Canadian Automated Vehicle Initiative

CAV Update   September 2024

From the Editors

CAVI has significant expertise in CAVs. To supplement this, we invite stakeholders and our readers to get involved and help advance the Canadian CAV ecosystem. There are two projects that we are planning: a national CAV strategy, and a national CAV conference in 2025. We would like to form a committee for each to assist with this work.

National CAV Strategy

CAVI and Andrew Miller of **Paladin Consulting** are planning the development of a national CAV strategy that covers the entire supply chain from research, development, testing, legal, regulations, and deployment. We would like to make this into a truly national strategy with inputs from across the country (i.e., not just from Andrew and most of the CAVI team who live in Ontario). Barrie and Andrew will be the Co-Chairs of this committee. If you are interested in joining them as a member of this committee, please write to Barrie Kirk at bkirk@cavi-icva.ca

National CAV Conference

CAVI is considering whether to organize a national CAV conference in 2025 and again, we welcome your input. Barrie was very involved in the first few *CAV Canada* conferences and was on the organizing committees. We are now starting with a blank sheet of paper, and we have two asks. First, could you please send us your answers to these questions:

- Would Canada benefit from a national CAV conference?
- What theme can you suggest?
- Is there a preference for Spring or Fall 2025?
- We expect to organize the conference with partners. Any suggestions?
- We are thinking of combining this conference with the CAVI AGM. Is this a good idea?

Our second ask is to invite you to be on the conference organizing committee.

Please send your replies to both sets of questions to Barrie at bkirk@cavi-icva.ca

There is one further point, we would like all active participants in both of these projects to be members of CAVI. If you are not yet a member and would like to join, please go to the CAVI web site here and click on "join us".

Canadian CAV News

As we reported recently, Toronto-based automated truck developer **Waabi** has attracted sizeable investments from well-known entities such as **Nvidia**, **Uber**, **Volvo**, venture capital firm **Khosla Ventures**, **IKEA's** Ingka Investments and others. Some of the field testing of Waabi's technology is happening in Texas where it has signed a multi-year lease on a trucking terminal in Texas's Dallas County. This terminal will be the base for its operations in the state. It has partnered with **Uber Freight** for hauling cargo between Dallas and Houston. Waabi has ambitions in other areas of automation too. According to its CEO, Waabi's technology is not limited to trucks only. In the future, it could be applied to humanoid robots, drones and potentially robotaxis. More information is at this link.

Ottawa-based **Aerial Evolution Association of Canada** (AEAC)) is Canada's leading national industry association dedicated to the advancement of the commercial drone and *Unmanned Aircraft Systems* (UAS) sector. Among its various activities, AEAC organizes a Student Competition to promote drone/UAS technologies among Canada's young people. The 2025 competition will be held in Medicine Hat, Alberta. It will be the 16th such competition with the aim of advancing Canada's position as a global leader in autonomous aerial systems technologies. The competition offers students from across Canada the opportunity to address real-world challenges, develop innovative solutions, and gain hands-on experience in simulated *Beyond Visual Line of Sight* (BVLOS) operations. More information is at this link.

This month's profiled CAVI corporate member is the law firm of **Borden Ladner Gervais LLP**. As Canada's law firm, BLG provides high-value advice and advocacy to address their clients' business challenges and problems. With 750 lawyers in five offices across Canada, they serve clients in all sectors and industries, including the automotive industry. More information can be viewed at BLG's website at this link.

Staying with CAVI, we and **Paladin Consulting** are pleased to jointly provide a directory of organizations in the Canadian CAV ecosystem. For your free copy, please download it from here.

All ecosystems evolve over time – and we may have missed some stakeholders – so we welcome all feedback, including changes. Please send your feedback to database@cavi-icva.ca

This is an initial directory. In 2025, we will do a deeper dive into the ecosystem with more details on the CAV stakeholders.

