Canadian Automated Vehicle Initiative

CAV Update March2024

From the Editors

We are pleased to introduce the re-branded *CAV Update*, which has migrated from **CAVCOE** to **CAVI**, given the launch of the **C**anadian **A**utomated **V**ehicle **I**nitiative – see below for more details.

Below the masthead, CAV Update is unchanged: a blend of Canadian and international CAV news. The articles will continue to be brief, executive summaries with one or more links if you want to dive in and get more information.

CAV Update subscriptions will continue to be free. All we need is your address -- and an email requesting a subscription so we comply with anti-spam legislation -- sent to this address.

We welcome your comments – and we especially welcome Canadian CAV news items. Please send your news items here.

Canadian CAV News

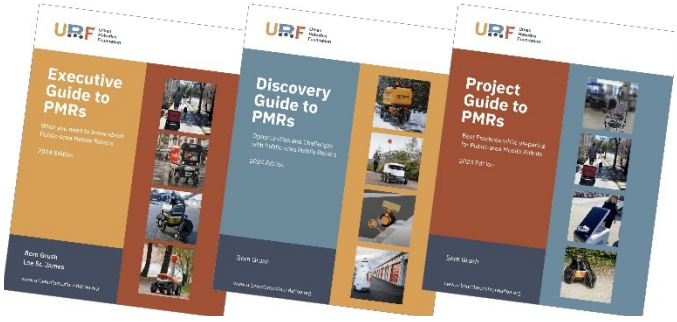
The **Canadian Automated Vehicle Initiative** (CAVI) has been launched. CAVI is a new association for stakeholders in industry, all levels of government, and academia who are involved in one or more of the many aspects of the connected and automated vehicle ecosystem,

CAVs are no longer only for passenger cars, they have expanded into many other market segments: cars, public transit, freight and logistics (long-distance, middle-mile, and local delivery), service and maintenance vehicles, airports, mining and farming. With a commitment to innovation, collaboration, and sustainability, CAVI aims to accelerate the development and adoption of automated vehicles of all kinds across the country.

Barrie Kirk, CAVI's President, said "I am very excited about the launch of CAVI. There is a broad consensus that Canada needs more synergies between the different groups involved in CAVs. CAVI can be both a forum and a voice for the CAV ecosystem. Historically, Canada has been a leader in telecommunications, satellites, and many other technologies. Canada can also become a leader in the CAV ecosystem."

The full media release and more details on CAVI are available here.

Toronto-based **Urban Robotics Foundation** (URF) has published the follow-up to the *2024 URF Executive Guide to Public-area Mobile Robots* with the second in the series: the *2024 URF Discovery Guide to Public-area Mobile Robots*.



This 80-page Guide is written for facilities managers, urban policymakers and heads of municipal departments tasked with addressing accessibility, emergency services, infrastructure, public works, and traffic. Its aim is to provide enough information to allow any manager for which *public-area mobile robots* (PMRs) may become important to determine their suitability for deployment, their alignment with operational goals, objectives and policies, and their policy and infrastructure readiness for PMRs at scale.

The Executive Guide, the Discovery Guide and a third publication called the Project Guide to PMRs are available at URF's site at this link. URF is also providing a 2-hour workshop based on their Discovery Guide. A link to the first one is here.

AIoT Canada, a non-profit organization, has announced the *AIoT Canada Spring Summit 2024* to be held on April 10th in Ottawa. This is an exclusive dinner and networking event.
This event will offer an opportunity to engage in insightful talks and discussions on the intersections of AI and IoT (AIoT) with a variety of industry experts and government officials that is highlighted by a fireside chat with the Honourable François-Philippe Champagne, Minister of Innovation, Science and Industry of Canada. The panel of distinguished speakers from Wesley Clover, Telus, Deloitte, BrainBox AI, BLG, and Shared Services Canada will explore topics shaping the future of AI and IoT, such as transportation, manufacturing, sustainability, legal implications, and digital transformation within the Canadian government. Given the overlap between the CAV and AIoT ecosystems, CAVI's Barrie Kirk will be there. To register, please click here.

On March 18, 2024, automated truck developer **Waabi** announced the formation of a partnership with chipmaker **NVIDIA**, to tap into the technology and power of NVIDIA's latest processors known as *DRIVE Thor*. This processor is specifically designed for leveraging *Generative AI* for the type of technology that Waabi is developing. Waabi's CEO was a speaker at the *NVIDIA GTC AI Conference* which was held in San Jose, California March 18-21, 2024. The partnership announcement was made at this

conference. According to NVIDIA, the software stack for the new processor has been designed for automotive safety and reliability, in compliance with specifications such as ISO 26262 for Road Vehicles. More information is at the Waabi site at this link.

