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On the leading edge: Autonomous vehicles and other safety technologies

CARSP • ACPSER
Canadian Association of Road Safety Professionals
L'Association canadienne des professionnels de la sécurité routière

Inside this issue:

Editor's note: The fall issue of the Safety Network Newsletter is focused on a very timely topic - autonomous vehicles and their anticipated impact to the transportation sector in Canada, specifically looking at road safety. We have invited Paul Godsmark, with the Canadian Automated Vehicles Centre of Excellence (CAVCOE) to write the guest editorial for our newsletter.

Autonomous Vehicles and Road Safety

Automonous vehicles - they are very real and they will be on our roads much sooner than you might expect. Autonomous (automated, self-driving, driverless) vehicles (AVs) capable of unmanned operation are being developed in more than 16 countries in the world and are going to transform how and where we live and work. Although the auto manufacturers are making very impressive progress (Daimler, Nissan, Volvo etc.) it is Google's Self Driving Car project that seems to be setting the pace. With ongoing plans to master highways and street driving, Google are also just about to launch a pilot project on the NASA Ames site in California using their low-speed (up to 25mph) electric 'bugs' that were originally designed with neither steering wheel nor pedals.

AVs have the potential to effectively eliminate or mitigate the approximately 90% or more of crashes in which human error is either the cause or a contributing factor. These robotic cars will be looking 360 degrees around themselves at least 10 times a second, will be able to react in milliseconds (i.e. at least 0.5 seconds quicker than a human driver with a fast reaction time) and through ongoing software algorithm development will simply get better as the fleet aggregates its experiences and continually improves its driving skills. The expectation is that if the immense technical, regulatory and liability issues and concerns can be overcome that AVs when fully deployed will result in a reduction of automobile crashes of greater than 80%. This alone is worth between 1.1% and 5% of Canada's GDP depending on whether we look at the direct or combined societal costs of crashes.

However, before we reach full automation and unmanned capability, the auto manufacturers will want to provide us with semi-automated vehicles that will require a licensed driver to be ready to take control as required. Human factors research has already raised concerns that this will lead to a de-skilling of drivers. A disengaged driver can require between 25 and 40 seconds to be re-engaged and to regain full and stable control as well as full situational awareness. The car could possibly hand control back in situations that are too difficult for the car to deal with, to a driver that may no longer have the skill-set needed to safely deal with that complex situation. Research by Google also showed that users put far too much trust in semi-automated systems, which resulted in driver distraction and even more hazardous situations than might have been anticipated. However, as a whole, the full integration of autonomous vehicles into the transportation section will result in a remarkable reduction in crashes.

The potential socio-economic benefits of AVs are significantly greater than just road safety, with Morgan Stanley estimating that they will save the US an estimated $1.3 trillion dollars/year when deployed (nearly 8% of US GDP).

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The automakers have been indicating that they hope to have fully automated vehicles for sale between 2020 and 2025, and Google have stated their aspiration to have their technology in the public's hands by 2017-19. Therefore don't be surprised if by 2023 we have AVs capable of all-year round operation firmly established on Canadian roads.

Paul Godsmark with a Google car

The implications to the road safety profession are immense; good that road safety could dramatically improve; bad that the majority of jobs in our profession could significantly change or even disappear within the next ten years.

At the Canadian Automated Vehicles Centre of Excellence (CAVCOE) we produce a monthly 'AV Update' to help all stakeholders in AVs keep abreast of the latest news and developments (www.cavcoe.com). Let's be as prepared as we can be for this new paradigm!

Paul Godsmark, P.Eng., C.Eng., M.I.C.E.
Chief Technology Officer, Canadian Automated Vehicles Centre of Excellence (CAVCOE)
Founder, Autonomous Vehicles Task Force, ITS Canada
Transportation Specialist

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Note de l'éditeur : L'édition automnale du bulletin Le Réseau-Sécurité aborde un sujet d'actualité, celui des véhicules automatisés et de leur impact attendu dans le secteur des transports au Canada, en particulier en sécurité routière. Nous avons invité Paul Godsmark, qui œuvre au sein du Canadian Automated Vehicles Centre of Excellence, à rédiger l'éditorial – collaboration spéciale de cette édition de notre Bulletin.

Véhicules autonomes et sécurité routière

Les véhicules autonomes sont bien réels et ils seront présents sur nos routes bien plus tôt que vous ne le pensez. Des véhicules autonomes (automatisés, auto-conduite, véhicules sans conducteurs) pouvant circuler sans conducteur sont actuellement en développement dans plus de 16 pays à travers le monde. Ces véhicules vont modifier le comment ainsi que l'endroit où nous vivons et travaillons. Bien que les constructeurs automobiles (Diamler, Nissan, Volvo, etc.) fassent d'impressionnants progrès, c'est le projet de voiture auto-conduite de Google qui semble donner le ton. Avec des projets mis en œuvre actuellement afin de parvenir à circuler sur les rues et sur les autoroutes, Google est également sur le point de

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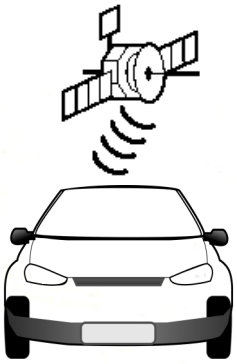

Les répercussions sur les professions en lien avec la sécurité routière sont immenses : bonnes d'une part puisque la sécurité routière pourrait s'améliorer considérablement; et mauvaises d'autre part car la majorité des emplois dans ces professions pourraient changer de façon significative ou même carrément disparaître dans les dix prochaines années.

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lancer un projet pilote au site de la NASA-AMES, en Californie, en utilisant leur petit véhicule électrique à basse vitesse (jusqu'à 25 mph) qui, à l'origine, a été conçu sans volant ni pédale.

Les véhicules autonomes sont susceptibles d'éliminer ou d'atténuer les effets d'environ 90% ou plus des collisions dans lesquelles l'erreur humaine est la cause ou l'un des facteurs contributifs. Ces voitures robotiques effectueront une recherche sur 360 degrés autour d'elles au moins 10 fois par seconde, seront en mesure de réagir en millisecondes (ce qui représente au moins 0,5 seconde plus rapide qu'un conducteur humain dont le temps de réaction est rapide) et, grâce au développement en cours de l'algorithme d'un logiciel, vont tout simplement devenir meilleures à mesure que la flotte cumulera ses expériences et ainsi améliorera sans cesse ses techniques de conduite. Les attentes sont que, si les questions et les préoccupations d'ordre techniques, de réglementation et de responsabilité peuvent être surmontées, les véhicules autonomes, lorsque complètement exploités, se traduiront par une diminution de plus de 80% des accidents d'automobile. Cette diminution représente à elle seule une valeur comprise entre 1,1% et 5% du PIB du Canada, selon que l'on considère les coûts sociaux directs ou combinés des accidents.

Cependant, avant d'en arriver à une automatisation complète et une capacité de fonctionnement sans intervention humaine, les constructeurs automobiles vont vouloir nous fournir des véhicules semi-automatisés qui nécessiteront que le conducteur détienne un permis de conduire et soit prêt à prendre le contrôle du véhicule lorsque nécessaire. Des recherches portant sur les facteurs humains ont déjà soulevé des inquiétudes que cela mènera à une déqualification des conducteurs. Un conducteur non-participant peut prendre entre 25 et 40 secondes pour être à nouveau impliqué dans la conduite et reprendre un contrôle assuré et complet du véhicule ainsi qu'une pleine conscience de la situation. Dans des situations qui sont trop complexes à traiter, la voiture pourrait redonner le contrôle manuel à un conducteur qui lui pourrait ne plus posséder l'ensemble des compétences nécessaires pour trouver une solution sécuritaire à cette situation complexe. Une recherche menée par Google a également montré que les utilisateurs ont beaucoup trop confiance dans les systèmes semi-automatisés, ce qui a pour effet de provoquer de la distraction chez le conducteur de même que des situations encore plus dangereuses que ce que l'on aurait pu prévoir. Néanmoins, dans l'ensemble, l'intégration complète des véhicules autonomes dans le monde des transports se traduira par une réduction remarquable des accidents.

