

CAV Update

A monthly newsletter
on the CAV ecosystem

February 2022

From the Editors

The lead story below is that the City of Ottawa has banned sidewalk robots, as did the City of Toronto in December 2021. In the December issue of *CAV Update*, we linked to an excellent, balanced analysis by Bern Grush of the Urban Robotics Foundation. The link is repeated [here](#). We agree with Bern’s conclusion that the regulatory process needs improving because the only way to get a municipal government to address an issue is for the supplier to spend money on a public pilot project. Politicians seem to be reluctant to investigate an issue ahead of time. This reminds us of the time, several years ago, when Lisa Raitt was Canada’s Minister of Transport. In a news conference, she was asked about regulation of self-driving cars. Her answer was that it was premature because “the technology is not here yet”. The reality is that the regulatory process takes longer than research and development. As Wayne Gretzky famously said: “Skate to where the puck is going, not where it has been.” All levels of government need to spend more time looking ahead and planning for new developments before they are deployed.

Canadian CAV News

In another setback for the Canadian sidewalk delivery robot industry, on February 2, 2022, the **City of Ottawa**’s Transportation Committee voted to ban sidewalk delivery robots from that city’s sidewalks. This follows a similar ban imposed by the **City of Toronto** in December 2021. **Tiny Mile** is the Toronto-based company whose sidewalk robots were the target of Ottawa’s ban. The company says that these robots reduce the cost of deliveries and reliance on cars to do the same task. It is worth noting that a number of cities in the United States are allowing such vehicles to operate in their jurisdictions. The **Province of Ontario** is currently considering expanding the scope of its automated vehicle regulations to include *micro-utility* vehicles such as delivery robots. More information is at [this link](#).



PAVE Canada has announced its launch. *Partners in AV Education* – or PAVE – is a coalition of industry, non-profits, and academics with one goal: to bring the conversation about automated vehicles (AVs) to the public so everyone can play a role in shaping the future. PAVE is purely educational; they do not advocate for a particular technology or specific public policies. Their members, which includes **CAVCOE**, believe that they can



only achieve the potential benefits of driverless technology if the public and policymakers know the honest facts. PAVE wants to raise public awareness of both what is on the roads today and what is possible for the future.

Thanks to a generous grant from **Transport Canada**, they have launched PAVE Canada to extend this educational effort to the Canadian public. There is more information on PAVE Canada [here](#)

In 2020, **CSA Group** published a research report titled "*Connected and Automated Vehicle Technologies – Insights for Codes and Standards in Canada.*" The report provided numerous recommendations and specifically highlighted the need for a code that would support the deployment of connected and automated vehicle (CAV) technology. This code aims to provide requirements and specifications for safe and secure digital and physical infrastructures for CAV operation. More information is at this [link](#).



To help develop the code, CSA Group recently published a second research report titled "***Physical and Digital Infrastructure for Connected and Automated Vehicles (CAV).***" This report provides a framework for developing a code for CAV implementation within North America, addressing three areas: 1) physical infrastructure, 2) digital infrastructure, and 3) cybersecurity and data security/privacy. More information is at this [link](#).

The development of the framework was informed by an investigation into relevant standards, technical research, and other existing literature sources. The findings in this report are also based on interviews with several experts in the physical and digital infrastructure fields who provided input on emerging standards and helped validate findings from the literature review. With these inputs, the report identifies categories for CAV requirements and specifications, as well as relevant standards, and provides a framework that can serve as a tangible starting point for CAV code development.

To learn more and engage with other CAV stakeholders, join [CSA Communities](#) (free registration required).

In early January 2022, the **Province of Ontario** and the **State of Michigan** announced a new partnership for developing an *air mobility corridor* between their respective jurisdictions. The first step in this task is to conduct a feasibility study to explore whether small drones can be flown *beyond the visual line of sight* (BVLOS) of a pilot and be used in operations such as just-in-time delivery, medical transport, etc. Many companies and organizations are involved in this initiative. The project's lead is **Air Space Link** with participation from aerospace company **Thales USA** and a number of other companies. The **Ontario Vehicle Innovation Network** (OVIN) and Ontario's **Ministry of Transportation** (MTO) will be handling the project's Canadian side. Geographically, this project will study the feasibility of a commercial drone skyway in three proposed areas: an international connection between Michigan and Ontario, southeast Michigan, and any other suitable location in the State of Michigan. More information is at [this link](#).



Oakville, Ontario based **Geotab Inc.** is a leader in connected vehicle (CV) technology and *In-Vehicle Monitoring Systems* (IVMS). Geotab beat out the competition to win a contract with the United States **Department of Air Force** (DAF) to provide telematics hardware and CV technologies for its vehicle fleet totaling approximately 21,000 general purpose vehicles. Geotab's technology will enable DAF to better manage its vehicles and provide the following functionalities:



- Automated odometer capturing
- Engine diagnostics
- Predictive analytics
- Fuel data
- Custom reporting
- GHG Reduction Dashboards
- Fleet Right-Sizing Reporting

More information is at [this link](#).

Winter Weather Testing

There have been a number of interesting developments in this space.