International CAV News

Intel-owned **Mobileye** develops its own self-driving technology as well as selling components to a number of automakers for their *Advanced Driver-Assistant Systems* (ADAS) and their autonomous vehicles. Due to a general slowdown in AV development, Mobileye recently announced that its customers have a lot of excess inventory on their hands. The news had a major negative impact on Mobileye's share price. It dropped by 25% on the news. Intel acquired Mobileye in 2017 for about US$15 billion. Mobileye went public in 2022 and has a market capitalization of over US$26 billion as of this writing. More information is at this link.

Continental AG - a German company, is the world's third largest manufacturer of automotive components such as brake systems, vehicle electronics, automotive safety systems, powertrain, chassis components as well as components needed for Advanced Driver Assistance Systems (ADAS). The company employs about 200,000 people worldwide. Continental has now partnered with California-based AV developer **Aurora Innovation** to mass produce driverless trucks starting in 2027. The partnership will see Aurora supplying the automated driving system – the *Aurora Driver*, while Continental will be supplying various sensors, automated driving control units, high-performance computers, telematics units and other components such as a *fallback system* in case the automated driving system develops a problem. The companies will be conducting tests of their driverless trucks at a testing facility in New Braunfels, Texas. Aurora has similar arrangements with **Volvo** and **Paccar**. More information is at this link.

We have previously reported in this newsletter about the efforts for bringing autonomy to marine vessels. Back in 2021, an experimental autonomous boat traversed the Atlantic Ocean from England to the United States. Considerable progress has been made since then in commercializing remotely controlled or fully autonomous ships. A recent report from the **BBC** focused on this topic. For example, the US-UK company **Ocean Infinity** now has a fleet of 23 vessels that will survey the seabed for offshore wind farm operators and check underwater infrastructure for the oil and gas industry. High-tech

equipment such as cameras, microphones, radars, GPS, robotics and satellite communications have been the enabling technologies for this achievement. Other countries such as Norway,

Belgium, Japan and China are also using large autonomous container ships to shuttle goods between coastal cities. The BBC report can be viewed at this link.

The **IEEE** has issued a Call for Papers for the IEEE Vehicular Technology Conference (VTC) 2024 Fall that will be held in Washington DC. For more information, please click here.

One of the many challenges for automated vehicles operating in an urban or rural area, is being able to access real-time information about construction zones, road/lane closures, detours, collisions, temporary speed limits, road and weather conditions and other information that may impact its route and trajectory. In a **UK** initiative to address these, the government has mandated that local councils are to digitize all *traffic regulation orders* (TROs) to help achieve this goal. The digitized data will be uploaded to a central database and made freely available online for satellite navigation (satnavs) and mapping services. It will also have a helpful feature for identifying vacant parking spaces. The budget for this initiative comes from the US$14.2 billion that was originally allocated to the *High Speed 2* (HS2) high-speed railway project; but partially cancelled by the UK government in October 2023. More information is at this link.

Another challenge for automated vehicles is adverse weather conditions. It is no secret that most AV testing has been conducted in generally mild and dry locations such as California, Arizona and Texas. This obviously is not the case for many parts of the world such as Canada or northeast United States. The adverse weather issue has been recognized by the **Federal Highway Administration** (FHWA) and funding made available to take a deep dive into this important issue. The result is a 93-page report published by FHWA titled *Automated Vehicles and Adverse Weather (AVAW): Phase 3 - Final Report*. Among other things, the report explores how adverse weather and road conditions in different driving environments affect AV dynamics and operations, driver behavior, communications, and AV sensor capabilities. The work was done in two rounds. Round one occurred under spring/summer conditions while round two was concerned with winter conditions. Copy of FHWA report can be viewed/downloaded at this link.

U.S. Department of Transportation
Federal Highway Administration

Delivery of goods by autonomous drones has been under development for many years. The world's largest retailer **Walmart** is now using drones to deliver its products in certain geographic areas. The largest of these is in the Dallas-Fort Worth area where 75% of the population can now be reached by drones employed by Walmart. Walmart has partnered with two drone delivery companies – **Zipline** and **Wing** whose parent company is **Alphabet/Google**. Both of these companies have permits from the **Federal Aviation Administration** (FAA) to fly *beyond visual line of sight* (BVLS). Due to limitation in carrying capacity of Zipline/Wing drones, Walmart can only deliver smaller products such as cold medicine, birthday candles and other small and light weight products.

Walmart claims that the deliveries arrive in 30 minutes or less, with some reaching customers' doorsteps in as fast as 10 minutes. More information is this link.