Les avantages socio-économiques des véhicules autonomes vont au-delà du domaine de la sécurité routière. À preuve, Morgan Stanley estime que ces véhicules feront économiser 1,3$ trillions de dollars par an lorsqu'ils seront déployés (soit près de 8% du PIB américain).

Les constructeurs automobiles ont indiqué qu'ils espèrent pouvoir mettre sur le marché des véhicules entièrement automatisés entre 2020 et 2025. Pour sa part, Google a exprimé son souhait de rendre disponible au public leur technologie vers 2017-2019. Par conséquent, ne soyez pas surpris sur d'ici 2023, nous avons des véhicules autonomes capables de circuler en toutes saisons sur les routes canadiennes.

Les répercussions sur les professions en lien avec la sécurité routière sont

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immenses : bonnes d'une part puisque la sécurité routière pourrait s'améliorer considérablement; et mauvaises d'autre part car la majorité des emplois dans ces professions pourraient changer de façon significative ou même carrément disparaître dans les dix prochaines années.

Au Canadian Automated Vehicles Centre of Excellence (CAVCOE), nous produisons une mise à jour mensuelle sur les véhicules autonomes afin d'aider toutes les gens intéressés par ce sujet à se tenir au courant des dernières nouvelles et des développements les plus récents (www.cavcoe.com). Préparons-nous aussi bien que nous le pouvons à ce nouveau paradigme!

Paul Godsmark, P.Eng., C.Eng., M.I.C.E.
Chief Technology Officer, Canadian Automated Vehicles Centre of Excellence (CAVCOE)
Founder, Autonomous Vehicles Task Force, ITS Canada
Transportation Specialist

Connecting Safely

Résumé: La D[re] Soumaya Cherkaoui, professeur à l'Université de Sherbrooke est chef du projet de l'Auto 21 Communication entre véhicules et perception relative à la sécurité ; un projet pour étudier et mettre au point des outils intelligents de télécommunications et de traitement de l'information afin de profiter des capacités de communication inter véhicules et entre plusieurs véhicules diminuant ainsi le risque d'accidents routiers.

Worldwide, traffic crashes account for 1.24 million lives lost each year and are the leading cause of death for young people aged 15-29, according to the World Health Organization's 2013 Global Status Report on Road Safety.

These staggering statistics are fueling automotive innovations that make cars safer not only for drivers, but also for cyclists and pedestrians who share the road. Researchers are taking advantage of current advances in wireless communication techniques, which have produced a multitude of devices that can collect information from vehicles on the road.

"When a vehicle is able to react in a timely manner because it has precise information, a bad situation can be avoided — a situation that may have a fatal outcome for vehicle passengers," said Dr. Soumaya Cherkaoui, a professor at Université de Sherbrooke who leads AUTO21's Multi-Vehicle Communication and Perception for Safety project. "The focus of our research is to leverage communication and perception technologies to make it possible for safety applications to prevent accidents or detect when an accident is imminent and try to avoid it as much as possible."

Dr. Cherkaoui and a team of AUTO21 researchers are developing intelligent telecommunication and information processing tools that use vehicle-to-vehicle communication to improve the reliability of safety applications. Multiple positioning

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"The focus of our research is to leverage communication and perception technologies to make it possible for safety applications to prevent accidents or detect when an accident is imminent and try to avoid it as much as possible."

"We hope to be able to transfer our technology to our industry partners so that the technology can be embedded in the next systems that are integrated into cars and be used for the purpose to enhance people's safety on the road."

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devices and a large number of sensors are used to collect data and monitor vehicle performance and the surrounding environment. By sharing individual data pieces and exploiting redundancies, vehicles can validate and enhance the precision of their readings in order to optimize the reliability and robustness of safety applications. Dr. Cherkaoui estimates it will take at least five years before the technology is readily available, however, some advancements can be integrated into embedded systems right away. For example, a few adaptations of vehicle-to-vehicle communication standards can be made to enhance information delivery rates among vehicles.

The U.S. Department of Transportation (DOT) estimates 90 per cent of crashes are caused by human error and driver distraction is a key factor leading to driving mistakes. The DOT's National Highway Traffic Safety Administration (NHTSA) is pushing for legislation requiring mandatory wireless vehicle-to-vehicle communication. Since the Canadian and American automotive markets are strongly linked, Cherkaoui said, the U.S. legislation, if passed, would greatly affect Canada.

As vehicle connectivity increases, so does the demand for reliable and safe exchange of information. Most new vehicles are equipped with up to 100 microprocessors.

"When there are more vehicles in an area, communication becomes difficult because data information is being sent by every vehicle — at least 10 times a second," Dr. Cherkaoui said. "This data might collide in the communication channel, so vehicles around may not be able to get the information in time. Communication reliability is then very important."

The research team has had recent success in overcoming situations in which a sensor defaults. For example, signals can be lost when a vehicle enters a tunnel or in the presence of tall buildings. Dr. Cherkaoui said researchers refined and combined mathematical, signal processing and analytic tools to achieve a high level of position accuracy even in the presence of faulty situations. Their technology can determine if a failure is minor – when a GPS signal is temporary lost – or if the failure is major – when a sensor is broken – in which case its information can no longer be trusted.

The AUTO21 research team is working with industry partners Opal-RT Technologies, Institut Français des Sciences et Technologies des Transports, de l'Aménagement et des Réseaux and nXstream Technologies Inc. "We hope to be able to transfer our technology to our industry partners so that the technology can be embedded in the next systems that are integrated into cars and be used for the purpose to enhance people's safety on the road," Dr. Cherkaoui said.

Kristie Pearce
AUTO21 Network of Centres of Excellence

Automated Vehicles Panel Session at CMRSC 2014

On the last morning of the CMRSC 2014 in Vancouver, a panel discussion was convened by CARSP on the status of automated vehicles.

Résumé: Lors de la XXIVe Conférence ACPSER, un groupe d'experts a discuté des implications qu'auraient les véhicules autonomes pour les conducteurs, les autorités de réglementation et les assureurs. Alors que l'implémentation réussie d'une telle technologie aurait sans aucun doute plusieurs avantages, comme une amélioration de la sécurité routière et une réduction de la congestion, certaines préoccupations se doivent aussi d'être soulevées, particulièrement en ce qui concerne la responsabilité.

On the last morning of the Canadian Multidisciplinary Road Safety Conference in Vancouver this past June, a panel discussion was convened by the Canadian Association of Road Safety Professionals (CARSP) on the status of automated vehicles (AVs). This session, chaired by Brian Jonah, President of CARSP, included the following panelists: Paul Godsmark of Canadian Automated Vehicles Centre of Excellence, Andrew Morin, Global Automakers of Canada (GAC), Mark Francis, Insurance Corporation of BC, Francine Rubin, the Ministry of Transportation of Ontario, and Robert Tremblay, Insurance Bureau of Canada. Each panelist brought a unique perspective to the discussion.

Paul noted that AVs are already being tested (e.g., Volvo, Toyota, Nissan, Daimler) and will likely be marketed by some manufacturers as early as 2017. Google has already tested its self-driving AV over 700,000 kilometres in California, Nevada, Michigan, and Florida, without any collisions where the Google car was at fault. AVs use a variety of sensors, cameras, and GPS to control the vehicle's path, detect potential collisions, and direct the vehicle to avoid them.

The benefits of AVs are considerable including: improved road safety, better fuel efficiency, reduced emissions, and reduced congestion. AVs would also permit people with disabilities, whether cognitive or physical, to travel to their destinations. However, Paul also identified some challenges in terms of the security of the vehicle, loss of some transportation related jobs, and liability for collisions. He sees AVs being adopted first in

Image courtesy of AutoNOMOS Labs
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CMRSC/CCMSR • XXIV

The benefits of AVs are considerable including: improved road safety, better fuel efficiency, reduced emissions, and reduced congestion.

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commercial fleets such as trucking, taxis, and rental vehicles. Paul considers AVs to represent a paradigm shift, as significant as the shift from horses to cars, which will require us to reconsider our roles as road safety professionals.

