APLICACIÓN PARA LA GESTIÓN DE PAVIMENTOS A NIVEL DE RED (NEW GENERATION OF CONTINUOUS DEFLECTOMETERS AND THEIR APPLICATION FOR NETWORK-LEVEL PAVEMENT MANAGEMENT). XVII IBERO-LATIN AMERICAN ASPHALT CONGRESS, ANTIGUA, GUATEMALA.

FLINTSCH, G.W., DE LEÓN IZEPI, E.D., & MEDINA-FLINTSCH, A. (2013, NOVEMBER). PROGRAMAS DE GESTIÓN DE LA FRICCIÓN ENTRE EL NEUMÁTICO Y EL PAVIMENTO: UNA HERRAMIENTA CLAVE PARA MEJORAR LA SEGURIDAD VIAL (TIRE-PAVEMENT PAVEMENT FRICTION MANAGEMENT PROGRAMS: A KEY TOOL TO IMPROVE ROAD SAFETY). XVII IBERO-LATIN AMERICAN ASPHALT CONGRESS, ANTIGUA, GUATEMALA.

FLINTSCH, G.W. (2013, OCTOBER). GESTIÓN DE PAVIMENTOS: EVOLUCIÓN Y TENDENCIAS (PAVEMENT MANAGEMENT: EVOLUTION AND TRENDS). INVITED PRESENTATION AT XIX SIMPOSIO COLOMBIANO SOBRE INGENIERÍA DE PAVIMENTOS, BOGOTÁ, COLOMBIA.

FLINTSCH, G.W. (2013, SEPTEMBER). USING PROFILE DATA FOR SUPPORTING ASSET MANAGEMENT DECISIONS. INVITED PRESENTATION AT 1ST EUROPEAN ROAD PROFILER USER GROUP MEETING, COPENHAGEN, DENMARK.

FLINTSCH, G.W., VINER, H., & DUNFORD, A. (2014, MAY). PREDICTING SPLASH AND SPRAY AND ITS IMPACT ON DRIVERS. INTERNATIONAL SAFER ROADS CONFERENCE, CHELTENHAM, UK.

PRIDDY, L.P., PITTMAN, D.W., & FLINTSCH, G.W. (2014, JANUARY). LOAD TRANSFER CHARACTERISTICS OF PRECAST PANEL REPAIRS FOR AIRFIELDS. PAPER PRESENTED AT THE TRANSPORTATION RESEARCH BOARD 93RD ANNUAL MEETING, WASHINGTON, DC.

ORGANIZED THE 3RD ADVANCED INFRASTRUCTURE MANAGEMENT COURSE TO BE HELD IN BLACKSBURG, VA, BY UNIVERSITY OF DELAWARE; VIRGINIA TECH; UNIVERSITY OF TEXAS, AUSTIN; UNIVERSITY OF WATERLOO; AND UNIVERSITY OF IOWA, JUNE 2014.

DELIVERED A SHORT COURSE ON INFRASTRUCTURE MANAGEMENT AT THE CATHOLIC UNIVERSITY OF PARAGUAY, ASUNCION, PARAGUAY, AUGUST 8-13, 2013.

DELIVERED A SHORT COURSE ON PAVEMENT SURFACE PROPERTIES AT THE UNIVERSITY OF COSTA RICA, SAN JOSÉ, COSTA RICA, NOVEMBER 4-6, 2013.

CHAIR: 13TH INFRASTRUCTURE MANAGEMENT RESEARCH AND EDUCATION WORKSHOP, TRANSPORTATION RESEARCH BOARD 93RD ANNUAL MEETING, JANUARY 2014, WASHINGTON, DC.

CHAIR: OPENING SESSION OF THE PIARC (WORLD ROAD ASSOCIATION) INTERNATIONAL SEMINAR ON ROAD INFRASTRUCTURE MANAGEMENT CURRENT PRACTICE AND DEVELOPMENT PROSPECTIVE, MARCH 31 - APRIL 2, 2014, CANCUN, MEXICO.

CLAY GABLER

GABLER, H. C. (2013, NOVEMBER). EVENT DATA RECORDERS IN CRASH INJURY RESEARCH. INVITED PRESENTATION AT UNIVERSITY OF VIRGINIA, CHARLOTTESVILLE, VA.

GABLER, H. C. (2013, NOVEMBER). FEASIBILITY OF USING ADVANCED EDRS FOR ASSESSING ACTIVE SAFETY SYSTEMS. INVITED PRESENTATION AT 2013 SAE ACTIVE SAFETY SYMPOSIUM, DETROIT, MI.

