CAVCOE

A monthly update on the CAV ecosystem

December 2023

From the Editors

All of us at **CAVCOE** and the **CAV Update** team wish you, our readers, all happiness and success in 2024.

The start of the New Year is also a good time to look back to 1899 and remember Henry Bliss. In the words of a plaque erected in New York City, Mr. Bliss became the first recorded motor vehicle fatality in the Western hemisphere. The plaque says:

> *Here at West 74th Street and Central Park West, Henry H. Bliss dismounted from a streetcar and was struck and knocked unconscious by an automobile on the evening of September 13, 1899. When Mr. Bliss, a New York real estate man, died the next morning from his injuries, he became the first recorded motor vehicle fatality in the Western Hemisphere. This sign was erected to remember Mr. Bliss on the centennial of his untimely death and to promote safety on our streets and highways.*

There is a good description of the life and death of Mr. Bliss on **Wikipedia** here.

This is relevant today because there has been a lot of concern about the safety of CAVs. The irony is that the biggest benefit, safety, is also the public's biggest concern. One of the reasons for this is that there has been too much hype. CAVCOE has called out governments and private sector corporations for predicting a utopian future with zero traffic deaths. This is a wonderful objective but a fantasy. CAVCOE's forecast is that with full deployment of CAVs, we will be able to reduce traffic deaths to 20% of the current figure. In Canada; this will result in an average of one traffic death per day. The public is not prepared for this, even though it is much better than the current five per day.

Henry Bliss' tragic death did not slow down the launch of the Model T Ford nine years later in 1908. If Henry's death – and all the other traffic deaths that came later – had slowed or stopped the era of Cars 1.0, transportation in the 20th Century would have been very different. And hence, the entire 20th Century would have been very different. In 2023 and 2024, the Cruise robotaxi incident in San Francisco should be properly investigated and remedied. However – sadly - there will be deaths in the future linked to

the deployment of robotaxis, just as there have been and will continue to be with human-driven cars. CAVCOE's New Year's wish is that the Cruise incident should not lead to a significant delay in the launch of Cars 2.0 and the opportunity to save so many lives, any more than Henry Bliss' death slowed down Cars 1.0.

Canadian CAV News

Planning is progressing well for the inaugural meeting of the **Canadian CAV Advisory Group** on January 16th. As previously announced, the objective is to examine ways to add to the excellent work currently being conducted by all stakeholders without duplicating what they are doing. One focus is to work towards minimizing the silos in the ecosystem and to develop synergies. Another is whether we in Canada should have a joint industry/government CAV agency along the lines of Zenzic in the UK or CCAT in Australia and New Zealand. There will likely be other things we can recommend.

The status of the January 16 meeting is:

- 30 people have confirmed that they will attend, and maybe a few more will decide to participate.
- The attendees come from the private sector, academia, and government.
- One of the attendees will be from the UK Government, which has done some excellent work in creating CAV synergies and a road map.
- We will provide highlights of the outcomes in CAV Update.

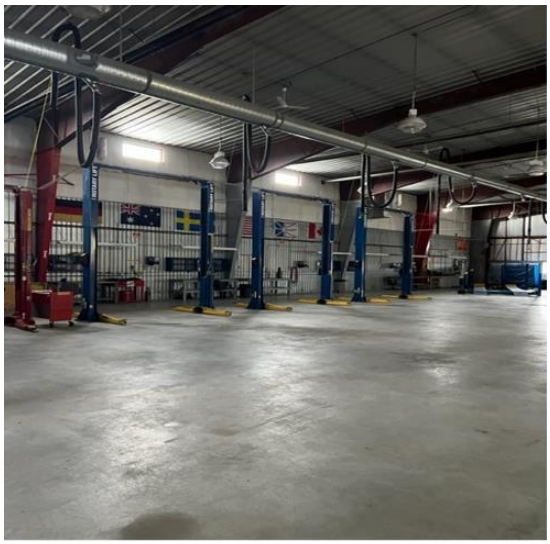
Attendance at the meeting is by invitation only. If you are interested, please write to Barrie Kirk at bkirk@cavcoe.com

Toronto Pearson Airport has teamed up with **Honda** to trial Honda's new multi-purpose *Autonomous Work Vehicle* (AWV). At present, the Honda AWV is performing perimeter security duty. However, the AWV can do other tasks such as carrying cargo around the tarmac, towing baggage carts, mowing grass, groundskeeping and debris removal.

