Canadian Automated Vehicle Initiative

CAV Update   *April 2024*

From the Editors

CAVI was launched in March and the team hit the ground running. Barrie Kirk is very pleased that the team comprises five excellent people: Fred Cotaras, Donna Elliott, Keith Fagan, Jennifer Pereira, and Ahmad Radmanesh. Their roles cover the areas of CAVI's finances, newsletter, website, research, and senior advisors. Special congratulations and a big thank you to Amad who has been preparing CAV Update for six years.

Barrie is looking to add someone to the team to manage communications, both with our members and the larger ecosystem. If you are interested, please write to him at bkirk@cavi-icva.ca

CAVI will have a 12-person Board representing the private sector, government and academia. The Board members will be from Nova Scotia to BC. Some but not all are confirmed. CAVI will make an announcement of the full Board in May.

CAVI has recently published the various deliverables to its members through to March 2025. These include research, government relations, speaking, and facilitating networking amongst its members:

Research
- Prepare and publish CAV Update, this newsletter.
- Develop and publish a profile of the overall Canadian CAV ecosystem.
- Develop an amalgamated view of Canadian CAV innovation and deployment projects.
- Develop a deployment road-map.
- Explore a Canadian testbed initiative for all types of CAVs, similar to the **CAM Testbed UK.**
- Only CAVI members will receive the full reports.

Government Relations
- Promote the idea of a Canadian CAV bill similar to the UK's AV Bill now being reviewed by the House of Lords and the House of Commons.
- Provide inputs to all levels of government for their CAV initiatives.

Networking
- A CAV networking event to be held in Belleville (a convenient location for people in Toronto, Montreal and Ottawa).
- Promote all CAVI's organizational members whenever and wherever possible.
- Organize and host webinars on various CAV-related topics.

- Continue to liaise with similar organizations in other countries.

Speakers Bureau
- Speak at conferences to advance the ecosystem and promote CAVI's organizational members.
- Speak at events for the general public (students, seniors' groups, etc.) to help educate them on CAVs and (for the students) the career opportunities.

The scope of each deliverable will depend in part on the level of funding we get.

We hope you will join CAVI for the benefits listed above and to help us advance the Canadian CAV ecosystem. To join CAVI, the *early adopter rates* are $200/year for individual members, and $1,000/year for organizations. The registration and payment pages (powered by Wild Apricot) are at https://cavi.wildapricot.org/join-us

Canadian CAV News

Markham-based **Cyberworks Robotics** is a developer of autonomous systems specializing in industrial machinery such as automated floor cleaners and wheelchairs. Its technology has been deployed at a major U.S. airport for both products. The company's niche is in addressing *edge cases*. These are defined as events that occur very rarely and yet the automated system is expected to handle them safely and properly. These cases have largely prevented mass deployment of automated systems such as robotaxis or automated transport trucks. The company also develops automated *tow tugs* and has deployed 18 of them at the growing facility of a major Canadian greenhouse company in Ontario. Furthermore, the company has partnered with Guelph-based **Linamar Corporation**, to adapt its autonomous material handling technology in the automotive industry. More information is at this link. A short YouTube video of the company's products in action can be viewed at this link.

We had reported previously on the automated snowplows and vegetation clearing robots developed by Kitchener-based Swap Robotics. In one of the latest developments, the company has secured a total funding of $2,369,170 to develop and commercialize robotic snowplows. Part of the funding was from the **Ontario Vehicle Innovation Network** (OVIN), and the rest from private industry. This work is in collaboration with the **Town of Innisfil**, Ontario. The company states that its
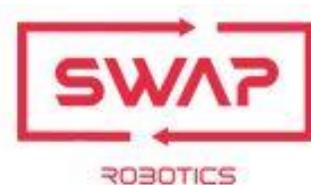
latest snowplows have 5 to 10 times the pushing power of previous models. Swap's robots are now operating across Ontario in Cookstown, Kitchener, Waterloo, Brampton and in Thompson, Manitoba. More information is at this link.

On April 8, 2024, Ottawa-based **Four DRobotics Corp.** announced the signing of a *Memorandum of Understanding* (MoU) with South Korea's **DRIVETECH Ltd.**, to jointly develop remotely controlled and full autonomous vehicles for applications in construction, agriculture, distribution, airports, sea ports, and industrial complexes. One of the business models of Four DRobotics is *Autonomous Vehicles as a Service Solution* (AVaaS). The company says its S.Korean partner is interested in AVaaS. Similarly, DRIVETECH business model is to offer *Flexible Autonomous Electrical Vehicle as a Service* (FAEVaaS) to its heavy duty logistics customers for both indoors and outdoors facilities. More information is at this link.