GABLER, H. C. (2014, JANUARY). USE OF EDRS FOR ACTIVE SAFETY RESEARCH. PAPER PRESENTED AT 2014 SAE GOVERNMENT/INDUSTRY CONFERENCE, WASHINGTON, DC.

GABLER, H. C. (2014, MARCH). USE OF EVENT DATA RECORDERS FOR ACTIVE SAFETY RESEARCH. PAPER PRESENTED AT MONASH UNIVERSITY, MELBOURNE, AUSTRALIA.

RUSSELL S. SPRINGER AWARD FOR MOST OUTSTANDING SAE PAPER (FACULTY ADVISOR, 2014)

PASCHA GERNI

VTTI'S STAFF, ADMIN, FACULTY, AND ALL EMPLOYEES TEAM RECOGNITION AND INCENTIVE PROGRAM (SAFE TRIP) (PROPOSAL TEAM: FALL/WINTER 2013)

RON GIBBONS

BHAGAVATHULA, R., & GIBBONS, R. B. (2013, SEPTEMBER). ROLE OF EXPECTANCY, MOTION AND OVERHEAD LIGHTING ON NIGHTTIME VISIBILITY. PAPER PRESENTED AT HUMAN FACTORS AND ERGONOMICS SOCIETY ANNUAL MEETING.

APRIL GRAY

VTTI 25-YEAR CELEBRATION, GOLD, SPECIAL EVENT CATEGORY OF THE 2014 HERMES CREATIVE AWARDS

VTTI 25-YEAR CELEBRATION, VIRGINIA PUBLIC RELATIONS AWARD, 2014

FENG GUO

FITCH, G. M., GUO, F., YANG, Y., SOCCOLICH, S., PEREZ, M., HANOWSKI, J., HANKEY, J., DINGUS, T. (2013, SEPTEMBER). THE IMPACT OF HAND-HELD AND HANDS-FREE CELL PHONE USE ON DRIVING PERFORMANCE AND SAFETY-CRITICAL EVENT RISK. PRESENTATION GIVEN AT THE 3RD INTERNATIONAL CONFERENCE ON DRIVER DISTRACTION AND INATTENTION, GOTHENBURG, SWEDEN.

JON HANKEY

FITCH, G. M., GUO, F., YANG, Y., SOCCOLICH, S., PEREZ, M., HANOWSKI, J., HANKEY, J., DINGUS, T. (2013, SEPTEMBER). THE IMPACT OF HAND-HELD AND HANDS-FREE CELL PHONE USE ON DRIVING PERFORMANCE AND SAFETY-CRITICAL EVENT RISK. PRESENTATION GIVEN AT THE 3RD INTERNATIONAL CONFERENCE ON DRIVER DISTRACTION AND INATTENTION, GOTHENBURG, SWEDEN.

RICH HANOWSKI

MARBURG, T. L., HICKMAN, J. S., & HANOWSKI, R. J. (2014). IDENTIFICATION OF COMMON DATA ELEMENTS IN THE LARGE TRUCK CRASH CAUSATION STUDY INVESTIGATIONS AND COMMERCIALY-AVAILABLE ONBOARD MONITORING SYSTEMS. POSTER PRESENTED AT THE 2014 LIFESAVERS CONFERENCE ON HIGHWAY SAFETY PRIORITIES, NASHVILLE, TN.

MABRY, J. E., HICKMAN, J. S., & HANOWSKI, R. J. (2014, MAY). CASE STUDY ON A WORKSITE HEALTH AND WELLNESS PROGRAM FOR COMMERCIAL MOTOR VEHICLE DRIVERS. PRESENTED AT THE ANNUAL AMERICAN COLLEGE OF SPORTS MEDICINE (ACSM) CONFERENCE, ORLANDO, FL.

FITCH, G. M., GUO, F., YANG, Y., SOCCOLICH, S., PEREZ, M., HANOWSKI, J., HANKEY, J., DINGUS, T. (2013, SEPTEMBER). THE IMPACT OF HAND-HELD AND HANDS-FREE CELL PHONE USE ON DRIVING PERFORMANCE AND SAFETY-CRITICAL EVENT RISK. PRESENTATION GIVEN AT THE 3RD INTERNATIONAL CONFERENCE ON DRIVER DISTRACTION AND INATTENTION, GOTHENBURG, SWEDEN.

