



Canadian Automated Vehicle Initiative

CAV Update

November 2024

From the Editors

Canada needs a national CAV strategy -- and CAVI is developing one. A robust CAV policy would align well with Canada's existing national priorities, including improving safety on our roads. It would also position Canada to lead in key aspects of CAV development and deployment.

For this initiative, CAVI has formed a five-person Working Group that is co-chaired by **Barrie Kirk** and **Andrew Miller** of **Paladin Consulting**.

The scope of this report includes all land CAVs for passenger transportation, freight and logistics, and service vehicles. Autonomous marine vessels and drones are viewed as very different ecosystems and are not included.

When the Working Group has developed a draft of this strategy, we will send it to CAVI members to validate the strategy and provide comments. The resulting strategy will be published in January 2025. Initially, this will be a high level strategy; we plan to follow-up later in 2025 with a more detailed strategy developed with extensive stakeholder consultations.

Canadian CAV News


On October 8, 2024, the **Ontario Vehicle Innovation Network (OVIN)** announced a new partnership with **Mercedes-Benz (MB)** for creation of a number of incubators across the Province of Ontario. The

Ontario incubators will become part of what MB calls the *STARTUP AUTOBAHN* network. The mission of these incubators is

to develop the next generations of technologies required by the connected, autonomous, and electric vehicles. To this end, industry leaders, post-secondary institutions, entrepreneurs, start-ups, and scale-ups along with municipalities and regional stakeholders will all be involved in these incubators. Initially, the incubators will

be located in Windsor, Kitchener-Waterloo, and Toronto. Ontario Premier Doug Ford, the Mayor of Toronto, the Chief Technology Officer of Mercedes-Benz and other dignitaries were on hand for this announcement. More information is at [this link](#).





As we have previously reported, the **Ministry of Transportation of Ontario** has published a draft regulatory framework for pilot projects using Automated Commercial Motor Vehicles (ACMVs) on Ontario roads, i.e. large trucks. This is separate from, but in parallel with, the current regulatory framework for testing cars and light trucks.

MTO requested feedback on the draft framework. CAVI responded and you can read our letter [here](#).

Staying with CAVI, we have received excellent feedback on the webinar held on November 20. The subject was *The ever-expanding use of autonomous vehicles*. The webinar described the many use-cases of this technology in three categories: passenger transportation, freight and logistics, and service vehicles.

Congratulations to **Andrew Miller** of **Paladin Consulting** for his presentation, and to **Tenille Houston** of **Aurrigo** for moderating the event.

If you missed the webinar, the recording is [here](#); the passcode is W=D2jq6\$

A recent article titled *Automated Driving: The Outside View* by the Canadian author **Andrew Miller** of **Paladin Consulting** explores the business model of leading robotaxi companies, like **Waymo**, and how they are cautiously building this nascent industry. In the author's view, these companies believe that any robotaxi incident can have a negative impact on the entire industry. For this reason, the industry as a whole has adopted a light touch, go slow, 'build and maintain trust' stance, with the aim of not attracting hostile attention. In practice, this has meant starting small in selected zones in a city such as San Francisco or Phoenix, and gradually enlarging the service area.



Another factor limiting the adoption and growth of robotaxis and other forms of automation are government regulations, and to some extent politics. For example, in Kentucky, the **Teamsters Union** successfully lobbied the governor to ban driverless trucks from the public roads in that state. The Teamsters argued that automation can rob their members of their jobs. The Teamsters also mounted a similar effort in San Francisco against Waymo arguing that Waymo intends to get into delivery business, and this could put the jobs of delivery drivers in jeopardy. Waymo representatives strongly denied this, however, The City of San Francisco sided with the Teamsters and rejected Waymo's expansion request. The article can be viewed at [this link](#).

We are very pleased to profile **RSG International**, a CAVI corporate member. RSG International is a North American leader in road safety, offering services from product development to installation and traffic management. As a woman-led business committed to safety in every aspect, RSG International prioritizes comprehensive health and safety programs, including mental well-being initiatives. More information can be viewed at RSG International's website at [this link](#).



A recent article titled *What rights should a robot have?* by Bern Grush of the **Urban Robotics Foundation** (URF) explores legal, social and moral *rights* that a *public-area mobile robot* (PMR) might have in a future where many PMRs will be deployed for a variety of tasks such as food or goods delivery, being a guide to a visually impaired person, carrying a patient in a hospital corridor, assisting a police officer and other tasks. In these cases, the robot's right to operate and occupy space would likely be protected by law and then-current social conventions. By extension, these rights could have an impact in a court case or an insurance settlement. There have been regulations passed in several countries that require a PMR to follow pedestrian rules or for a motor vehicle operator to treat a PMR in a roadway intersection as though it is a pedestrian. The issues of a PMR's capabilities, agency and rights are part of the **ISO Draft Technical Standard 4448** currently under development by URF and others. The URF article can be viewed at [this link](#).