In a surprise move, on March 18, 2024, The **Province of British Columbia** amended the existing *Motor Vehicle Act* through *Order in Council 147/2024*, to ban all Level 3, Level 4 and Level 5 automated vehicles from its public roads. The new regulations went into effect on April 5, 2024. The fine for operating such vehicles on and after the effective date was set at $368 and 3 driver penalty points, up to a maximum fine of $2,000 and 6 months of prison. Apparently, the motivation for this action by the province is protecting vulnerable road users. **Tesla**'s *Full Self-Driving* (FSD) and *Autopilot* are not impacted by this ban. More information is at this link. The actual two-page order can be viewed/downloaded from the province's site at this link.

A very successful AIoT summit was held on April 10, 2024 at the Brookstreet Hotel in Kanata ON. The two key speakers were the Honourable François-Philippe Champagne, Minister of Innovation, Science and Industry of Canada, and Sir Terence Matthews, Chairman of Wesley Clover (seen speaking in the photo below). CAVI's Barrie Kirk was there, and there were excellent presentations on AIoT (AI + IoT) from the two key speakers and the panel of industry experts and government officials.

The CAV and AIoT ecosystems clearly overlap, and we will see an increasing focus on synergies. Congratulations to Walter Knitl and the organizing team for a very successful event.

International CAV News

A recent report by **Bloomberg** says that **Apple** has stopped all work on its much rumored electric self-driving car. Although it was never officially announced, industry insiders believe that Apple has spent billions of dollars on the so-called *Project Titan* to develop the technology over the past several years. At various points in time, Apple contemplated partnering with BMW, Mercedes-Benz and others. It was also reported that at one point Apple had offered to buy-out Tesla to get a foothold in the automotive market. None of these plans came to pass and Apple decided to go it alone in developing its own EV equipped with its own self-drive technology. The Bloomberg report titled *What Killed the Apple Car?* is in an 11-minute video clip. It can be viewed at Bloomberg's website at this link.

An article in the **Scientific American** magazine titled *We Need Smarter Driverless Vehicle Regulations More Urgently Than We Need Smarter AI* takes issue with the Silicon Valley culture of *moving fast and breaking things* in order to bring new and innovative products to the market. The author acknowledges the current public infatuation with *Large Language Models* (LLMs)

that power applications such as ChatGPT by manipulating words into sentences. However, these models are not designed to do the driving tasks in a self-driving car. The software for self-driving cars requires much higher standards of accuracy and dependability. To put this in perspective, the statistics from the **National Highway Traffic Safety Administration** (NHTSA) indicates that fatal crashes occur approximately once in every 3.6 million hours of driving, and injury-causing crashes about once in every 61,000 hours of driving. These numbers translate into one fatal crash in 411 years and one injury-causing crash in seven years of continuous 24/7 driving. Developing software systems required to achieve comparable statitics is a major challenge for the autonomous vehicle industry. In conclusion, the author calls for much more rigorous regulations to ensure the safety of AVs. The Scientific American article can be viewed at this link.

Tel Aviv-based startup **No Traffic** claims to have developed technologies beneficial to connected/autonomous vehicles as well as other road users that are unconnected.

Using primarily cameras and radar at each approach to an interesection, the system detects and classifies the movement of cars, bikes, buses, pedestrians and other road users. This information is uploaded to a cloud-based hub for further processing and decision making. Sensors developed by the company are installed in the local traffic control cabinet at an intersection and can read the status of the traffic signal at any given time. This information plus other data previously mentioned can then optimize the operation of the local traffic signal, as well as an entire grid of them. Some of the benefits of this system are to warn connected motorists about someone running a red light, granting priority at signalized intersections to emergency vehicles and transit buses, or when a pedestrian might step onto the street by alerting an approaching connected car with limited visibility to slow down and avoid a potential collision. The company recently signed on its hundredth department of transportation customer in North America, and is operating in 13 states, including California, Texas, Arizona and Pennsylvania. Since 2021, **No Traffic** has raised about US$68 million in venture funding. More information is at this link.