The AWV is fully-electric and equipped with Radar, LiDAR, and other sensors. It can go on or off-road and is capable of creating maps for future planning. Honda believes AWV technology can help address many of the challenges facing airports, including labour shortages, safety, and emissions. More details are at this link.

In the September 2023 edition of this newsletter, we reported on the acquisition of Kitchner-based **Clearpath Robotics** by the U.S. company **Rockwell Automation** for a reported US$600 million. **IEEE Spectrum** conducted a recent interview with a co-founder of Clearpath Robotics (Ryan Gariepy) to find out the impact of the acquisition on Clear Robotics'

products, strategy, marketing, R&D, and other issues. The IEEE's interview can be viewed at this link.



The **Thompson Regional Airport Authority** (TRAA) and **the Canada Infrastructure Bank** (CIB) have announced a $52 million investment towards the redevelopment of Thompson Regional Airport. The airport is a hub providing essential passenger and cargo services to communities in northern Manitoba and western Nunavut. Following project completion, the airport will continue supporting long-term access for critical goods and services as well as supporting the region's critical mineral mining opportunities, and growing cargo and passenger travel needs. This is an important step in winter weather testing for CAVs and other equipment. Curtis Ross, CEO of the Thompson Regional Airport said that "the airport has a long history of winter weather testing with extensive testing infrastructure. The new airport terminal will enhance Thompson's ability to serve as a major transportation and testing hub for Canada". Additional information is here.

Drone Delivery Canada has announced that it has completed the first of two milestones as part of the contract with the **Department of National Defence** and the **Canadian Armed Forces'** *Innovation for Defence Excellence and Security* ("IDEaS") program. DDC has been authorized to move to the second phase of the Contract which is expected to be completed in the first quarter of 2024. The completion of the first milestone of the project involved nine test objectives and the Company completed a total of 145 flights with an overall flight distance of almost 800km. Steve Magirias, CEO of Drone Delivery Canada said "We are immensely proud of the achievement in completing the first phase of the DND contract. This success is a result of the hard work, dedication, and exceptional skills of the entire DDC team. We look forward to continuing this successful effort as we move into the next phase of the contract." The full media release is here.

International CAV News

Online giant **Amazon** is best known for selling all kinds of merchandise. Less known is Amazon's foray into medical and pharmacy services. In July 2022, Amazon acquired **One Medical service** for US$3.9 billion. This company provides virtual and in-person primary care services. Similarly, in 2020, **Amazon Pharmacy** was launched. This online pharmacy currently covers around 500 medications, including those for flu, asthma and pneumonia. For rapid delivery of medications, Amazon has deployed its **Prime Air** service using autonomous drones. The deliveries are made within 60-minutes after the order is placed. At present, delivery of medications by drone is only available in College Station, Texas. However, Amazon intends to offer this service in other U.S. cities such as Austin, Indianapolis, Miami, Phoenix and Seattle once the kinks are worked out of this method of delivery. In addition to faster delivery, it is believed that drone delivery is a more economical option compared to delivery by traditional trucks. More information is at this link.

Staying with medicines and drone delivery, we had reported previously in this newsletter how drones have been used in Ontario to quickly transport organs for transplant operations between hospitals. Now the UK Government through **Innovate UK** is providing funding for a similar initiative with the aim of improving patient care in the UK. The funding is through a competitive process and companies can apply for grants of up to £100,000 (approximately US$125,500) to develop projects in this field. The project themes are as follows:

- How drones can augment healthcare logistics and improve supply chain resilience
- Cost benefit analyses of drones compared to existing logistics operations
- Standard Operating Procedures (SOPs) for drones to supply medical products
- Demonstrating how drones could support specific care pathways, for example, for treating cancer
- Demonstrating how drones could support services for example, pathology
- Demonstrating how drones could support policy aims for example, improving prevention, enabling community care and reducing health inequalities
- Compliance with medical distribution regulations, for example good distribution practice
- Maintaining medical product integrity during drone flight
- Other use cases such as organ transport, medical device supply
- Middle-mile logistics with long range or bulk goods movements

- Local compared with national drone networks
- Regulatory considerations, including aviation and medical

More information is at this link.

