

# CAV Update

A monthly newsletter  
on the CAV ecosystem

April 2021

## ***From the Editors***

I have a bittersweet announcement. Paul Godsmark, a co-founder of CAVCOE and our CTO, has accepted a new position with Parsons.

I checked my calendar, and the earliest of our many conversations over the years was in July 2012 when we were both members of **ITS Canada**. Over these almost 9 years, Paul has been a key part of almost all the CAVCOE projects and has made many substantial contributions to the Canadian CAV ecosystem as well as internationally. The result of his work is that the Canadian CAV world has certainly progressed significantly.

I - and I am sure all of you -- wish Paul much success in his new position with Parsons. I plan to stay in touch with him. And given that Oakville is much closer to Ottawa than his previous home in Alberta, I will probably see him more frequently - once COVID is in the rear view mirror. Best wishes, Paul!

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## ***Canadian CAV News***

In March 2021, **Transport Canada** released the latest version of *ITS Architecture for Canada* (Version 3.1). This version brings the Canadian version in closer compliance with the latest U.S. Version 9.0 architecture known as the *Architecture Reference for Cooperative and Intelligent Transportation* (ARC-IT). Certain elements of Connected and Automated Vehicles are incorporated in this latest version, e.g., *Connected Vehicle Traffic Signal System* and *Automated Vehicle Operations*. More information on Transport Canada's site at [this link](#).

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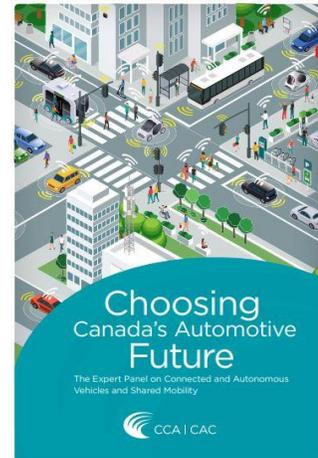
Winnipeg-based **Bison Transport Inc.** is collaborating with California-based **Embark Trucks** in trialing Embark's automated truck technology. Other participants are **Werner Enterprises, Mesilla Valley Transportation** and **Anheuser Busch InBev**.



Embark has developed the *Embark Universal Interface* (EUI) which the company claims

will work with the four popular makes of trucks made by **Peterbilt, Volvo, International,** and **Freightliner**. More information is at [this link](#). A short YouTube video about EUI can be viewed at [this link](#).

In March 2021, a major report titled *Choosing Canada's Automotive Future* was published by the **Council of Canadian Academics (CCA)**. The report was sponsored by **Innovation, Science and Economic Development Canada (ISED)**. This 233-page report takes a deep dive into how future Connected and Autonomous vehicles and Shared mobility services (CASE) may impact Canadian economy, industry, and society. More information is at [this link](#). A copy of the report can be viewed/downloaded at [this link](#).



The **City of Hamilton** in collaboration with **McMaster University** and the **Centre for Integrated Transportation and Mobility (CITM)** have initiated a connected vehicle project. Three intersections have been equipped with cameras, microphones, weather sensors, radio equipment and LiDAR to facilitate R&D with local researchers and the City. The Hamilton research site is one of six in the provincially-funded *Autonomous Vehicle Innovation Network (AVIN)*. The initial focus for the new system is on traffic management and collision avoidance technologies. More information is at [this link](#).



In early March 2021, the **Government of Manitoba** introduced legislation that would allow testing of automated vehicles on provincial roads. **Manitoba Infrastructure Minister Ron Schuler** said "*Development of vehicle technology, including automated self-driving vehicles, is progressing rapidly worldwide and these changes will help make Manitoba competitive in attracting business and keeping pace with other jurisdictions. Our government is honouring our commitment to bring forward legislative amendments that would create a framework to allow the safe testing of automated vehicles on Manitoba roads.*" The news release is at [this link](#), and the proposed legislation can be viewed on the Manitoba Government's web site at [this link](#).



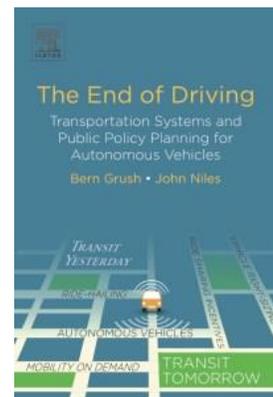
In March 2021, **The University of Alberta** ran a feature and interview with Prof. Tony Qiu on his CAV research activities. He spoke about a \$15 million partnership between the U of A and Telus for testing 5G technologies for high-speed data transmission and of a truck platooning project sponsored by **Transport Canada**. The project is titled the *Cooperative Truck Platooning Systems* and is in collaboration with **Alberta Motor Transport Association** (AMTA). The project brings together several industry partners with three different U of A research teams to test truck platoons linking transport trucks using automated driving support systems in real-world conditions over the next 15 months. Details are at [this link](#).