LESLIE HARWOOD

HOLMES, L. M., HARWOOD, L. C., KLAUER, S. G., & DOERZAPH, Z. R. (2014, JANUARY). CONNECTED VEHICLE SYSTEMS: EVALUATION OF DISPLAY LOCATION AND APPLICATION TYPE ON DRIVING PERFORMANCE. POSTER PRESENTED AT THE TRANSPORTATION RESEARCH BOARD 93RD ANNUAL MEETING, WASHINGTON, DC.

JEFF HICKMAN

MARBURG, T. L., HICKMAN, J. S., & HANOWSKI, R. J. (2014). IDENTIFICATION OF COMMON DATA ELEMENTS IN THE LARGE TRUCK CRASH CAUSATION STUDY INVESTIGATIONS AND COMMERCIALY-AVAILABLE ONBOARD MONITORING SYSTEMS. POSTER PRESENTED AT THE 2014 LIFESAVERS CONFERENCE ON HIGHWAY SAFETY PRIORITIES, NASHVILLE, TN.

MABRY, J. E., HICKMAN, J. S., & HANOWSKI, R. J. (2014, MAY). CASE STUDY ON A WORKSITE HEALTH AND WELLNESS PROGRAM FOR COMMERCIAL MOTOR VEHICLE DRIVERS. PRESENTED AT THE ANNUAL AMERICAN COLLEGE OF SPORTS MEDICINE (ACSM) CONFERENCE, ORLANDO, FL.

HICKMAN, J. S. (2013). THE CELL PHONE PARADOX: HOW DO WE EXPLAIN THE DIFFERENCES BETWEEN SIMULATOR AND NATURALISTIC DRIVING RESEARCH? PAPER PRESENTED AT THE 3RD INTERNATIONAL DISTRACTION CONFERENCE IN GOTHENBURG, SWEDEN.

MARY HODGE

VTTI'S STAFF, ADMIN, FACULTY, AND ALL EMPLOYEES TEAM RECOGNITION AND INCENTIVE PROGRAM (SAFE TRIP) (PROPOSAL TEAM: FALL/WINTER 2013)

LATANYA HOLMES

HOLMES, L. M., HARWOOD, L. C., KLAUER, S. G., & DOERZAPH, Z. R. (2014, JANUARY). CONNECTED VEHICLE SYSTEMS: EVALUATION OF DISPLAY LOCATION AND APPLICATION TYPE ON DRIVING PERFORMANCE. POSTER PRESENTED AT THE TRANSPORTATION RESEARCH BOARD 93RD ANNUAL MEETING, WASHINGTON, DC.

ARASH JAHANGIRI*

JAHANGIRI, A. & RAKHA, H. (2014, JANUARY). DEVELOPING A SUPPORT VECTOR MACHINE CLASSIFIER FOR TRANSPORTATION MODE IDENTIFICATION BY USING MOBILE PHONE SENSOR DATA. PAPER PRESENTED AT THE 93RD TRANSPORTATION RESEARCH BOARD ANNUAL MEETING, WASHINGTON, DC (PAPER 14-1442).

LISA JANSEN

VTTI'S STAFF, ADMIN, FACULTY, AND ALL EMPLOYEES TEAM RECOGNITION AND INCENTIVE PROGRAM (SAFE TRIP) (PROPOSAL TEAM: FALL/WINTER 2013)

JULIE JERMELAND

VTTI'S STAFF, ADMIN, FACULTY, AND ALL EMPLOYEES TEAM RECOGNITION AND INCENTIVE PROGRAM (SAFE TRIP) (TECHNICIAN/INSTALLERS IN HEL/CTD: FALL/WINTER 2013)

RYAN JOHNSON

VTTI'S STAFF, ADMIN, FACULTY, AND ALL EMPLOYEES TEAM RECOGNITION AND INCENTIVE PROGRAM (SAFE TRIP) (IT SUPPORT TEAM: SUMMER 2013)

WILLIAM JOHNSON

VTTI'S STAFF, ADMIN, FACULTY, AND ALL EMPLOYEES TEAM RECOGNITION AND INCENTIVE PROGRAM (SAFE TRIP) (TECHNICIAN/INSTALLERS IN HEL/CTD: FALL/WINTER 2013)

RAJ KISHORE KAMALANATHSHARMA*

KAMALANATHSHARMA, R. & RAKHA, H. (2014, JANUARY). FUEL-OPTIMAL VEHICLE THROTTLE CONTROL: MODEL LOGIC AND PRELIMINARY TESTING. PAPER PRESENTED AT THE 93RD TRANSPORTATION RESEARCH BOARD ANNUAL MEETING, WASHINGTON, DC (PAPER 14-1028).