In an effort to improve access to public transportation, the **Contra Costa Transportation Authority** (CCTA) has developed a micro-transit system called *Dynamic Personal Micro-Transit* (DPMT). DPMT is designed to address the first-mile/last-mile issue for accessing public transportation as well as a downtown community center or to a university or school. This is achieved using small electric autonomous vehicles known as *Glydcars* from a company called **Glydways**. These AVs are only 5 feet wide (1.52 metres) and can accommodate just one person. They will run on a 28 mile (45 Kilometre) dedicated closed-circuit roadway connecting the cities of Pittsburg, Antioch, Brentwood and Oakley. The project is a public-private partnership with an estimated cost of US$450 million. If all goes according to plan, the system could be in operation within three to four years. Glydways was started in 2016 and has attracted US$70 million in funding so far. Among the investors is **Bill Gates** through his venture investment company called *Gates Frontier*. More information is at this link. A short YouTube video showing the system being tested can be viewed at this link.

Since early August 2023, there has been wide media coverage about GM's self-driving division - **Cruise**, obtaining approval from the **California Public Utilities Commission** (CPUC) to operate a robotaxi service on a 24/7 basis in San Francisco. Almost immediately after receiving this approval, a series of mishaps occurred culminating with a Cruise driverless taxi getting involved in a pedestrian accident in early October and seriously injuring this person. This resulted in Cruise's operating license being suspended, a fine of US$1.5 million imposed on it, and its CEO resigning. Less reported is Cruise's intense lobbying efforts to build a coalition of supporters in getting the CPUC's approval back in August. It has now come to light that Cruise submitted 40 letters of support from various community groups, charities and business groups in support of its successful CPUC application. And apparently, Cruise made financial contributions to some of these groups and provided other incentives to get their support. More details at this link.

Staying with **Cruise**, our colleague **John Niles** sent us some information and a link to a Reuters article. It describes Cruise testing continuing in Japan and Dubai, even as Cruise vehicles are parked in the US. A spokesman for Cruise confirmed its vehicles overseas, identical to those in the U.S., were still undergoing public testing abroad, saying it was a "small pilot." Asked why it was safe for those to be on public roads in Japan and Dubai, while apparently not safe in the U.S., the spokesman said, "That's the decision we made." He did not provide details on how many vehicles were being tested in those regions. More information is here.

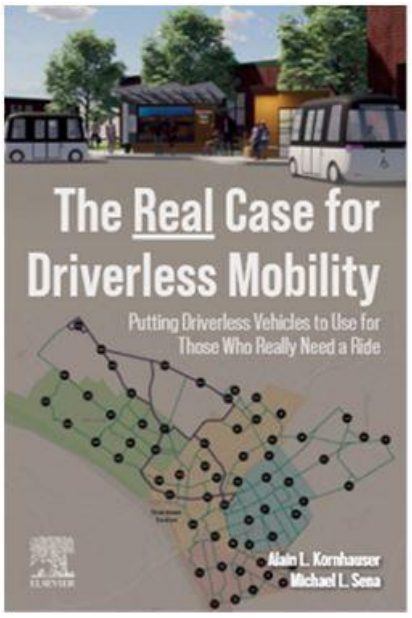
Separately, we hear that Dubai aims to deploy 4,000 self-driving taxis by 2030, and Cruise has been designated as the exclusive robotaxi service provider in the city until 2029. This project will make Dubai the first non-US city to commercialize Cruise's self-driving cars.

A recent article in **Wired** magazine titled *Remote Driving Is a Sneaky Shortcut to the Robotaxi* highlights the work of the German company **Vay**. Started in 2018, Vay has developed technology for teledriving cars remotely. This is partly based on Vay's belief that fully autonomous robotaxis are many years away. Vay's taxis are driven by a remote driver to where the customer is, the customer then uses the vehicle for their purpose and leaves it at the end of their journey. A Vay remote driver then takes it over by driving it to the location of the next customer. Vay thinks their system also mitigates the parking issue since their vehicles are not normally parked as is customary with a traditional rental car. Vay states that their remote driving concept can also be applied to transport trucks; so that truck drivers do not have to be away from their families for many days. The driver can remotely drive a truck from a control room and go home to their families after their shift. Another remote driver can then take over, so the truck does not have to stay idle at a truck stop. Vay has raised US$95 million in venture funding so far. The Wired article can be viewed at this link.