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**Transport Canada** and the **National Research Council** have published a report on the on-road electric Low-Speed Automated Shuttle (LSAS) trial conducted in Ottawa in Fall 2020. The research team at **Transport Canada's Innovation Centre** contracted with **Invest Ottawa (Area X.O)** for this project. This project aimed to test and evaluate LSAS as a potential sustainable transit solution and help Transport Canada prepare for the safe and efficient integration of this technology into future Canadian passenger transportation systems. The report is available [here](#).

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I have been reading *The End of Driving* by two well-known people in the CAV ecosystem: **Bern Grush** (of Toronto) and **John Niles** (of Seattle). This is a particularly good book that focuses on the urban and social issues of CAV deployment, and on strategies for creating flexible transportation systems and policies that capture the opportunities and avoid the pitfalls of a driverless environment. The details on getting the book are [here](#).



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## **CASPI News**

We are pleased to announce that the winner of the Technical Paper part of the automated snow plow competition was **Team VAUL** from the Université de Laval. CASPI also received qualifying Technical Paper submissions from **Team OC Autoplow** from Carleton University and the University of Ottawa, and **Team Caribou** from The University of Ottawa.

Due to the COVID-19 pandemic, this year's Phase II part of the competition (On-Site Demonstration) has been redesigned to limit the physical contact required between team members, shared equipment, and shared workspaces. A key factor in the design of the competition format is the ability for teams to work entirely remotely (e.g., from a home office/personal garage) and still produce a competitive submission. Personal and



public health are the top priority, and it is expected that participants will act in accordance with the most recent public health orders/restrictions in their jurisdiction.

This year, the objective is not to build an operational snow plow, rather it is for teams to do a “deep dive” into autonomy functions that are essential aspects of autonomous vehicles. The aim is to help teams build capacity for future competitions and to develop skills related to autonomous technologies.

Phase II of the competition will be conducted via Zoom on Saturday May 15th and the winner will be announced on another Zoom call on Sunday May 16, 2021.

We are also pleased to announce that **Tim Lichti**, Founder and CEO of **Top Hat Robotics**, will speak at the opening of the competition. Tim is a Canadian technology entrepreneur. He was named by the Globe & Mail as one of Canada's *Top 12 Innovators at Work* and was nominated for an Innovator of the Year award by PricewaterhouseCoopers. Top Hat Robotics is the world's first (and only) commercial-ready, manufacturer of 100% electric sidewalk robots for sidewalk snow plowing, salting, and grass cutting. They are based in Kitchener-Waterloo.

Everybody is invited to attend (virtually of course) all or part of the events on the Saturday and Sunday. For an invitation, the schedule, and the Zoom details, please write to [competition@caspi-icda.com](mailto:competition@caspi-icda.com)

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## ***International CAV News***

The new Biden Administration has big plans for electric cars and the supporting charging infrastructure. Many see this as a precursor for bringing autonomy to road vehicles. The new U.S. Secretary of Transportation, **Pete Buttigieg**, appears to be solidly behind this plan judging by what he said at his confirmation hearing. Mr. Buttigieg indicated ambitious priorities for promoting electric and automated freight fleet vehicles as part of the administration's overall goals for combating climate change. Part of the reason is the prediction that freight shipments are expected to increase by 22.4 percent over the next 20 years. The government hopes that long-haul freight with automation will eventually lead to fewer injuries and deaths. More information is at [this link](#).

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Intel-owned **Mobileye** is a major developer of Automated Driving Systems (ADS). Mobileye has announced a partnership with two major French companies for developing 16-passenger automated shuttles to be deployed first in France and then Europe (by 2023) and then the rest of the world. The ultimate goal is to integrate these shuttles into the local public transportation systems. The French companies are the **Lohr Group** and **Transdev Autonomous Transport Systems (ATS)**. Lohr Group is a manufacturer of transport systems and ATS is a large private-sector operator of public transportation systems. More information at [this link](#).



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On April 15, 2021, truck automation company **TuSimple** listed its shares on the Nasdaq exchange through an *Initial Public Offering* (IPO). The company reportedly raised US\$1 billion through this IPO giving TuSimple a market capitalization of US\$8.9 billion. This company is one of the first major self-drive technology companies to monetize its technology and business model. More information is at [this link](#).