Image courtesy of
Google's self-driving car project

Andrew pointed out that the GAC represents 14 global manufacturers many of which are producing vehicles today which are already partially automated (e.g., lane departure warning, back up cameras, brake assist, etc.). As a result of such technologies, he considers that many current vehicles are at Level 2 of the National Highway Traffic Safety Administration's continuum of automation, where Level 5 is complete automation (i.e. self-driving). He also noted that there are other connected vehicle systems being tested, such as vehicle to infrastructure (V2I) and vehicle to vehicle (V2V), which will need to be integrated with AVs. Andrew believes that any regulatory measures by either federal or provincial governments would be premature at this time, but he urged provincial administrators to coordinate their work on connected and automated vehicles (CAVs), nationally with Transport Canada, and through existing organizations such as the Canadian Council of Motor Transport Administrators (CCMTA).

Mark Francis indicated that ICBC is responsible for licensing vehicles and drivers and will be considering how their role may change in the future as a result of AVs. Will there be a need for new vehicle classifications, and will drivers be tested different if they are operating AVs? Since ICBC is also the vehicle insurer in the province, they will have to determine how fault and liability will be determined when an AV is involved in a collision, particularly when these vehicles are traveling amongst vehicles operated by drivers.

Francine Rubin explained that Ontario's Highway Traffic Act provides the authority to pilot test emerging vehicles proactively in order to monitor and evaluate their safety, and to establish rules prior to them potentially becoming widely available to the public. MTO is currently monitoring developments in this technology, as well as the latest research and jurisdictional practices. MTO has posted a possible regulatory framework for AVs on the Ontario Regulatory Registry and is seeking public feedback from the insurance, enforcement, technology, and operations' sectors. Francine also noted that jurisdictions are sharing information and research on AVs and that CCMTA has created a working group on AVs including representatives from federal/provincial/territorial jurisdictions.

Will there be a need for new vehicle classifications, and will drivers be tested different if they are operating AVs?

Robert Tremblay explained the various types of insurance currently available, and the concept of liability. While basic insurance coverage will still be required by vehicle owners, some additional requirements may be necessary. Vehicle

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manufacturers may use self-insurance schemes and supplementary performance bonds, while software developers and sensor suppliers may seek product liability insurance. Robert noted concerns in the insurance industry regarding potential hacking of AV systems, data breaches, and inappropriate responses by software. He also indicated that insurers will need good data on collision statistics during the AV testing and development phase in order to establish costs for insurance premiums but, as in the past, the industry will be flexible and ready to adapt to the new realities.

Brian Jonah
Canadian Association of Road Safety Professionals

Advanced Event Data Recorders

Résumé: Les enregistreurs de données routières actuels fournissent des données concernant une grande gamme de systèmes de protection des occupants. Ils font de même pour une grande variété d'éléments d'information relatifs aux actions des conducteurs avant la collision ainsi qu'à la performance des systèmes anticollision.

Event data recorders (EDRs) have been installed in many production vehicles since the introduction of frontal air bags into the fleet in the 1990's. On-going advancements in automotive electronic systems have produced vast changes in the features and capabilities of these on-board crash recorders.

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Deployment Command Data (most recent event)	
Frontal airbag deployment, 1st stage, driver	Yes
Frontal airbag deployment, 2nd stage, driver	Yes
Frontal airbag deployment, time to first stage deployment, driver (msec)	28
Frontal airbag deployment, time to second stage deployment from T0, driver (msec)	101
Frontal airbag deployment, first stage, passenger	Yes
Frontal airbag deployment, second stage, passenger	Yes
Frontal airbag deployment, time to first stage deployment, passenger (msec)	28
Frontal airbag deployment, time to second stage deployment from T0, driver (msec)	151
Knee airbag deployment, driver	Yes
Buckle pretensioner, driver	No
Reactor pretensioiner, driver	Yes
Frontal airbag deployment, passenger 3rd squib	Yes
Buckle pretensioner, passenger	Yes

On-going advancements in automotive electronic systems have produced vast changes in the features and capabilities of these on-board crash recorders.

The availability of detailed pre-crash data affords researchers the opportunity to develop considerable insights into driver behaviour and the timing of avoidance manoeuvres under real-world conditions.

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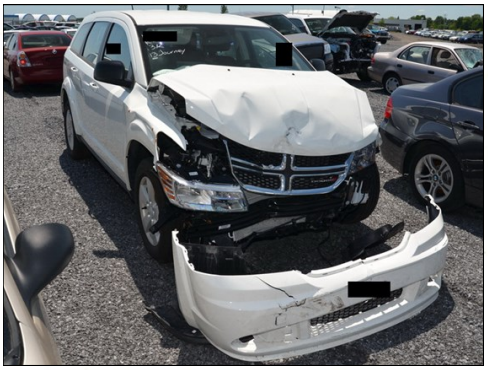
Today's EDRs will report on deployment parameters for a wide range of air bag systems, including multi-stage frontal air bags, side air bags, head curtains, and deployable knee bolsters. In addition, data are often available on pyrotechnic systems associated with seat belts, such as buckle retractors, webbing pre-tensioners, and inflatable belt systems. Not only do EDRs indicate that such devices have been deployed as a result of a crash, they also provide details of the timing of the deployments.

Such data are frequently accompanied by detailed crash pulses in the form of acceleration and/or change in velocity (delta-V) profiles. Together these data provide valuable information on the nature of crashes, their severity, and timing, and can enable automotive engineers to optimize vehicle structural characteristics, and restraint system designs, in order to afford the best possible protection to vehicle occupants.

Some early EDRs also provided pre-crash data; however, these were generally limited to five "snapshots", taken at one second intervals, of vehicle speed, engine RPM, percentage throttle application, and brake light status (on or off). Today's systems normally have greatly expanded capabilities with, for example, additional data elements and readouts of parameters of interest being made every tenth of a second for the five second period prior to impact.

New elements that may be present in the pre-crash data stream include individual wheel speeds, accelerator pedal voltage, engine throttle position, brake fluid pressure, and steering system input. Information may also be available on the pre-crash activity associated with on-board collision avoidance systems such as antilock brakes (ABS) and electronic stability control (ESC). Other pre-crash data elements may include the transmission's gear selection, cruise control setting, electronic traction control (ETC) status, and individual tire pressures.

The availability of detailed pre-crash data affords researchers the opportunity to develop considerable insights into driver behaviour and the timing of avoidance manoeuvres under real-world conditions. Such research would best be performed in the context of a comprehensive collision causation study where all of the relevant data sources and analytical techniques would be brought to bear. Nevertheless, we may obtain some indication of the potential use of pre-crash data obtained from EDRs by considering a case example from a crashworthiness study, where detailed driver and witness statements relating to the collision events are not available.



The case collision involved a 2013 Dodge Journey utility vehicle that was travelling southbound on a six-lane, median-divided arterial roadway. The case vehicle was being driven at approximately 60 km/h in a 50 km/h zone, and was approaching a traffic-light controlled intersection. The traffic light was reported to be green. It was overcast and raining and, as a result, the asphalt pavement was wet.