International CAV News

Following a three year pilot program, Pittsburgh-based automated trucking developer **Aurora Innovation Inc**. and **Uber Freight** have signed a long-term agreement for hauling cargo between major Texas cities using Uber Freight's trucks outfitted with Aurora's sensor suite, high-powered computers and its software suite known as *Aurora Driver*. Both companies were launched in 2017. Uber Freight connects truck drivers with shippers, much in the same way the company's ride-hailing app pairs drivers with those looking for a ride. Aurora was started by top technical people working for Google, Tesla and Uber. Since inception, Aurora has raised US$4.2 billion in funding. Uber owns 26% of Aurora. Under the new agreement, Aurora plans to deploy 20 fully autonomous trucks this year for Uber Freight customers. Most of the driving on Texas highways will be done autonomously. However, human drivers will be in charge of the first mile/last mile part of the driving. More information is at this link.

The two countries doing the bulk of research and development in the autonomous vehicle sector are the United States and China. A recent Q&A session conducted by **Intertraffic** sheds some light on China's rapid progress in deployment of automated vehicles (robotaxis, public transportation and delivery trucks) as well as electric vehicles. The Intertraffic Q&A is titled *What the world could learn from China's autonomous vehicle innovations*. The two Dutch experts interviewed had made recent trips to China and had seen first-hand how the Chinese have made significant inroads in deployment of AVs and EVs. According to these experts, part of China's success in these areas is the political decision-making processes. In China, these are also less complex than in Europe or the U.S. By contrast, legislating autonomous vehicles in Europe is challenging due to concerns over safety, liability issues, ethical considerations, and the complexity of harmonizing regulations across different member states. Intertraffic is based in Amsterdam and is a well-known organization for promoting technologies for the global mobility and traffic sector. More information is at this link.

Staying with **Intertraffic**, another interview was conducted with *Cameron Gieda - **Pony.ai***'s Director of Business Development; who is based in Fremont, California. Pony.ai was founded in 2016 in California's Silicon Valley and is in the business of developing robotaxis, robotrucks and personally owned vehicles. According to Mr. Gieda, in China, Pony.ai's taxi fleet is doing about 2500 rides a day and about half of those rides are with unmanned vehicles. The plan is to make the entire taxi fleet driverless. Due to Pony.ai's connection to China, its activities in the United States are somewhat curbed. This has shifted the main focus for AV deployment to Europe, where the regulatory environment is friendlier. Mr. Gieda sees a potential big market for elderly communities and disabled people; which in his opinion are an underserved population. Based on his personal experience, the public are generally wary of AVs. However, once they have taken a ride in one, their attitudes quickly change from negative to positive. The full interview can be viewed at this link

A recent article in **IEEE Spectrum** described research sponsored by the **U.S. Department of Energy**'s *Advanced Research Projects Agency* (ARPA-E), in how connected and autonomous vehicle technologies can improve fuel efficiency of vehicles. The project known as *Next-Generation Energy Technologies for Connected and Automated On-Road Vehicles* (NEXTCAR) was led by the **Southwest Research Institute** (SwRI) in collaboration with several other U.S. academic institutions. The SwRI team retrofitted a 2021 *Honda Clarity* hybrid with basic autonomous features such as perception and localization. An *ecodriving* device was added to the vehicle to enable it to drive at the most economical driving speed determined by its software stack. External factors such as the timing of traffic lights and surrounding vehicles were taken into account by the system. The goal was to reduce unnecessary acceleration and deceleration of the vehicle in order to optimize energy usage without impeding other vehicles. Wireless communications enabled the vehicle to anticipate the traffic light's actions far more accurately than a human driver could and adjust speed and braking accordingly. The researchers claim that the new smart-vehicle technologies can boost fuel efficiency by as much as 30 percent. The full IEEE Spectrum article can be viewed at this link.