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Staying with automated trucking theme, on January 28, 2021, **The U.S. Department of Transportation** (USDOT) published a 42-page report titled *Macroeconomic Impacts of Automated Driving Systems in Long-Haul Trucking*. Using the *USAGE-Hwy* model, USDOT has made predictions on how adoption of automated trucks may impact U.S. economy and jobs in the trucking industry. Unlike many dire predictions about massive (driving) job losses in the industry, the USDOT study comes to a much less dire prediction in employment displacement of truck drivers. A copy of the USDOT report can be viewed/downloaded at [this link](#).

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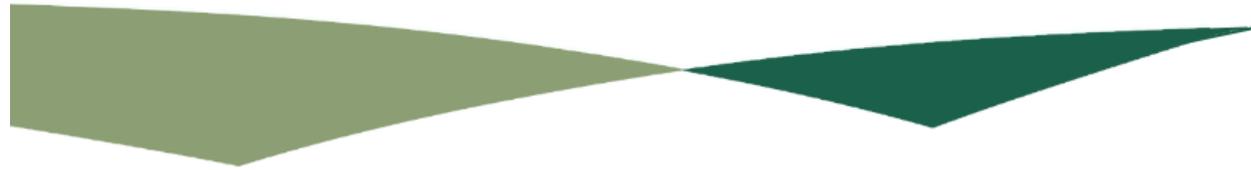
For the past six years, the **American Automobile Association** (AAA) has conducted surveys to determine the public level of interest in autonomous vehicles. The latest survey conducted in January 2021 among 1,000 adults indicates that there is a greater interest (80%) in safety systems such as *automatic emergency braking* with pedestrian detection and *blind spot warning* rather than fully self-driving cars. It also says that exaggerated claims by some manufacturers claiming to have developed *full self-driving* capability undermines public's confidence in the AV technology. More information is at [this link](#).

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**Tesla** and **Waymo** have adopted different approaches to development of automated driving. For example, Tesla has so far shunned the use of LiDAR in its vehicles whereas Waymo views it as an essential sensor. Tesla claims its *Full Self-Driving* (FSD) system is superior to Waymo's driverless technology. In March 2021, an enterprising group of individuals decided to pitch these rivals against each other. They picked the same origin and destination and then drove the route in a Waymo driverless (*robotaxi*) Chrysler Pacifica and then did the same with a Tesla (model unknown) engaging its FSD function. The results: Waymo took 8 minutes. Tesla / FSD took 5 minutes and 12 seconds. The organizers filmed both drives and posted it to YouTube. The video clip can be viewed at [this link](#). It is 14 minutes long. More information at [this link](#).

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In an article titled *Self-driving startups are becoming an endangered species* in **arstechnica.com**, the author points to several recent acquisitions of self-driving startups by more established companies; and the fact that all of them need to transition to fully driverless operations for their services to be profitable. Five years ago, many people expected self-driving startups to disrupt the old-line automotive industry. This clearly did not happen. And the longer it takes, the more likely that self-driving startups



will be absorbed into incumbent auto or technology companies. The article can be viewed at [this link](#).

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Safety benefits of CAVs are often cited for spurring development and investment in the field. Reducing automobile crashes is widely viewed as one of these benefits. To prove the point, in a 24-page paper published in February 2021 by **Waymo** and titled *Waymo Simulated Driving Behavior in Reconstructed Collisions*, Waymo argues (through simulations) that in various real-world automobile crashes, its self-driving technology could have mitigated these crashes. Waymo's analysis is focused on Arizona crashes over a ten-year period. More information at [this link](#). A copy of the Waymo paper can be downloaded at [this link](#).

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It is no secret that hype is part and parcel of the CAV industry. **Tesla** and its self-driving technology are a case in point. An article in **Los Angeles Times** illustrates this pretty well. It states that the *full self-driving* (FSD) option that Tesla sells to its customers at US\$10,000 is nowhere close to being a true FSD. In letters to **California Department of Motor Vehicles** (DMV), Tesla states that there are circumstances and events in which the FSD system is not capable of recognizing or responding. These include static objects and road debris, emergency vehicles, construction zones, large uncontrolled intersections with multiple incoming ways, occlusions, adverse weather, complicated or adversarial vehicles in the driving path, unmapped roads, etc. The LA Times article can be viewed at [this link](#).

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In its first foray outside the United States, GM's self-driving division, **Cruise**, has announced an agreement with **Dubai's Roads and Transport Authority** (RTA) to start testing its *Origin* driverless shuttle and then start a commercial service there in 2023. Cruise hopes to deploy up to 4,000 such shared robotaxis by 2030. More information is at [this link](#).