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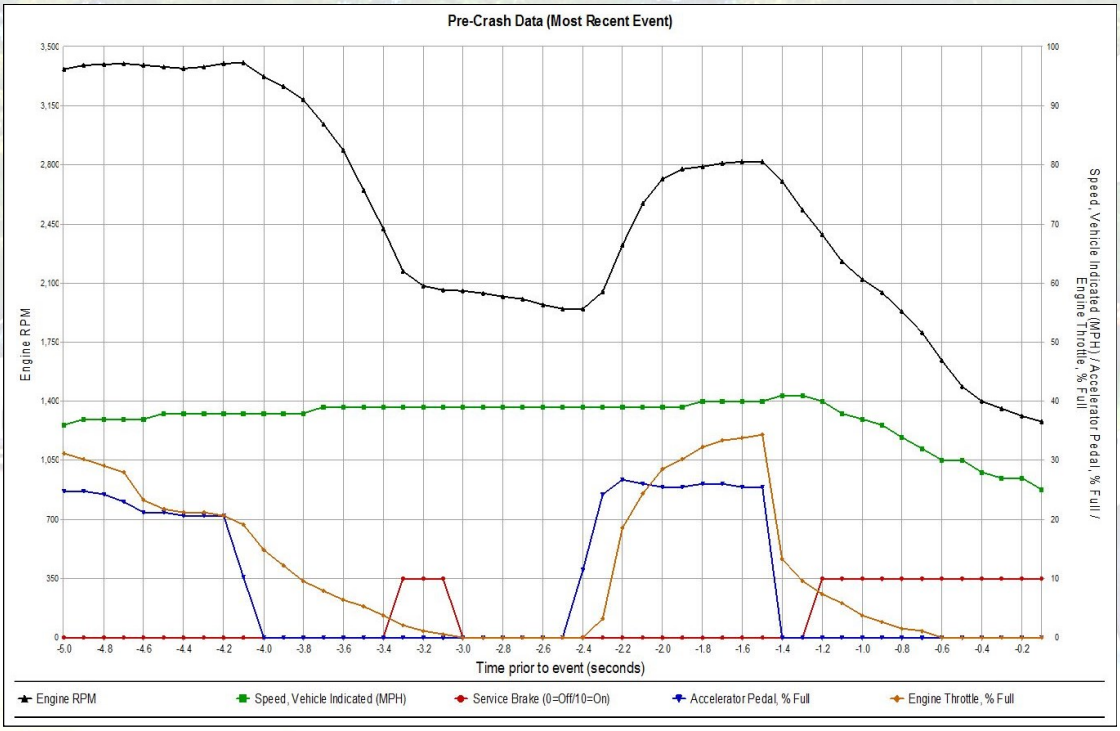
As the Journey approached the intersection, a 2012 Chrysler 200 four-door sedan commenced a left turn. The Journey's driver braked and steered to the right; however, the front of the Journey struck the right side of the turning vehicle.

A graph of some of the pre-crash data elements captured by the Journey's EDR is shown in the following figure. From these curves, and the associated tabular data contained in the EDR report, it can be seen that, at 2.4 seconds prior to impact, and for a subsequent period of about one second, the driver pressed on the accelerator pedal by about 25% (blue curve). The engine speed (black curve) shows a corresponding, although lagged, increase; however, the vehicle's travel speed (green curve) increases only marginally, from 62 to 65 km/h.



At 1.2 seconds prior to impact, the driver of the Journey applied the vehicle's brakes, holding them on until impact, as demonstrated by the approximately linear decrease in vehicle speed. The anti-lock braking system engaged for part of this time (one second to 0.5 seconds prior to the crash).

At about the same time that the vehicle's brakes were applied, the driver also steered to the right by between 90 and 120 degrees. The latter steering wheel position was maintained for the final half second before impact, with the vehicle's electronic stability control engaging during this latter period.

Clearly we have no details of the timing of the phases of the traffic light signal from either infrastructure data or witness statements. However, given the above-noted driver actions, we might speculate that the light turned yellow as the Journey approached the intersection, and that the driver accelerated, intending to travel through the intersection.

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The breadth and detail of the pre-crash data that are available from current EDR systems can be seen to provide considerable potential benefits to traffic safety researchers who are interested in driver behaviour and their pre-collision actions, and also to automotive engineers and regulators who are developing collision avoidance measures.

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What is clear, is that the Journey's driver observed the left-turning vehicle only about one second prior to collision. The speed-time data indicates that the vehicle's deceleration averaged approximately 0.6g over this time period which is not unreasonable for an ABS-equipped vehicle braking hard on a wet road. However, given the vehicle's 65 km/h travel speed prior to braking, a period of such hard deceleration of approximately three seconds would have been required for the driver to bring the vehicle to halt and so avoid the collision.

As noted earlier, due to a lack of detailed information, some of the above considerations are speculative in nature. Nevertheless, the breadth and detail of the pre-crash data that are available from current EDR systems can be seen to provide considerable potential benefits to traffic safety researchers who are interested in driver behaviour and their pre-collision actions, and also to automotive engineers and regulators who are developing collision avoidance measures.

Alan German
Road Safety Research

Improving Rear Visibility with Video Technology

Résumé: La technologie des caméras de recul est utilisée pour permettre la détection dans les angles morts pour les conducteurs qui font marche arrière ou qui tournent à droite. La NHTSA a publié une disposition exigeant la technologie de visibilité arrière dans tous les véhicules légers d'ici 2018.

Reversing motor vehicles has always been difficult due to the driver's position towards the front of the vehicle, and the structural components that obscure rearward visibility. Vehicle design trends have resulted in reduced visibility - vehicles are larger, they have smaller rear windows, and larger roof pillars. In the past, rear view and side mirror systems have been utilized to provide assistance to drivers undertaking such manoeuvres. Nevertheless, the field of view provided has often been limited. Fatal and serious injury collisions have resulted to non-occupants in reversing incidents, and these have particularly involved children and the elderly.

In the United States, the National Highway Traffic Safety Administration (NHTSA) estimates that children under 5 years old account for 31% of back-over fatalities each year, and adults 70 years of age and older account for 26% of such incidents. The equivalent Canadian statistics are not so clear as many of these crashes occur "off road" (e.g. in private driveways) and are not necessarily recorded in police reports. However, some multi-year data from Transport Canada's National Collision Database (NCDB), suggest that 8% of on-road fatalities to pedestrians and cyclists resulting from impacts with reversing vehicles may involve children under 4 years of age, with adults aged 70 and above accounting for almost 55% of such crashes.

However, reversing is not the only vehicle manoeuvre involving vision restrictions that can result in collisions with pedestrians and cyclists. Another key issue involves

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Reversing motor vehicles has always been difficult due to the driver's position towards the front of the vehicle, and the structural components that obscure rearward visibility.

Image source: http://www.jalandhartrafficpolice.com/

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right turns, especially for larger vehicles, such as heavy trucks and buses. Structural components, such as the vehicle's hood and the roof pillars, can limit the driver's view. Even side mirrors, that may help with blind spots to the rear, can create blind spots ahead of the vehicle. All of these factors may result in drivers being unable to see non-occupants in the path of travel.

The recent rapid advances in electronic technology, and in particular those related to digital imaging systems, may well provide a viable solution to such problems. Video cameras have been miniaturized, and their sensor systems refined in terms of their field of view and light-gathering ability. In particular, the cost of video cameras has been reduced considerably, and they are now being widely adapted for in-vehicle applications.

Backup camera view

Right-side mirror camera view

Rear-view cameras and in-dash display screens are being installed in many new vehicle models. These provide a broad view to the rear of the vehicle, with software often being used to overlay a grid on the image, indicating distances to objects to the rear of the vehicle.

Similar camera systems may be embedded in a vehicle's side mirrors. These systems provide additional coverage of blind spots and may be activated automatically, by use of the turn signals, or under the manual control of the driver.

As with all safety systems, there are some limitations inherent in the use of video cameras. Their lenses can get dirty and, in rainy conditions, water droplets on the camera lens may distort the image. Glare from sunlight, and low-light conditions (e.g. when backing into an enclosed garage), can also reduce the clarity of the displayed image.

Even with video technology, drivers need to be vigilant. The systems generally display warnings that driver should check the space around their vehicle before moving. It is also essential to properly adjust rear view and side mirrors, to use them, and to do shoulder checks if there are remaining blind spots.

However, despite such caveats, the potential for camera systems to reduce back-over collisions has been recognized by NHTSA. The agency has recently promulgated a final rule requiring the provision of rear visibility technology in all new light-duty vehicles by 2018. Given the highly integrated nature of the North American vehicle fleets, it is anticipated that similar regulations will be adopted by Transport Canada.

Alan German
Road Safety Research

NHTSA has recently promulgated a final rule requiring the provision of rear visibility technology in all new light-duty vehicles by 2018. Given the highly integrated nature of the North American vehicle fleets, it is anticipated that similar regulations will be adopted by Transport Canada.

The 2015 CARSP Conference will be held at the Delta Hotel in downtown Ottawa, Ontario from Wednesday, May 27 to Saturday, May 30.

CARSP Conference 2015 Sponsorship Opportunities

Download the Sponsorship Form

Early Bird Opportunity Available until January 9, 2015!