KAMALANATHSHARMA, R. & RAKHA, H. (2014, JANUARY). AGENT-BASED SIMULATION OF ECO-SPEED CONTROLLED VEHICLES AT SIGNALIZED INTERSECTIONS. PAPER PRESENTED AT THE 93RD TRANSPORTATION RESEARCH BOARD ANNUAL MEETING, WASHINGTON, DC (PAPER 14-1028).

KAMALANATHSHARMA, R., RAKHA, H., & BADILLO, B. (2014, JANUARY). SIMULATION TESTING OF CONNECTED VEHICLE APPLICATIONS IN A CLOUD-BASED TRAFFIC SIMULATION ENVIRONMENT. PAPER PRESENTED AT THE 93RD TRANSPORTATION RESEARCH BOARD ANNUAL MEETING, WASHINGTON, DC (PAPER 14-4260).

KAMALANATHSHARMA, R., ZOHDY, I., & RAKHA, H. (2013, OCTOBER). PUBLIC PERCEPTION ON INCREASED USE OF TECHNOLOGY IN AUTOMOBILES: SURVEY FINDINGS. PAPER PRESENTED AT 20TH ITS WORLD CONGRESS, TOKYO, JAPAN. (PAPER 4112).

JESSAMINE KANE-WISELEY

VTTI 25-YEAR CELEBRATION, GOLD, SPECIAL EVENT CATEGORY OF THE 2014 HERMES CREATIVE AWARDS

VTTI 25-YEAR CELEBRATION, VIRGINIA PUBLIC RELATIONS AWARD, 2014

ANDREW KARPA

VTTI'S STAFF, ADMIN, FACULTY, AND ALL EMPLOYEES TEAM RECOGNITION AND INCENTIVE PROGRAM (SAFE TRIP) (TECHNICIAN/INSTALLERS IN HEL/CTD: FALL/WINTER 2013)

SAMER KATICHA

KATICHA, S. & FLINTSCH, G.W. (2013, SEPTEMBER). USE OF PROBE VEHICLES TO MEASURE ROAD RIDE QUALITY. ROAD PROFILER USER GROUP MEETING, SAN ANTONIO, TX.

CHARLIE KLAUER

HOLMES, L. M., HARWOOD, L. C., KLAUER, S. G., & DOERZAPH, Z. R. (2014, JANUARY). CONNECTED VEHICLE SYSTEMS: EVALUATION OF DISPLAY LOCATION AND APPLICATION TYPE ON DRIVING PERFORMANCE. POSTER PRESENTED AT THE TRANSPORTATION RESEARCH BOARD 93RD ANNUAL MEETING, WASHINGTON, DC.

PHIL LAMBERT

VTTI'S STAFF, ADMIN, FACULTY, AND ALL EMPLOYEES TEAM RECOGNITION AND INCENTIVE PROGRAM (SAFE TRIP) (IT SUPPORT TEAM: SUMMER 2013)

ERIN MABRY

MABRY, J. E., HICKMAN, J. S., & HANOWSKI, R. J. (2014, MAY). CASE STUDY ON A WORKSITE HEALTH AND WELLNESS PROGRAM FOR COMMERCIAL MOTOR VEHICLE DRIVERS. PRESENTED AT THE ANNUAL AMERICAN COLLEGE OF SPORTS MEDICINE (ACSM) CONFERENCE, ORLANDO, FL.

STEVEN MACKAY

VTTI 25-YEAR CELEBRATION, GOLD, SPECIAL EVENT CATEGORY OF THE 2014 HERMES CREATIVE AWARDS

VTTI 25-YEAR CELEBRATION, VIRGINIA PUBLIC RELATIONS AWARD

2014 GOLD WINNER FOR PUBLICATIONS/CORPORATE SOCIAL RESPONSIBILITY, HERMES CREATIVE AWARDS, VTTI 25

VIRGINIA PUBLIC RELATIONS AWARD, VTTI 25

ZACH MANNES*

MANNES, Z., ROBINSON, Z., BOWDRING, M., MINNICK, M., & SMITH, R. C. (2014, APRIL). CANDY, A GATEWAY DRUG: A COLLEGIATE FILED STUDY ON ALCOHOL. PAPER PRESENTED TO THE SEMI-ANNUAL MEETING OF THE VIRGINIA PSYCHOLOGICAL ASSOCIATION, NORFOLK, VA.**

LAUREL MARBURG

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PROFESSOR OF ELECTRICAL AND COMPUTER ENGINEERING (ECE), BY COURTESY, 2014

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***DENOTES PRESENTATION MADE BY A VTTI STUDENT AUTHOR**

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