International CAV News

Robotaxis in theory should be cheaper than a human-driven taxi due to a lack of a driver behind the wheel. This is refuted in a recent report by **Forbes** magazine which says robotaxi rides are more expensive than a ride in an **Uber** or **Lyft**, and take significantly longer to reach the destination. This is based on over 50 rides taken in a **Waymo** robotaxi and comparing the cost, time for pickup and trip time, to a similar trip in a ride-hailing taxi. The tests were conducted in Los Angeles and assessed on the basis of the ride price at booking, estimated time to pick up, and estimated time of arrival. The robotaxis performed worse on all these criteria. The test data showed that the average time to pick up for Waymo was 7.2 minutes, compared to 3.4 for ridesharing. Even worse was the trip time: 33:58 minutes for Waymo versus 15:20 minutes in an Uber or Lyft. Waymo has reportedly spent more than US\$25 billion so far on its robotaxi project. Assuming the Forbes data to be accurate, it is unclear if Waymo



can ever recoup its huge investment and make a return on top of it. More information is at [this link](#).

Staying with **Waymo**, a passenger riding a Waymo robotaxi recently in San Francisco reported that while the vehicle was stopped at a red light, a man approached the car and attempted to open the robotaxi's door. The door was locked and the man started knocking on the window. He then pulled out a knife or some sort of tool before giving up and walking away. Once the light turned green, the robotaxi continued its journey. Though short-lived, the passenger felt helpless as the intruder tried to get into the car. Had a human driver been behind the wheel, he could have just floored the gas to get out of the situation. The passenger reported the incident to Waymo and was advised to press the emergency button in the Waymo app next time to connect to 9-1-1. More information is at [this link](#). A short video of the incident can be viewed at [this link](#).



There has been a tug of war between the **Governor of California** and the **California State Assembly**. The issue is allowing driverless trucks on public roads in California. So far, the governor has twice vetoed the bill requiring heavy trucks to always have a *safety driver* behind the wheel. The state's *Department of Motor Vehicles* (DMV) recently conducted a public consultation on this issue. Part of the proposed regulations requires that autonomous truck developers provide crash reports that include information on the readings of the vehicle's sensors 30 seconds prior to a collision along with braking, acceleration, steering details and camera footage. Furthermore, Hazmat, oversize and tanker trucks would not be allowed to operate autonomously. More information is at [this link](#). A copy of DMV's proposed regulations can be viewed/downloaded at [this link](#).



The science and technology of autonomous vehicles is constantly evolving. One of the latest tools developed by **Waymo** is called *End-to-End Multimodal Model for Autonomous Driving* (EMMA). Incorporated in EMMA is Google's powerful *Large Language Model* (LLM) known as *Gemini*. According to Waymo, the end-to-end strategy is anticipated to eventually enable autonomous vehicles to function directly from sensor data and real-time driving scenarios. The EMMA model leverages real-world information and is based on its *Gemini* language model. Waymo has labelled EMMA's architecture as the *Waymo Foundation Model*. In addition to using



LLMs, Waymo also uses what are called *Vision-Language Models* (VLMs). A VLM can understand images and text jointly and relate them together. More information is on Waymo's site at [this link](#). A copy of the 23-page paper titled *EMMA: End-to-End Multimodal Model for Autonomous Driving* can be downloaded/viewed at [this link](#).

The **European Road Transport Telematics Implementation Coordination** - better known as **ERTICO – ITS Europe**, was established in 1991 to coordinate and promote Intelligent Transportation Systems (ITS) in Europe. In line with other organizations and companies who have recognized the important role of drone technology in transportation of goods and people, ERTICO has recently announced a major new initiative for air mobility. This comes in the form of a platform known as ITS Driven Innovative Aerial Services (IDI). The focus of this initiative will be on drone technologies and autonomous systems such as Urban Air Mobility (UAM), Innovative Air Mobility (IAM), Advanced Aerial Mobility (AAM), Unmanned Aircraft System Traffic Management (UTM) and U-space. U-space is a set of specific services and procedures designed to ensure safe and efficient access to airspace for a large number of drones. Among the founding members of this new initiative are **SAE International**, **Continental**, **City of Hamburg**, and the UK's **Satellite Applications Catapult**. More information is at ERTICO's website at [this link](#).