(Note: Exhibitor options coming soon)

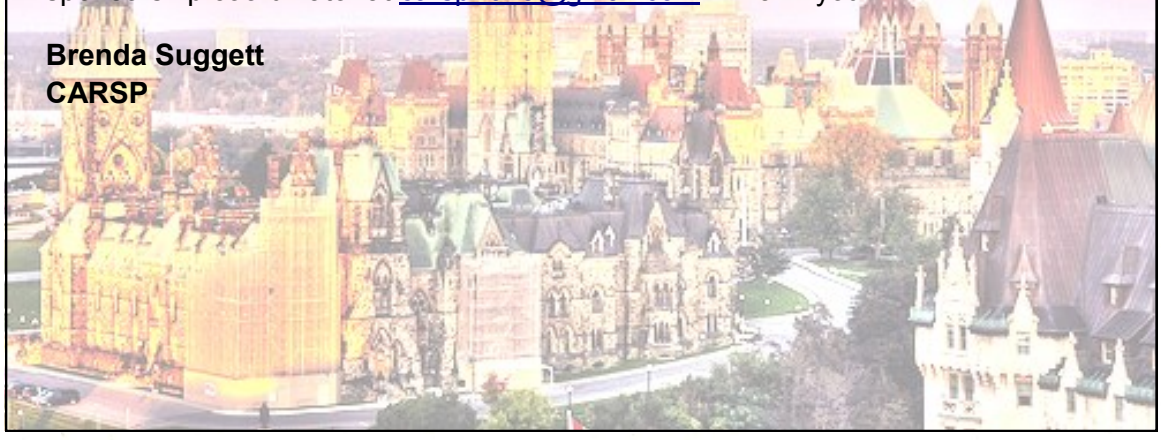
This year's Canadian Association of Road Safety Professional's (CARSP) Conference, a multidisciplinary conference on road safety, promises to be an inspiring and educational event. Join CARSP as they host the 25th CARSP Conference (formerly Canadian Multidisciplinary Road Safety Conference) in Ottawa, Ontario from May 27-30, 2015.

Our annual conference will bring together around 150-200 delegates from around the world to facilitate the sharing of knowledge and promote strategies that improve road safety.

This year's theme ***Road Safety – The Road Ahead*** focuses on Canada's achievements in road safety, where work is still needed, and on the opportunities and challenges Canada will face tomorrow. Authors are being invited to submit abstracts on many road safety topics, including, but not limited to: Vehicle & Vehicle Systems; Traffic Engineering & Road Design; Injury Prevention; Enforcement & Legal Issues; Safety Initiatives; Policy & Program Development; and Road Users & Behavioural Issues.

At this time, CARSP is inviting individuals and organizations to sponsor the 2015 CARSP Conference. As a sponsor, you may benefit significantly by raising the profile of your organization and interacting with road safety professionals within Canada's road safety community. Our sponsorship program has three levels: Bronze, Silver and Gold. Click here or visit http://www.carsp.ca/carsp-conference/carsp-conference-xxv/sponsorshipexhibitor-options/ for more details. Sponsor prior to January 9th, 2015 and receive additional "early bird" sponsorship benefits! If you have questions or comments about sponsorship, please contact our sponsorship coordinator at carsp2015@gmail.com. Thank-you.

Brenda Suggett
CARSP



As a sponsor, you may benefit significantly by raising the profile of your organization and interacting with road safety professionals within Canada's road safety community.

Demande de commandites pour la conférence ACPSER 2015

ACPSER prévoit tenir sa prochaine conférence du mercredi 27 mai au samedi 30 mai 2015, à l'hôtel Delta du centre-ville d'Ottawa.

Télécharger le formulaire de commandite (en anglais seulement)

Offres bonifiées pour les organisations qui commanditent d'ici au 9 janvier 2015 !

(Note: Des options pour les exposants sont à venir)

Cette année encore, la Conférence ACPSER, une conférence multidisciplinaire sur la sécurité routière, promet d'être un événement à la fois éducationnel et inspirant. Joignez-vous à l'Association canadienne des professionnels de la sécurité routière lors de la 25e édition de la Conférence ACPSER (auparavant Conférence canadienne multidisciplinaire en sécurité routière), qui sera tenue à Ottawa, en Ontario, du 27 au 30 mai 2015.

Notre conférence annuelle rassemblera de 150 à 200 participants provenant de partout dans le monde qui partageront leurs connaissances et promouvront des stratégies pour améliorer la sécurité routière.

Le thème de cette année, ***Sécurité routière: en route vers l'avenir***, met l'accent sur les réussites canadiennes en sécurité routière, le travail qu'il reste à accomplir ainsi que les opportunités et les défis qui attendent le Canada dans l'avenir. Les auteurs sont invités à proposer des résumés d'articles touchant plusieurs aspects de la sécurité routière, y compris, mais sans s'y limiter : les véhicules et systèmes à bord des véhicules, l'ingénierie du transport et la conception des routes, la prévention des blessures, l'application de la loi et les questions de droit, les initiatives en matière de sécurité routière, l'élaboration des politiques ainsi que les usagers de la route et les enjeux liés au comportement routier.

L'ACPSER invite présentement les individus et les organisations à commanditer la Conférence ACPSER 2015. En tant que commanditaire, votre organisation bénéficiera d'une visibilité accrue et d'interactions avec la communauté canadienne des professionnels de la sécurité routière. Notre programme de commandites comprend trois niveaux : bronze, argent et or. Vous pouvez cliquer ici ou visiter : http://www.carsp.ca/carsp-conference/carsp-conference-xxv/sponsorshipexhibitor-options/ pour obtenir plus de détails (en anglais seulement). De plus, si vous commanditez d'ici au 9 janvier 2015, vous bénéficierez d'une offre de commandites bonifiée ! Si vous avez des questions ou des commentaires concernant les commandites, veuillez s'il vous plaît communiquer avec notre coordonnateur des commandites au carsp2015@gmail.com. Merci !

Brenda Suggett
ACPSER

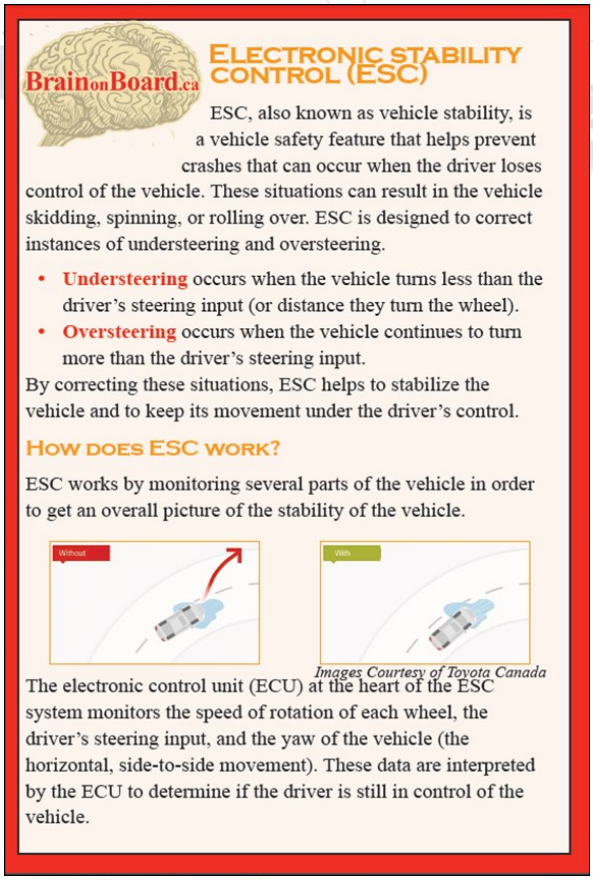
En tant que commanditaire, votre organisation bénéficiera d'une visibilité accrue et d'interactions avec la communauté canadienne des professionnels de la sécurité routière.

Brain on Board

TIRF created a free online educational program entitled "Brain on Board" to increase knowledge among practitioners and the public about current safety features and how to safely use them.

Résumé: Votre cerveau est la principale composante de sécurité de votre véhicule. La Fondation de recherches sur les blessures de la route (*Traffic Injury Research Foundation* – TIRF) a développé le programme d'éducation « cerveau à bord » (www.brainonboard.ca), en réponse au manque de connaissances des conducteurs sur les équipements de sécurité du véhicule. « Cerveau à bord » est un guichet unique visant à informer les conducteurs des dispositifs de sécurité d'un véhicule. Il contient une variété de ressources telles que des feuillets d'information, aide-mémoire, vidéos, annonces à la radio, diagrammes, liste de publications, glossaire et bien d'autres informations utiles.