The **U.S. Department of Transportation** (USDoT) through its **Federal Highway Administration** (FHWA), has announced a US$40 million grant program titled *Saving Lives with Connectivity: Accelerating V2X Deployment* to advance connected and interoperable vehicle technologies. This initiative is focused on road safety, mobility, and efficiency through technology. Vehicles and wireless devices can communicate with each other, with roadside infrastructure, and provide warnings to motorists, pedestrians, and other road users. According to FHWA, effective interoperable V2X connectivity can include multiple wireless technologies, including mobile, in-vehicle, and roadside devices that can communicate and operate with each other, such as warnings and alerts related to intersections, red lights, curve speeds and roadway departures. These can be disseminated to road users in an effective and timely manner. The deadline for applications is January 17, 2024. More information is at this link.

In a significant step forward, Chinese passenger drone maker **Ehang** has obtained a *type certificate* from **Civil Aviation Administration of China** (CAAC), for its *electric vertical take-off and landing* (eVTOL) passenger drone model EH216-S. This passenger drone is designed to fly without a pilot on board. The autonomous drone has a range of about 30 Km, and a speed of up to 130 Km/h. Ehang has reportedly signed a US$100 million deal with the city government of Hefei in Anhui province to provide tourist flights and other services such as deliveries and emergency response, using 100 of the machines. The company believes its eVTOLs will one day be able to offer airtaxi rides at a similar price to regular cabs. The passenger drone industry has attracted a lot of venture capital funding in recent years. According to the consulting firm **McKinsey**, US$30 billion has been committed to this aviation sector by the venture capital companies. And even large players such as Boeing and Airbus have been active in the passenger drone industry. More information is at this link or this one.

Two of the luminaries in the field of connected and automated vehicles (CAVs) – Prof. **Alain Kornhauser** of Princeton University and Mr. **Michael Sena** – President of *Michael L. Sena Consulting AB* (based in Sweden), have jointly written a book titled *The Real Case for Driverless Mobility: Putting Driverless Vehicles to Use for Those Who Really Need a Ride*. The book suggests that CAVs will be beneficial to a high percentage of the residents in many U.S. cities who are poor, and employed in jobs that are often not easily reached by public transit systems who struggle to deliver a minimum level of service with their limited budgets. Among the book's suggestions is to start small, achieve success, and evolve to scale, with an emphasis on affordability. The target audience for this book are professionals in transportation policy; technology professionals; investors in transportation solutions, marketing; public transit regulators and operators; local, regional/state and national departments of transportation staff and administrators; researchers and students of transportation, public policy, and regional planning. The book will be available from **Elsevier** on **January 1, 2024**. The cost is US$106. More information is at this link.



And finally, robotaxis are by their nature shared vehicles. As such, robotaxi operators such as **Cruise** and **Waymo** expect their passengers to be courteous and not leave a mess behind at the end of their journey. To encourage passengers to behave this way, Waymo is now charging a $100 *clean up fee* for riders who leave a mess behind in the vehicle, such as vomit, excessive trash, and odors caused by smoking. For those that self-report their mess during their ride (not including smoking), the fee will be $50. For issues that go unreported, Waymo will charge riders $100 for the first violation and increase the fee for subsequent violations. Repeat trash and smoking related violations may impact the riders account as well. Among other things, Waymo advises its customers not to smoke, vape, or consume drugs & alcohol in the car, and also not to carry weapons of any kind!

CAVCOE Speakers' Bureau

CAVCOE 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 enquire about a speaker for your event, please write to speakers@cavcoe.com

Upcoming CAV-Related Events

January 9-12, 2024	CES 2024, Las Vegas NV
January 16-17, 2024	Maritime Autonomous Ship Systems (MASS) – MASSive Developments, virtual conference
February 1, 2024	J.D. Power Auto Summit, Las Vegas NV
March 20-21, 2024	Connected Places Summit, London UK
March 26, 2024	Automotive Forum, New York City
March 26-27, 2024	VTM Vehicle & Transportation Innovation Meetings, Torino, Italy
June 19-21, 2024	ITS Canada Annual Conference & Expo, Vancouver BC
August 28-29, 2024	ADAS & Autonomous Vehicle Technology Expo, San Jose, CA

September 22-25, 2024	2024 TAC Conference & Exhibition, Vancouver, B.C.
October 22-24, 2024	Automotive Testing Expo, Novi, MI

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

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