It is well known that California has been a testbed for AV development for many years. Companies such as **Waymo** and **Cruise** have been very active in that state and particularly in the city of San Francisco. San Francisco's municipal government is unhappy that it has no say in regulating AVs in its jurisdictions. It has gone as far as filing lawsuits against state agencies granting operating licenses to AV companies (see this link for information on the lawsuit). Other cities such as Los Angeles and San Jose have expressed similar sentiments. A bill (SB-219) has now been introduced in the **California Senate** with the aim of giving more powers to municipalities for regulating AV deployments in their respective jurisdictions. The bill's title is the *Autonomous Vehicle Service Deployment and Data Transparency Act*. The bill puts controls around AVs similar to how cities regulate cab and ride-share services. If passed, the bill will require that local governments enact an ordinance to regulate robotaxi companies before commercial autonomous vehicle services are allowed. More information is at this link. A description of the proposed bill can be viewed on California Senate's website at this link.

CALIFORNIA STATE SENATE

In a somewhat similar move, states of New York and Indiana have introduced bills in their legislatures for an outright ban on deployment of driverless trucks in their respective states. More information is at this link.

Urban Air Mobility (UAM) is increasingly used in the media to describe airtaxi operations in urban environments. This covers both piloted and autonomous types of airtaxis. The aircraft used in airtaxi operations are normally *electric vertical take-off and landing* known as eVTOL. Well-known eVTOL developers are **Joby Aviation**, **EHang**, **Lilium**, and **Volocopter**. Regardless of the company, the eVTOLs need infrastructure to land, take-off, charge batteries, load and unload passengers and other normal aviation activities. To this end, Joby has partnered with **Atlantic Aviation** to create the necessary eVTOL infrastructures in New York City and in southern California. Atlantic Aviation a major *fixed base operator* (FBO) with over 100 operating sites in the United States. To encourage the growth of the UAM industry, Joby has put in the public domain the specifications for its charging system known as the *Global Electric Aviation Charging System* (GEACS). The intent is to enable its competitors to utilize the sites it has under development with Atlantic Aviation. More information is at this link.

In a similar move, Joby and Dubai's **Road and Transport Authority** (RTA) have signed an agreement to launch air taxi services in the Emirate by early 2026. Details at this link.

Back in 2021, automated truck developer **TuSimple** was the leading company in its field. That year, it raised more than US$1 billion through an *Initial Public Offering* (IPO) and, at its peak, had a market capitalization of nearly US$15 billion. TuSimple delisted from the Nasdaq market on February 7, 2024 and is now embroiled in multiple lawsuits from its former shareholders and other parties. It is alleged that the company misappropriated funds, infringed the company's Intellectual Property (IP) and violated U.S. national security regulations by sharing trade and technology secrets with China. More information is at this link. A copy of the actual 48-page lawsuit can be viewed at this link.

Nissan (UK) through its advanced engineering team known as *Nissan Technical Centre Europe* (NTCE) is involved in a major AV project called *evolvAD*. This is the third of such projects for Nissan and its partners. The previous two projects had their focus on highways and complex city environments. By contrast, *evolvAD*'s focus is on automated driving in urban residential areas and in complex rural roads. The project will also examine the role of *Vehicle-to-Infrastructure* (V2I) technologies in supporting the

deployment of autonomous vehicles. For this project, NTCE has partnered with four different entities

who have expertise in a specific area relevant to automated driving. They are:

Connected Places Catapult – applying advanced machine learning techniques to generate high-definition maps from aerial imagery
Humanising Autonomy – UK supplier with advanced vulnerable road user (pedestrians, cyclists and motorcyclists) perception and behavior estimation capability
SBD Automotive – onboard cybersecurity and advanced safety case
TRL – Developing vehicle system validation processes utilizing infrastructure on the Smart Mobility Living Lab (SMLL) testbed

More information is at this link.

In an unfortunate incident coinciding with the Chinese New Year on February 10, 2024, a crowd attacked a **Waymo** robotaxi in San Francisco's Chinatown neighborhood, breaking windows, covering it with graffiti and setting it ablaze with a lit firework tossed inside the vehicle. The vehicle was unoccupied at the time and there were no injuries to anyone. This is another example of backlash against autonomous vehicles in some cities such as Phoenix and San Francisco. More information and a short video at this link.

And finally, as in previous years, the annual **Consumer Electronic Show** (CES) in Las Vegas had many high-tech car entries and demonstrations. A short report from the **BBC** is now available on YouTube highlighting some of these vehicles, including AVs. The YouTube clip can be viewed 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

April 10, 2024	AIoT Canada Spring Summit 2024, Ottawa ON
April 17-18, 2024	DiscoveryX, organized by the Ontario Centre of Innovation, Toronto, ON
April 22-25, 2024	ITS America Conference & Expo, Phoenix, AZ
June 5-6, 2024	AutoTech Detroit, Suburban Collection Showplace, Novi MI
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 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.

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@cavcoe.com www.cavcoe.com