According to a study conducted by the Traffic Injury Research Foundation (TIRF) in 2012, less than one-third of Canadian drivers are familiar with many modern safety features available on today's vehicles (Robertson et al. 2012). The study further revealed that of those who were aware of various safety features; many reported that they were unsure of how to use them or they overestimated the capabilities of the features, stating that they would drive more dangerously if they knew their vehicle had the feature. These various gaps in driver knowledge on safety features can pose serious threats to all road users. In response to these gaps, TIRF created a free online educational program entitled "Brain on Board" to increase knowledge among practitioners and the public about current safety features and how to safely use them (www.brainonboard.ca).



BrainonBoard.ca

ELECTRONIC STABILITY CONTROL (ESC)

ESC, also known as vehicle stability, is a vehicle safety feature that helps prevent crashes that can occur when the driver loses control of the vehicle. These situations can result in the vehicle skidding, spinning, or rolling over. ESC is designed to correct instances of understeering and oversteering.

- **Understeering** occurs when the vehicle turns less than the driver's steering input (or distance they turn the wheel).
- **Oversteering** occurs when the vehicle continues to turn more than the driver's steering input.

By correcting these situations, ESC helps to stabilize the vehicle and to keep its movement under the driver's control.

HOW DOES ESC WORK?

ESC works by monitoring several parts of the vehicle in order to get an overall picture of the stability of the vehicle.

Images Courtesy of Toyota Canada

The electronic control unit (ECU) at the heart of the ESC system monitors the speed of rotation of each wheel, the driver's steering input, and the yaw of the vehicle (the horizontal, side-to-side movement). These data are interpreted by the ECU to determine if the driver is still in control of the vehicle.

Vehicle safety features offer a wide variety of benefits to the road environment, particularly towards mitigating or eliminating vehicle-related injuries and fatalities. Examples include adaptive headlights that adjust light beams to curves in the road or electronic stability control which corrects driver understeering or oversteering when a driver is at risk of losing control of their vehicle.

Recent advancements in technology have produced a surge in the number of these features available to drivers. However, lack of familiarity or improper use of features, and dangerous driving habits all can negate or undermine their effectiveness. In order to gain the most benefits, drivers must employ safe driving habits and familiarize themselves with the specific advantages and limitations of the features in their vehicles.

(Continued on page 17)

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Additionally, new features are continuously being developed, making it increasingly difficult to keep up with the technology – what it does, how it works, and the new benefits to drivers.

Brain on Board is the one-stop-shop to help drivers answer these and other questions. Available in both English and French, this program is a complete educational resource to help drivers learn more about vehicle safety features and navigate the world of vehicle safety in order to obtain the most protection from their vehicle's features. The website is designed for use by the public and road safety practitioners. Resources include fact sheets, flash cards, videos, radio announcements, diagrams, list of publications, and a glossary as well as other useful information which can be downloaded or printed for easy use.

Unique components of Brain on Board include information that challenges 'myths and misconceptions' about safety features and the effect of human behaviour on safety features. For instance, Brain on Board explains why safety features cannot compensate for distracted driving and dispels the myth that anti-lock brakes help drivers to stop faster. Various dangerous driving behaviours and their negative effects on the performance of safety features are explained.

New features continue to be added to the website including an upcoming component on automated vehicles. Check out Brain on Board (http://www.brainonboard.ca) for all of the available resources or contact TIRF for further information.

Shawna Meister
Traffic Injury Research Foundation

Reference:
Robertson, R.D., Vanlaar, W.G.M., Marcoux, K.D., McAteer, H.J. (2012). Vehicle Safety Features: Knowledge, Perceptions, and Driving Habits. Traffic Injury Research Foundation.

Brain on Board is the one-stop-shop, available in both English and French, to help drivers learn about vehicle safety features and how to obtain the most protection from these features.

Driver Assistance Systems for Speed Control and Safety

Speed is considered one of the major factors of accident causation, along with other behavioural factors such as drunk and distracted driving. Among the tools available to influence speed, there is a general and recently increasing interest in technological solutions or intelligent transportation systems. That is why the Québec Ministry of Transportation has mandated a multi-disciplinary team of researchers, led by Polytechnique Montreal, to investigate the opportunity for such technologies, for pilot projects and eventually their deployment. Of particular interest are the systems for Intelligent Speed Adaptation (ISA) and Speed Data Loggers (SDL). The former consists of comparing a vehicle current speed with the speed limit at its current location and providing passive or active feedback to the driver: ISA was proposed and tested as early as the 1990s, but has seen little large scale (jurisdiction-wide) deployment. The latter is very simple and simply logs speed data, typically along with time and location, over time. SDL have seen some level of adoption, in particular for two purposes: vehicle fleet management and usage-based car insurance.

(Continued on page 18)

Among the tools available to influence speed, there is a general and recently increasing interest in technological solutions or intelligent transportation systems.

The most interesting recent development regarding Speed Data Loggers relates to safety insurance telematics, where some insured drivers choose to install a device reporting their speeds and trips in exchange for a potential discount on their insurance premium.

(Continued from page 17)

The first phase of the project involves a literature review and feasibility study for the deployment of these systems and any other system with a proven or promising impact on speed and safety. The review has revealed that ISA and SDL are part of a long list of advanced driver assisting systems (ADAS) such as intelligent cruise control, forward collision warning, and even connected and autonomous vehicles, but that few other technologies target speed directly.

The more than thirty ISA experiments that were done previously have shown overall positive impacts on behavior and safety, especially for some categories of drivers such as the young and elderly, drivers with disabilities, recidivists and professional drivers, as well as for some types of roads such as high-volume, high-speed and accident-prone roads. User acceptability is variable, depending on technical issues and the quality and ergonomics of the feedback.

Regarding SDL, the most interesting recent development for safety is insurance telematics, where some insured drivers choose to install a device reporting their speeds and trips in exchange for a potential discount on their insurance premium: the discount is evaluated based on the number of harsh accelerations and brakings, the time of driving (accident risk is highest at night), distance travelled and, in the case of one insurance company, speed limit violations. These aspects will be further elaborated in interviews with the insurance companies, in order, for example, to gauge user acceptability of the systems.

Telematics explained
Source: http://www.confused.com/car-insurance/specialist/telematics/telematics-explained

As a conclusion, it is important to put this project in the context of the progressive introduction of ADAS and the medium term (2 to 5 years) arrival of completely autonomous (driverless) vehicles, which constrains the window of opportunity for all other technology deployment. Furthermore, for transportation researchers, such systems are very promising as they will make detailed behaviour data with unprecedented temporal and spatial coverage available for a significant share of the population.

Nicolas Saunier[1], Étienne Morin[2], Jean-François Bruneau[2]
[1] Polytechnique Montréal
[2] Université de Sherbrooke

Systèmes d'aide à la conduite pour le contrôle de la vitesse et de la sécurité

Parmi les outils qui peuvent influencer la vitesse, il y a un intérêt général et grandissant pour des solutions technologiques et les systèmes de transport intelligents.

La vitesse est considérée comme un des facteurs les plus importants d'accident, avec d'autres facteurs comportementaux comme la conduite en état d'ivresse et la conduite inattentive. Parmi les outils qui peuvent influencer la vitesse, il y a un intérêt général et grandissant pour des solutions technologiques et les systèmes de transport intelligents. C'est pourquoi le ministère des Transports du Québec (MTQ) a mandaté une équipe multidisciplinaire de chercheurs menée par Polytechnique Montréal pour examiner les opportunités pour de telles technologies, pour des projets pilotes et leur déploiement éventuel. Les systèmes d'adaptation intelligente de la vitesse (SAIV) et les enregistreurs de données de vitesse (EDV) sont d'un intérêt particulier. Les premiers consistent à comparer la vitesse instantanée d'un véhicule avec la limite de vitesse à sa position et à donner une rétroaction passive ou active au conducteur. Les SAIV ont été proposés et testés dès les années 1990, mais ils ont vu peu de déploiements à grande échelle (à l'échelle d'une administration). Les seconds sont des appareils très simples qui enregistrent des données de vitesse à fréquence régulière, en général avec le temps et la position du véhicule. Les EDV ont été adoptés pour plusieurs usages, en particulier pour la gestion de flotte de véhicules et les assurances télématiques basées sur l'utilisation.