Back in 2020, we reported on a startup called **Cavnue**. This company arose from the doomed Alphabet's **Sidewalk Labs** project at the Toronto Waterfront. Cavnue bills itself as a company dedicated to making the road infrastructure ready for connected and autonomous vehicles. As such, it undertook a 39-mile (62.8 Km) high-tech highway between Detroit and Ann Arbor in Michigan's I-94 highway to accelerate development of CAVs in that automobile-centric state. Fast-forward to 2024 and Cavnue has announced the completion of the first 3-miles (4.8 Km) of this project. Spaced out every 200 metres poles containing cameras, radar units, other sensors, wireless communications equipment, and an *edge computer* are installed to generate a detailed view of what is happening on this stretch of I-94 highway. The data generated in the field is fed in real-time to a *digital twin* of the highway to gain real-time insight into possible safety issues such as stalled vehicles, vehicles on fire, debris on the road, deteriorating pavement, jaywalking pedestrians, and more. Collectively, the system will enable judgment and insights to authorities and roadway operators to make timely interventions. Since inception, Cavnue has raised US$130 million from the **Ford Motor Company**, **Sidewalk Infrastructure Partners** (SIP) and others. More information is at this link

One of the less desirable features of autonomy technologies is the production of autonomous and semi-autonomous weapon systems. These can be land, naval or aerial autonomous vehicles. A recent article in **apnews.com** lifts the veil on **Ukraine**'s efforts to create such an industry for its conflict with Russia. Many small workshops in Ukraine design and build such weapons. For example, one of these workshops can assemble an *unmanned ground vehicle* in four days at a cost of US$35,000, or roughly 10% of the cost of an imported model. According to the report, Ukrainian engineers take inspiration from articles in defense magazines or online videos to produce cut-price platforms. They then add smart components such as cameras, thermal sensors and even remotely controlled machine guns to these platforms later. On the government side, a fourth branch of Ukraine's military called the *Unmanned Systems Forces* is now actively engaged in weapons development for the army, navy and air force. The article can be viewed at this link.

Several recent media reports covered the story of robotaxis deployed by **Apollo Go** (a subsidiary of **Baidu**) in the city of Wuhan which has a population of 14 million. According to **Bloomberg**, you can travel 6 miles (9.7 Km) in one of these robotaxis for about US$1.93. That is roughly one-third the cost of a comparable ride in a premium-class human-driven taxi with the ride-hailing service **Didi**. The regular taxi companies are fearful that they may be out of

business if more robotaxis are deployed in the city. According to Bloomberg, Wuhan has 24,000 taxi drivers. At present, Apollo Go is operating 500 driverless taxis in Wuhan. Company intends to increase to 1,000 by the end of 2024. According to a report in the **Economist** magazine, the rides are heavily subsidized by the company at present, however, Apollo Go expects to breakeven by the end of year and turn a profit in 2025. As expected, these cheap robotaxis have been a big hit with riders in Wuhan. More information is at this link or this one.

And finally, a recent article in the **Economist** magazine titled *Peru's crazy drivers offer a data deluge for self-driving cars,* presents an interesting viewpoint in the quest to make self-driving cars a reality. Whereas almost all research & development work on AVs have so far occurred in western countries, researchers in Peru believe that the often chaotic traffic in the capital Lima can inject a dose of reality into the AV ecosystem. The work is being done by a Lima-based company called **Artificio Inc.** The company intends to collect 10 million hours of driving data from Peru and other Latin American countries by getting transport companies to install cameras on their fleets of vehicles. It would then license its dataset to tech firms to train their self-driving cars to the conditions found in less developed countries. Similar efforts have been made in India by Indian companies attempting to crack the AV market. The Economist 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

October 7-10, 2024	IEEE Vehicular Technology Conference (VTC) 2024 Fall, Washington DC
October 22-24, 2024	The Future of Automotive Testing Conference, Novi, MI
November 5-7, 2024	2024 Aerial Evolution Canada Conference & Exhibition, Ottawa ON
January 23, 2025	J.D. Power Auto Summit, New Orleans
March 19-20, 2025	Connected Places Summit, London, England
April 16-17, 2025	DiscoveryX, organized by the Ontario Centre of Innovation, Toronto, Ontario

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.

Chief Editor: Ahmad Radmanesh
Contributors to this issue: Barrie Kirk, Keith Fagan, and Donna Elliott

To subscribe, click here. To unsubscribe, click here.
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.

300 Earl Grey Drive, Suite 222, Ottawa ON K2T 1C1, Canada.
info@cavi-icva.ca   www.cavi-icva.ca

© CAVI 2024