First, the Thompson MB winter weather testing initiative has been rebranded to **SubZeroNorth**.

SUBZERONORTH
WINTER WEATHER TESTING

Second, the team has been expanded and now includes:

- Ken Slobodian, who has spent the last 35 years helping entrepreneurial-minded individuals efficiently open and operate businesses.
- Tim Gibson, who has 25+ years of industrial experience and is also with the University College of the North (UCN) in Thompson.
- Samantha Wiwcharuk, with 7+ years of Office Administration experience, and is a graduate of UCN. She has lived in Thompson for almost 10 years.

The whole team has been involved in a project to showcase drone use in Northern Manitoba. **Transport Canada**, **Spexi** and **AirMarket** are involved in this event, which is being held in Thompson and is hosted by SubZeroNorth. More information is [here](#).



Finally, the planning for the Winter Weather Testing conference in late November 2022 is well underway. This conference will explore the opportunities and challenges in testing products and services for winter weather and all-season testing for the North.

Please note that this section of *CAV Update* on winter weather testing is migrating to a separate newsletter that will be published by SubZeroNorth and will no longer be part of *CAV Update*. If you would like to continue receive news on winter weather testing, please write to info@subzeronorth.ca

International CAV News

In a surprise development, Arizona-based **Local Motors**, the high-profile maker of *Olli* autonomous shuttles ceased operations on January 14, 2022. The *Olli* shuttles were used in many AV demonstration projects including the ill-fated one in Whitby, Ontario where on December 17, 2021 it crashed into a tree seriously injuring the safety driver onboard. *Olli* was also supposed to provide passenger service between West Rouge and Rouge Hill GO station in Toronto starting in Spring 2021. Aside from an October 2020 announcement, news on that pilot seems to have





gone quiet. According to *crunchbase.com*, Local Motors had attracted US\$15.3 million in venture funding while it was in existence. More information is at [this link](#).

There is a lot activity in bringing airtaxis into commercial service. This includes both piloted and autonomous types. According to a recent article in *The Economist* magazine, the airtaxi industry attracted US\$5.1 billion in 2021 (see [this link](#)). And, over 200 companies are engaged in developing this technology. U.S. and Chinese companies are dominating the field at present. Bringing airtaxis to mass markets entails three distinct phases. First is obtaining a *Type Certificate* from the appropriate aviation authority. Second is obtaining a *Production Certificate* permitting the manufacturing of the aircraft. And third, obtaining an *Operating Licence* for carrying fare-paying passengers. **Joby Aviation** is one of the leading American developers of airtaxis. It has already applied to the **Federal Aviation Administration** (FAA) to operate airtaxi test flights over the San Francisco Bay area (see [this link](#)). Joby hopes to launch its commercial airtaxi business in 2024.



Canada's **CAE Inc.** is a major manufacturer of flight simulators for the world's major airlines and the military. In a recent interview, its CEO indicated that CAE plans to develop simulators designed specifically for future electric airtaxis. The interview article can be viewed at [this link](#).



California-based **Parallel Systems** is a startup developing autonomy for railways. It is developing single railcars which are battery operated, use the existing rail network and are autonomous. Carrying freight by rail is four to five times more energy efficient than trucks due to lower friction of steel to steel as opposed to rubber tires to the asphalt. The company claims that its automated rail vehicles can carry nearly three times more capacity than a semi-truck, travel up to 500 miles (804 Km) between charges, and recharge in less than one hour. It has also attracted US\$50 million in venture funding. The rail vehicles are individually powered and can travel alone on existing rail lines or join together in *platoons* for all or part of their journey. The company sees legacy rail companies as its potential partner for its niche technology. More information is at [this link](#).



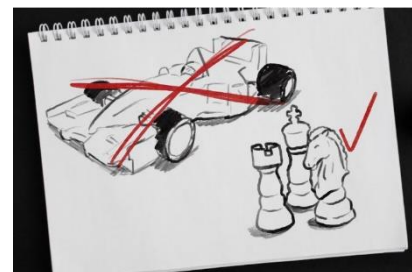
At the 2022 **Consumer Electronic Show (CES)** in Las Vegas, leading agricultural company - **John Deere**, unveiled its first fully autonomous tractor. It is equipped with six pairs of stereo cameras enabling 360-degree obstacle detection and the calculation of distance. Images captured by the cameras are passed through a deep neural network that classifies each pixel in approximately 100 milliseconds and determines if the machine continues to move or stops. Furthermore, the autonomous tractor is also continuously checking its position relative to a geofence, ensuring it is operating where it is supposed to, and is within less than an inch of accuracy. The tractor's operation is monitored via a smartphone app where the farmer can view live video, images, data such as fuel level, adjust the speed, depth and other operating parameters. In the event of any anomalies or technical issues, the farmer will be notified remotely and can make adjustments to the operation of the machine. The tractor is priced at US\$58,000. More information is at [this link](#). A short YouTube clip of the autonomous tractor in action can be viewed at [this link](#).