La première phase du projet implique une revue de littérature et une étude de faisabilité pour le déploiement de ces systèmes et de tout système avec un impact prouvé ou prometteur sur la sécurité et la vitesse. La revue de littérature a révélé que les SAIV et EDV font partie d'une longue liste de systèmes avancés d'aide à la conduite (SAAC) tels que le limiteur de vitesse intelligent, les détecteurs de collision avant et même les véhicules connectés et autonomes, mais que peu d'autres technologies visent expressément la vitesse.

Plus de trente expérimentations de SAIV effectuées par la passé ont montré dans leur ensemble des impacts positifs sur le comportement et la sécurité, et ce, en particulier pour certaines catégories de conducteurs comme les jeunes conducteurs, les conducteurs seniors, les conducteurs avec des handicaps, les récidivistes et les conducteurs professionnels, de même que pour certains types de routes comme les routes à débit élevé, à vitesse élevée ainsi que les routes accidentogènes. L'acceptabilité par les usagers est variable et dépend en particulier de la présence de problèmes techniques dans le fonctionnement des systèmes ainsi que de la qualité et de l'ergonomie de la rétroaction.

Concernant les EDV, le développement récent le plus intéressant pour la sécurité est l'assurance télématique avec laquelle les usagers choisissent d'installer un appareil enregistrant et communiquant leurs vitesses et déplacements en échange d'une réduction potentielle de leur prime d'assurance : la réduction dépend du nombre d'accélérations et freinages brusques, des périodes de conduites (le risque d'accident est le plus élevé la nuit), de la distance parcourue et, dans le cas d'une compagnie spécifique, des dépassements de la limite de vitesse. Des informations

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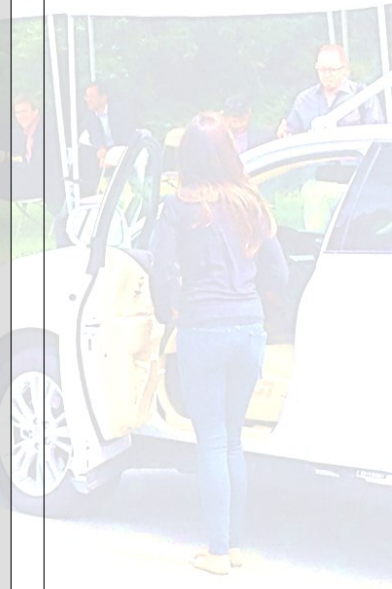

Le développement récent le plus intéressant pour la sécurité est l'assurance télématique avec laquelle les usagers choisissent d'installer un appareil enregistrant et communiquant leurs vitesses et déplacements en échange d'une réduction potentielle de leur prime d'assurance.

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complémentaires seront obtenues lors d'entretiens avec les compagnies d'assurance afin, par exemple, d'estimer l'acceptabilité des systèmes par les usagers.

Il est important, en conclusion, de remettre ce projet dans le contexte de l'introduction progressive des SAAC et de l'arrivée à court terme (2-5 ans) de véhicules complètement autonomes (sans conducteur), qui contraignent la fenêtre d'opportunité pour tout déploiement de technologies. Par ailleurs, pour les chercheurs en transport, de tels systèmes sont très prometteurs puisqu'ils rendront disponibles des données comportementales détaillées avec une couverture spatio-temporelle sans précédent pour une part importante de la population.

Nicolas Saunier[1], Étienne Morin[2], Jean-François Bruneau[2]
[1] Polytechnique Montréal
[2] Université de Sherbrooke

Road Safety – The Road Ahead

CARSP Conference 2015
Ottawa, Ontario
May 27-30, 2015

Conférence ACPSER 2015
Ottawa, Ontario
27-30 mai, 2015

Sécurité routière: en route vers l'avenir

Michelin Challenge Bibendum: enhancing sustainable safety with technologies

The 2014 Annual Michelin Challenge Bibendum will take place in Chengdu, China from November 11th to 14th. Thousands of stakeholders, developers, experts and journalists are welcomed from around the world. Workshops will generate ideas and partnerships to increase the sustainability of road safety, with a special focus on promising technologies. Activities include different workshops, a start-up village, a smart city, and a hackathon which aims to create innovative and user-friendly apps to invent future sustainable mobility. Participants will test the latest autonomous vehicles in an urban environment and manufacturers will propose rallies with electric vehicles featuring auto-guidance and crash avoidance systems, such as emergency auto-braking and pedestrian avoidance. Other interesting technologies will be showcased, such as automated truck fleets, driverless trains, intelligent roads, connected mobility, and two-wheeled vehicles with driver assistance.

Michelin invited students to propose their vision of sustainable mobility. A total of 307 teams registered and 674 participants from 319 universities in 38 countries demonstrate the global interest for this topic. Four finalist teams will compete for the best sustainable mobility solution:

- The Brazilian "Aquarius" is a business model connecting users and taxis.
- The French "Ecofriendly Transportation" wants to reduce accidents and pollution by generating electricity from waste to power driverless vehicles 24/7.
- The Indian "Green Mobile" developed hydrogen as a viable alternative fuel by reconverting waste from chocolate factories.
- The French "Modulocar" designed a clever customizable vehicle that adapts to user's needs, from purely electric in the city to hybrid for longer week-end trips, and eventually a high power module for moving heavy objects.

Because Michelin has a strong interest in partnering on sustainable road safety projects, a CIRODD student-team composed of Polytechnique and École de technologie supérieure was invited to participate in the Challenge. The student team developed an approach at three levels for the electrification of transportation in Quebec. At the neighborhood level, the Serpentine, a last-mile transportation mode consisting of a series of small connected cabins using underground magnetic rails to move without a driver, is seen as a flexible solution for last-mile transportation of people and goods, and can also perform waste collection on university campuses. It

(Continued on page 22)

The 2014 Annual Michelin Challenge Bibendum sets in Chengdu, China from November 11th to 14th.

A CIRODD student-team composed of Polytechnique and École de technologie supérieure was invited to participate in the Challenge.

(Continued from page 21)

is anticipated to have numerous benefits including reducing accidents risks with heavy trucks. City- and regional-level approaches, which incorporate electric bikes, e-buses, and suspended monorail, are also proposed.

To learn more about the Michelin Challenge Bibendum, contact Alexandre Échalier (alexandre.echalier-f297987@fr.michelin.com) or visit https://community.michelinchallengebibendum.com/welcome. To learn more about CIRODD, its mission and projects, contact Valérie Bécaert (valerie.becaert@polymtl.ca) or visit http://www.CIRODD.org.

Jean-François Bruneau[1], Hassana Elzein[1], Émilien Hirth[2], Alexandre Rancher[2], Marc-André Tessier[1]

[1] Polytechnique Montréal

[2] École de technologie supérieure

Challenge Michelin Bibendum: technologies et sécurité routière durable

Du 11 au 14 novembre 2014, à Chengdu, en Chine, le Challenge Michelin Bibendum réunit des milliers de décideurs, développeurs, spécialistes, étudiants et journalistes de tous les pays.

Du 11 au 14 novembre 2014, à Chengdu, en Chine, le Challenge Michelin Bibendum réunit des milliers de décideurs, développeurs, spécialistes, étudiants et journalistes de tous les pays. Ce sommet mondial a pour objectif de favoriser les échanges et les partenariats en matière de mobilité et de sécurité routière durables, avec une attention particulière portée sur les technologies expérimentales. En plus des ateliers et des nombreuses galeries de produits, un méga-hackathon, un village start-up, une ville intelligente et des parcours balisés, des rallys sont offerts aux participants pour faire l'essai de véhicules autonomes et de vélos électriques intelligents. Les exposants y expliquent les applications et dispositifs tels que l'assistance au freinage, la détection et l'évitement de piétons, les flottes de camions automatisées, les trains sans conducteurs, la route intelligente, la mobilité connectée et l'anti-dérapage deux-roues.