The **Government of Dubai** through its **Roads and Transport Authority** (RTA) has organized the fourth *Dubai Challenge for Self-Driving Transport*. Participants need to ensure their proposed solution includes integration across at least two of the following modes of transport: Autonomous Taxi, Autonomous Shuttles, Autonomous Buses, Autonomous Drones, Autonomous Marine, Autonomous Logistics, and Autonomous Aviation. Furthermore, Participants must also ensure that all autonomous modes in the proposed solution meet at least SAE Level 3 of autonomy. At least one connectivity solution must be offered for *Dubai Autonomous Zone* from the following: Vehicle to Vehicle (V2V), Vehicle to Network (V2N), Vehicle to Pedestrian (V2P), Vehicle to Infrastructure (V2I), Vehicle to Everything (V2X). The prize money for the winning company is set at US\$3 million. More details are at [this link](#).



At the present time, there are far more electric vehicles (EVs) than autonomous vehicles (AVs) on the roads. An article in **evmechanica.com** titled *The Role of Autonomous Driving in the Future of Electric Vehicles* delves into all the extra benefits that AV technology can add to the EVs in terms of safety, enhanced emission reductions,





increasing an EV's range, taking more cars off the road through automated buses and shuttles, and many other benefits. For example, autonomous driving systems can optimize driving behaviors by maintaining optimal speeds, avoiding sudden acceleration, or braking, and selecting the most efficient routes. These improvements in driving efficiency directly translate into energy savings, extending the range of EVs and reducing the need for frequent recharging. Furthermore, future technologies such as platooning (where vehicles travel in close formation to reduce air resistance), energy consumption can be significantly reduced, benefiting EVs by maximizing their battery life. Fleet-based EVs, such as autonomous taxis or delivery vehicles, could be deployed in a way that allows them to automatically return to base or charging depots, ensuring they are always charged and ready for use. This would reduce operational downtime and increase the overall efficiency of electric fleets. More information is at [this link](#).

And finally, automation in the agricultural sector is not new. Autonomous and semi-autonomous farming machinery have been deployed for a number of years. A recent article in the **Economist** magazine highlighted the challenges in developing robotic machinery for picking grapes in vineyards. Up to now, picking grapes has been a very intense manual effort and needed to be done in short time windows for producing good wines. Such grapes can fetch upwards of US\$6,480 per tonne (1,000 Kg). Researchers at **Queen Mary University of London** (QMUL), working with UK-based **Extend Robotics** are now developing a grape-picking robot equipped with visual sensors and powered by artificial intelligence (AI) to determine when fruit is ripe. This is done by shining a light on the grapes and measuring which wavelengths come out the other side. The AI is then utilized to calculate levels of sugar present in grape juice. At present the robotic grape picker is being trained by a human wearing a virtual reality headset. The hope for the future is a fully autonomous system for this industry. The article can be viewed at [this link](#) or [this one](#).



CAVI Speakers' Bureau

CAVI provides speakers for many different types of events across Canada, the US and overseas. On the one hand, our keynotes and presentations have core messaging on the status of CAVs, their deployment scenarios, and the impact on business plans, government regulations, and almost all aspects of society. On the other hand, each presentation is customized for the audience and the time available.

To inquire about a speaker for your event, please write to speakers@cavi-icva.ca

Upcoming CAV-Related Events

December 3, 2024	IEEE Smart Cities Webinar . The guest speaker is Bern Grush of URF.
January 13, 2025	URF Member Roundtable - Autonomous Pick-up & Drop-off . (Via Zoom)
January 23, 2025	J.D. Power Auto Summit , New Orleans
January 28, 2025	SAE International and CSA Group are organizing a facilitated, collaborative session to discuss a North American Digital Standard that will improve the performance of CAVs and infrastructure. The meeting is in Washington DC. Please contact Mahmood Nesheli of CSA group for more details. mahmood.nesheli@csagroup.org
January 28-29, 2025	Autonomous Vehicles and Public Transport , organized by AV America and Global Mass Transit, San Francisco
January 29, 2025	Exploring Human-Robot Interactions , Zoom webinar by Urban Robotics Foundation
February 19-21, 2025	1st International Conference on Drones and Unmanned Systems (DAUS' 2025), Granada, Spain
March 19-20, 2025	Connected Places Summit , London, England
April 16-17, 2025	DiscoveryX , organized by the Ontario Centre of Innovation, Toronto, Ontario
May 21-23, 2025	International Transport Forum 2025 Summit: Enhancing Transport Resilience to Global Shocks , Leipzig, Germany
June 15-18, 2025	UITP Summit, Hamburg, Germany (web site tba)
June 24-26, 2025	Autonomous Ship Conference , Amsterdam, Netherlands (call for speakers)



About CAV Update

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

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

The Canadian Automated Vehicle Initiative (CAVI - formerly CAVCOE) is an association for all stakeholders in industry, government and academia involved in any aspect of the ever-increasing automated vehicles ecosystem.

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