Innovate UK is the United Kingdom's innovation agency, which provides funding and support to organizations to make new products and services. In February 2024, Innovate UK published a 52-page report titled *UK Transport Vision 2050: Investing in the Future of Mobility*. As the name suggests, this is a long term forecast of how the transportation landscape will change in the next 25 years. One part of the report takes a deep dive into autonomy with

predictions and timelines for deployment of road vehicles, air transport, rail transport, marine transport (both surface and sub-surface), agriculture, and heavy plant automation. One prediction is that passenger and freight-carrying air vehicles will be developed with increasing levels of autonomy and able to operate with full autonomy by 2025. As for truck automation, the expectation is that 90% of highway transport trucks (called *Heavy Goods Vehicles* (HGV) in the UK) will be autonomous by 2050. More information is at this link. The report can be viewed/downloaded at this link.

Advanced Air Mobility (AAM) initiatives are steadily in the news in many countries. One of the latest is a partnership between the **City of Sugar Land**, Texas (located in the southwest of Houston, population 112,000) and a **Boeing** subsidiary called **Wisk Aero**. Under this partnership agreement, Wisk will provide advice on technical needs for autonomous *Electric Vertical Take-off and Landing* (eVTOL) operations, including infrastructure, training, ground operational procedures, and plans for potential site expansion, while Sugar Land will focus on integrating AAM into its long-term plans, championing community engagement, and establishing operational policy, such as infrastructure permitting and noise levels. The site for these activities will be the Sugar Land Regional Airport. More information is at this link.

Many in the autonomous vehicle industry expected to see automated transport trucks deployed widely on a commercial basis. One reason for this optimism was the fact that automated highway driving is less complicated than urban automated driving where robotaxis have to contend with pedestrians, traffic signals, parked cars and many other impediments. Experts now believe that the U.S. federal government is poised to announce rules for automated trucks in the near future. Unlike robotaxis confined to a defined urban area, self-driving commercial vehicles participation in interstate commerce, and hence the imperative for the federal government to get involved as opposed to the states and cities making their own rules. Some states such as California and Indiana have recently enacted regulations for automated trucks prohibiting them from becoming fully driverless. By contrast, Mississippi Pennsylvania and Alabama are allowing driverless testing on public roads subject to certain conditions. The federal rulemaking is being spearheaded by the **Federal Motor Carrier Safety Administration**. More information is this link.

Carnegie Mellon University's Prof. Philip Koopman is one of the luminaries of the AV world. He is a strong advocate of AV safety and has numerous publications and presentations on this topic. One of the latest such presentations by Prof. Koopman was at the **Automotive Safety Council** meeting in Florida on April 4, 2024. The presentation was titled *Autonomous Vehicle Safety: Beyond Net Risk Metrics*. The presentation examines some of the safety claims made by Waymo, Cruise, Motional and Zoox, and tries to separate hype from reality. It also points to all the relevant standards and guidelines that AV developers must comply with. Prof. Koopman's 20-slide presentation can be viewed at this link or this one.
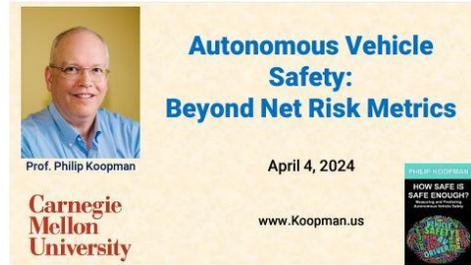
And finally, once again **Tesla** announces the launch of its new robotaxi service starting on August 8, 2024. According to media reports, this long promised service is based on Tesla's next-generation vehicle platform and will be part of the so-called *Tesla Network* of fleets of Tesla vehicles deployed as robotaxis. In theory, Tesla owners will be able to add their cars to this network by just tapping a button on the Tesla phone app and start generating income while they are at work or on vacation, and significantly offsetting the monthly loan or lease cost. This whole story started on April 5, 2024 with a cryptic tweet from **Elon Musk** announcing the August 2024 robotaxi reveal. More information is at this link.

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

June 5-6, 2024	AutoTech Detroit, Suburban Collection Showplace, Novi MI
June 18-20, 2024	Autonomous Ship Expo, Amsterdam, The Netherlands
June 27-28, 2024	Last Mile Delivery Conference & Expo, Las Vegas NV
August 28-29, 2024	ADAS & Autonomous Vehicle Technology Expo, San Jose, CA
September 10-12, 2024	Simulation, Testing & Validation for Automated Driving 2024, Stuttgart, Germany
September 16-20, 2024	30th ITS World Congress, Dubai, UAE
September 22-25, 2024	2024 TAC Conference & Exhibition, Vancouver, B.C.
Fall 2024	IEEE Vehicular Technology Conference (VTC) 2024 Fall, Washington DC
October 22-24, 2024	Automotive Testing Expo, Novi, MI
November 5-7, 2024	2024 Aerial Evolution Canada Conference & Exhibition, Ottawa ON

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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