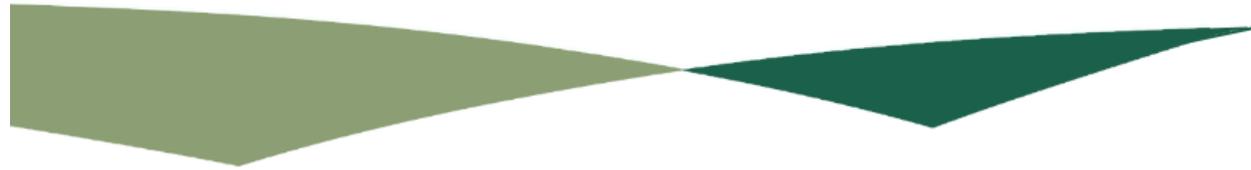


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The **State of Pennsylvania** is the latest state to pass legislation allowing operation of sidewalk delivery robots. The legal limits for these



robots are 2 mph in a pedestrian area, 25 mph on a roadway, and a load limit of 550 pounds. Not everyone is happy about delivery robots crowding the sidewalks.



The **Teamsters Union** is not supportive because the robots can potentially take driving jobs away from its members. **The National Association of City Transportation Officials** (NACTO) believes that automation without a comprehensive overhaul of how streets are designed, allocated, and shared will not result in substantive safety, sustainability, or equity gains. More information is at [this link](#).

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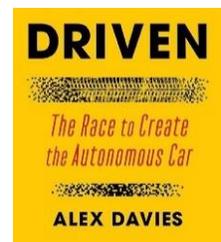
Some large U.S. labour organizations such as **AFL-CIO**, **Transport Workers Union of America** (TWU), the **American Trucking Associations** (ATA) and others are opposed to the last AV policy document released by the (previous) Trump Administration. The document was called *Automated Vehicles Comprehensive Plan* (AVCP) and was released in January 2021. The unions are lobbying the Biden Administration to rescind it. They allege that they were not consulted when the AVCP was being developed and as such; it puts the livelihood of their members and public safety at risk. More information at [this link](#).

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For the past twenty-years, the German carmaker **BMW** has used the *iDrive* system for its infotainment, navigation, and vehicle monitoring. The latest version of *iDrive* has been designed with autonomous driving in mind (Level 3 for the time being). Furthermore, BMW has designed a large, curved dashboard angled towards the driver for displaying various messages and controls of the vehicle. Information about navigation, parking, and EV charging will be fully integrated into *iDrive*. The new *iDrive* will be debuted this year in the new iX electric SUV and the BMW i4 electric sedan. More information is at [this link](#).



Another book about the self-driving car industry has been published. The book is titled *DRIVEN: The Race to Create the Autonomous Car*. In it, the author – Alex Davies recounts the fierce competition between Google, Uber, and other companies in the race to make AVs a reality. It is available on Amazon (Canada) for \$28.76. More information at [this link](#).





## ***Upcoming CAV-Related Conferences***

- May 3-6, 2021 [Association for Unmanned Vehicle Systems International \(AUVSI\) 'XPONENTIAL'](#), Atlanta GA
- Jun 8-10, 2021 [Autonomous Vehicle Technology Expo 2021](#), Stuttgart, Germany
- Jun 16-17, 2021 [Autonomous Vehicles 2021](#), Long Beach CA
- Jun 20-23, 2021 [ITS Canada 2021 Conference](#)
- Jun 22-23, 2021 [Autonomous Vehicle Technology & Test Expo 2021](#), Hannover, Germany
- Sept 13-15, 2021 [MINExpo](#), Las Vegas, Nevada
- Sept 27-30, 2021 [IEEE VTC2021-Fall](#). Paper submissions are due May 15, click on the link for more details.
- Oct 11-12, 2021 [Auto Sensors 2021](#), Detroit MI
- Oct 11-15, 2021 [ITS World Congress](#), Hamburg, Germany
- Dec 14-17, 2021 [UITP Global Public Transport Summit](#); Melbourne, Australia
- Feb 27 – Mar 2, 2022 Ontario Good Roads Association's conference; Fairmont Royal York, Toronto
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## **About CAV Update**

*CAV Update is a free, monthly summary of news and analysis in the world of connected and automated vehicles, and the impact on the private sector, government, and society.*

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**CAVCOE** (formerly the Canadian Automated Vehicles Centre of Excellence) advises the public and private sectors on planning for the arrival of self-driving vehicles.

**CASPI** (the Canadian Automated Snow Plow Initiative) is an association for all stakeholders involved in winter operations and maintenance of sidewalks and trails.

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