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Michelin a invité les étudiants à soumettre leur vision de la mobilité durable. Au final, ce sont 307 équipes, 674 participants de 319 universités, provenant de 38 pays, qui ont démontré leur intérêt pour cet enjeu. Quatre équipes se sont disputés la palme du concours :

- "Aquarius" (Brésil) est un modèle d'affaires pour connecter taxis et utilisateurs;
- "Ecofriendly Transportation" (France) souhaite réduire le bilan routier et l'empreinte environnementale en générant à partir de déchets de l'électricité pour véhicules autonomes utilisables 24/7;
- "Green Mobile" (Inde) développe une alternative viable à l'essence via l'hydrogène obtenue à l'aide de déchets de chocolateries;
- "Modulocar" (France) a conçu un véhicule électrique entièrement adaptable en fonction des besoins, de purement électrique en ville à hybride pour les longues sorties, et pouvant transporter des charges lourdes avec un module à haute capacité.

Parce que le Groupe Michelin est intéressé à établir des partenariats en vue de développer des projets de recherche en sécurité routière, une équipe d'étudiants du CIRODD, de Polytechnique Montréal et de l'École de technologie supérieure, a été invitée à participer au Challenge. L'équipe propose une approche multi-niveaux pour électrifier les transports au Québec. À l'échelle du quartier, la Serpentine, un mode de transport composé de cabines connectées et automatisées mues par des rails magnétiques sous la chaussée, est envisagée comme alternative écologique au déplacement des personnes et des biens sur le campus, et aussi pour collecter les déchets. Ce mode éliminerait les risques associés à la présence des camions lourds. À l'échelle régionale et de la ville, les solutions proposées gravitent autour des vélos et des autobus électriques, et du monorail suspendu.

Pour en savoir davantage sur le Challenge Michelin Bibendum ou pour faire partie de cette communauté d'experts, contacter Alexandre Échalier (alexandre.echalier-f297987@fr.michelin.com) ou visiter : https://community.michelinchallengebibendum.com/welcome. Pour apprendre sur le CIRODD, sa mission et des projets, contacter Valérie Bécaert (valerie.becaert@polymtl.ca) ou visiter : www.CIRODD.org.

Jean-François Bruneau[1], Hassana Elzein[1], Émilien Hirth[2], Alexandre Rancher[2], Marc-André Tessier[1]

[1] Polytechnique Montréal

[2] École de technologie supérieure

CIRODD
Centre interdisciplinaire de recherche en opérationnalisation du développement durable

Une équipe d'étudiants du CIRODD, de Polytechnique Montréal et de l'École de technologie supérieure, a été invitée à participer au Challenge.

Hosting a CARSP Conference

CARSP is looking for a local hosting committee to help organize a high quality road safety conference in 2016.

CARSP is looking for a local hosting committee to help organize a high quality road safety conference in 2016.

CARSP is dedicated to enhancing road safety internationally, nationally and at the local level by providing access to multi-disciplinary information, research and networking opportunities.

The annual CARSP conference (formally CMRSC) is held to share research and policy initiatives with other multi-disciplinary road safety professionals. The conference attracts attendees from across Canada as well as internationally.

Advantages of Hosting the Conference

The local hosting committee has the opportunity to highlight local road safety programs and research and to use the conference to pull together regional road safety partners. There is also an opportunity for local businesses to provide information to a national target group.

What is Involved in Hosting the Conference

The local hosting committee works with the CARSP board of directors in defining the local venue, menus, the scientific program, finding sponsors and other local events. A manual has been produced by CARSP to assist local hosting committees. The web site to support the conference as well as other logistics and seed funding is provided by CARSP.

How to Get Started

A local hosting committee should consider finding other local partners to assist in distributing the workload. Consideration should also be given to identifying key funding sources, such as Ministry of Transportation, Insurance Agencies or Road Construction Firms.

Contact CARSP to make your intentions known so that your jurisdiction may be considered as host of the 2016 conference or to get additional information on conference hosting. (carsp@cogeco.ca).

Brenda Suggett
CARSP

Recherche d'un hôte conjoint pour une conférence ACPSER

L'ACPSER est à la recherche d'un hôte conjoint pour l'organisation d'une conférence de haute qualité sur la sécurité routière en 2016.

L'ACPSER est dévouée à l'amélioration de la sécurité routière tant à l'échelle internationale, nationale que locale en assurant à ses membres l'accès à de l'information et de la recherche multidisciplinaires ainsi qu'à des opportunités de réseautage.

La conférence de l'ACPSER (précédemment la CCMSR) a lieu annuellement afin de permettre aux membres de partager leurs initiatives en recherche, politiques et pratiques avec d'autres professionnels en sécurité routière provenant de diverses disciplines. Les participants à la conférence viennent de partout au Canada ainsi que d'autres pays.

Les avantages d'organiser une conférence

L'hôte conjoint bénéficie d'une opportunité pour mettre l'accent sur les programmes et les recherches locaux en sécurité routière. L'organisation de la conférence peut aussi être l'occasion de rassembler les divers partenaires en sécurité routière locaux et régionaux. De plus, la conférence permet à des entreprises locales de diffuser de l'information à un niveau national.

Qu'est-ce que l'organisation de la conférence implique ?

L'hôte conjoint forme un comité organisateur local qui travaille de concert avec le conseil d'administration de l'ACPSER pour choisir le lieu de la conférence ainsi que les menus, le programme scientifique, les commanditaires et les événements locaux. Un manuel a été rédigé par l'ACPSER afin d'aider les comités organisateurs locaux. L'ACPSER s'occupe du site web de la conférence, de certains détails logistiques et du financement de démarrage.

Par où commencer ?

Un comité organisateur local devrait trouver d'autres partenaires locaux qui pourront les aider lors de la distribution des tâches. Le comité organisateur local devrait aussi identifier des sources de financement comme le ministère des Transports, des compagnies d'assurances ou des firmes d'ingénierie ou de construction de routes.

Veuillez aussi contacter l'ACPSER pour faire connaître votre intérêt afin que votre juridiction soit considérée pour l'organisation de la conférence 2016 ou pour obtenir plus d'informations sur l'organisation de la conférence. (carsp@cogeco.ca)

Brenda Suggett
ACPSER

L'ACPSER est à la recherche d'un hôte conjoint pour l'organisation d'une conférence de haute qualité sur la sécurité routière en 2016.

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Next Issue and Photo Contest

The next issue of the Safety Network will feature road safety promotional campaigns from provincial and territorial ministries of transportation from all across Canada. We will also be hosting a road safety promotion photo contest over the next few months. Photo submissions can include billboards, website snap shots, still images from videos, or shots of other safety promotional material. The winning photo will be featured in the next issue and the person responsible for taking the photo will receive recognition at the 2015 CARSP Conference. Please send submissions to Rebecca Peterniak (chair@youthroadsafety.ca) or contact her if you would like to provide an article on a ministry's recent or particularly successful road safety promotional campaign. Photo submissions and articles are due January 5, 2015.

Prochain Numéro et Concours de Photos

Le prochain numéro du bulletin Le Réseau-Sécurité aura pour thème les campagnes de promotion en sécurité routière produites par les ministères des Transports provinciaux et territoriaux de l'ensemble du Canada. Au cours des prochains mois, nous allons également organiser un concours de photos dont le thème sera la promotion de la sécurité routière. Les photos soumises peuvent comprendre des panneaux d'affichage, des images captées sur le vif provenant d'un site internet, des images fixes provenant d'une vidéo ou des prises de vue d'autre matériel promotionnel en lien avec la sécurité. La photographie gagnante fera l'objet d'un traitement particulier dans le prochain numéro et la contribution de la personne qui l'a prise sera soulignée lors de la conférence 2015 de l'ACPSER. S'il-vous-plaît, faites parvenir vos propositions à Rebecca Peterniak (chair@youthroadsafety.ca) ou contactez Rebecca si vous souhaitez proposer un article sur une campagne de promotion récente particulièrement réussie réalisée par un ministère. L'échéance pour les propositions de photographies et d'articles est fixée au 5 janvier 2015.