Staying with automated agricultural technology, San Francisco-based startup **Agtonomy** has raised US\$9 million to develop a hybrid autonomy and tele-assist technology to turn tractors and other equipment into autonomous machines. Among the financial backers is **Toyota Ventures**. According to Toyota, there is a huge potential in agtech and fully autonomous vehicles will become a reality on farms. Agtonomy vision is for larger farms to purchase a swarm of smaller machines that can run 24 hours a day and be more environmentally friendly. More information is at [this link](#).



An article titled *Why Self-Driving Isn't a Race, It's a Game* published in **groundtruthautonomy.com** uses historical examples to establish the point that autonomous vehicle development is in its very early stages and there is no guarantee that today's dominant players in the AV space will be necessarily the dominant players in the future. Examples from the evolution of flight, airlines, elevator companies and others are cited in the article. The conclusion of the article is that the current state of AV development is not really a race but a game. All explained succinctly in the article which can be viewed at [this link](#).





On February 2, 2022, the **U.S. House of Representative's** subcommittee on *Highways and Transit* held a session on proposed legislation for autonomous vehicles. This session was the first one in over two-years. In fact, AV legislation known as *Advancement of Revolutionary Technologies* (AV START) has been stalled in the Congress for about five-years now. Members of the Congress have been unable to agree on some fundamental issues such as granting exemptions to AV companies, liability issues, competing legislation from various states, etc. Interestingly, Congress seems to have its focus now on protecting workers displaced by automation and to differentiate between advanced driver assistance systems (ADAS) and AVs. Representatives of many AV companies attended this hearing but were unable to provide guidance to the committee on how to move the agenda forward. More information is at [this link](#). The 4.5-hour hearing can also be viewed on YouTube at [this link](#).



One of the most quoted statistics to push for AV adoption is that 94% or more of automobile crashes is due to *human error*. This statistic is often quoted by the media, the AV industry and all levels of government. It is then theorized that AVs will make a dent in this number, lowering it perhaps to 50%. A recent article by *David Zipper* in **The Atlantic** magazine takes issue with the 94% statistics and laying all the blame on *human error*. He posits that this is largely an American point of view and assigns no blame to makers of SUVs and trucks for adding heft and height to their vehicles, and to traffic engineers and road design engineers who could be making their designs safer. By contrast, in Europe regulators have pushed carmakers to build vehicles that are safer for pedestrians and cyclists, and governments regularly adjust road designs after a crash to reduce the likelihood of recurrence. The author gives good examples of how a crash occurs, how it is investigated and how the blame is assigned. He advocates for a more European style of looking at crash analysis and remedy. The Atlantic article can be viewed at [this link](#).

The Atlantic

A major multi-year agreement between **Stellantis** and **Amazon Web Services** (AWS) will see the two companies collaborate to bring connectivity and multiple functionalities to vehicles made by Stellantis starting in 2024. Millions of Stellantis vehicles will be equipped with the *STLA SmartCockpit* which will run advanced software developed jointly by the two companies. The software will be updated *Over the Air* (OTA) if/when



necessary. Some of the capabilities of vehicles thus equipped will be in-vehicle entertainment for each of the passengers as well as Alexa-enabled voice assistance, navigation, vehicle maintenance, ecommerce marketplaces, and payment services. On family trips, it can recommend media content, points of interest, restaurants, and other fun stops along the route. Back in 2020, AWS had signed a similar agreement with BlackBerry. More information is at the Stellantis site at [this link](#).

And finally, California-based **Toyota Research Institute** (TRI) is no stranger to autonomous vehicle development. One of its more recent research initiatives has been to bestow *expert driver* skills into its automated drive systems. For instance, many ordinary drivers do not know how to handle unexpected obstacles on the road such as a fallen tree, cargo fallen off the back of a truck or a patch of black ice. By contrast, expert drivers have the knowledge and experience of dealing with such scenarios. *Drifting* the vehicle is one such technique.



The TRI team equipped a *Toyota Supra* sports car with all the necessary equipment to self-drive along with specially developed software to enable the vehicle to make drifting maneuvers similar to an expert driver. The test was conducted at the *Thunderhill Raceway Park* in northern California. More information is at [this link](#). Also, a 3-minute YouTube video of the Supra in action can be viewed at [this link](#).

Upcoming CAV-Related Events

May 25-26, 2022	Autonomous Vehicles USA 2022 , Huntington Beach, California
June 8-9, 2022	AutoTech: Detroit , Novi, Michigan
June 20-23, 2022	HxGN LIVE Global , Las Vegas, Nevada
June 21-23, 2021	Autonomous Vehicle Technology Expo , Stuttgart, Germany
Sept 7-8, 2022	ADAS & Autonomous Vehicle Technology Expo , San Jose, California (postponed from March 2022)
Nov 16-17, 2022	North American Winter Weather Conference, Thompson, Manitoba, Canada



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.

Chief Editor: Ahmad Radmanesh

Contributors to this issue: Barrie Kirk, Nicola McLeod, Keith Fagan and Donna Elliott

To subscribe, click [here](#). To unsubscribe, click [here](#).

We welcome all comments; please send them [here](#)

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

300 Earl Grey Drive, Suite 222, Ottawa ON K2T 1C1, Canada.

info@cavcoe.com

www.cavcoe.com

© CAVCOE 2022