



From the Editors

10 years ago this month, we published the inaugural issue of what was then called *AV Update* and was later re-branded to *CAV Update*.

We have re-visited some of the early issues. On the one hand, there has been a lot of progress over 10 years. At the same time, there was too much hype in the early days, and the predictions that passenger CAVs would be deployed at scale within a few years were overly optimistic.

I want to say a big thank you to everybody on the *CAV Update* team for all their contributions over the years. Keith Fagan, Paul Godsmark and I started the newsletter. A few months later, Ahmad Radmanesh joined the team. Then Paul left CAVCOE and moved to pastures new. And, more recently, Donna Elliott joined us.

A great team! Thank you to everybody...this is a wonderful achievement!

Barrie Kirk

From the Editors (2)

From the past to the future. The **Transportation Association of Canada's** annual conference is now over and was a huge success. Barrie Kirk's presentation on *The Changing Future of Automated Vehicles* attracted a great audience and excellent questions. The presentation addresses how and why the CAV future has changed. It also describes the expansion of the CAV ecosystem to include a variety of passenger CAVs, freight and logistics CAVs, and service CAVs that perform a wide variety of tasks and carry neither passengers nor freight.

We have put the presentation on the CAVCOE website. Feel free to download it from [here](#) (no charge). If you have any questions, please write to Barrie at bkirk@cavcoe.com



Canadian CAV News

In the June 2023 edition of this newsletter, we reported on research conducted at UK's University of Nottingham on quantifying the general public's reactions and opinions towards autonomous vehicles. Now, the **University of British Columbia's** (UBC) Department of Civil Engineering has conducted similar research to gauge the opinions of British Columbians towards AVs. The project was conducted by UBC's *Research on Active Transportation Lab* (REACT) and collected opinions from 1,133 participants in the province. One of the findings of the research was that people who harbour anxiety or discomfort regarding new technology were more likely to hold a negative bias against AVs. One of the main focus areas was the reaction of pedestrians to human-driven cars versus AVs. The survey revealed that 55% of people would like to see autonomous vehicles such as taxis and shuttles allowed on public roads, and 48% said they'd like to see self-driving cars owned by private companies. The study was funded by **TransLink** whose long-term strategic vision believes that by 2050, AVs could be carrying a majority of personal trips. More information is at [this link](#).




Hamilton-based **Mohawk College** has developed a new program aimed at elementary and secondary students (Grades 5 to 12), to spark an interest in them in advanced automotive technologies such as electric vehicles and autonomous vehicles. Called *Put Your Future in Motion*, it is intended to educate 500+ students starting this summer and ending by the end of 2023. The program is funded by the **Ontario Vehicle Innovation Network** (OVIN) to the tune of \$400,000 as part of its *Regional Workforce Program*. The program will also connect local high school students with automotive skilled trades and technology industry workers and employers. More information is at [this link](#).



The **Province of Ontario** has seven *Regional Technology Development Sites* (RTDS) devoted to the development of technologies helpful to its vast automotive industries. The seven RTDSs are located in Waterloo, Ottawa, Hamilton, Durham, Windsor-Essex, Toronto, and the newly added Northern RTDS that includes Greater Sudbury, Thunder Bay, Timmins, Temiskaming Shores and Sault Ste. Marie. The Ottawa RTDS has now received new funding of \$2.5 million through **Ontario Vehicle Innovation Network** (OVIN) to expand the testing and development facilities at Ottawa's **Area X.O** (operated by **Invest Ottawa**). This is intended to accelerate the development of technologies for connected, autonomous and electric vehicles, primarily in support of small and medium-sized (SMEs) businesses active in these areas. More information is at [this link](#).





On August 16, 2023, **CBC Radio**'s popular *As it Happens* (AIH) program had a segment on the recent robotaxi issues in the city of San Francisco. As luck would have it, the day after **California Public Utilities Commission** (CPUC) approved applications by **Cruise** and **Waymo** to offer robotaxi services in all of San Francisco to fare-paying customers, a number of Cruise vehicles suddenly stopped moving and causing a serious traffic jam for several blocks. According to Cruise, the cause of the mishap was the loss of communication between Cruise robotaxis and its control centre.



Cruise blamed this on a *wireless bandwidth constraints* disabling communication between its vehicles and their control room. It didn't take long before the City of San Francisco contacted CPUC demanding that Cruise's permit be rescinded. Furthermore, the City claims that it has documented 60 cases of interference by robotaxis with the work of first responders. The President of the San Francisco Board of Supervisors (SFBV) had a warning for other U.S. states and Canada: *Start putting the regulatory mechanisms in place that we are sadly lacking in California.*


More information is at CBC's site at [this link](#). The AIH audio report can also be heard at the same link. It is 6 minutes long.

The **Department of National Defence and the Canadian Armed Forces**' (DND/CAF) *Innovation for Defence Excellence and Security (IDEaS)* has awarded a \$200,000 6-month contract to **Drone Delivery Canada** (DDC) to operate and evaluate DDC's *Canary* drone delivery platform for delivery of medical equipment as well other supplies to Canadian Armed Forces. The *Canary* is designed for long-range and high payload capacity and is capable of operating in adverse weather conditions. Depending on the outcome of the testing and evaluation, DDC could potentially be awarded a further 12-month \$1 million contract. More information on DDC's site at [this link](#).



On September 12, 2023, it was reported that Kitchner-based **Clearpath Robotics** was acquired by U.S. company **Rockwell Automation** for US\$600 million. Clearpath Robotics was formed in 2009 by a group of University of Waterloo mechatronics graduates. One of its divisions called *OTTO Motors* is a successful developer and manufacturer of *Autonomous Mobile Robots* (AMR) for deployment in industrial, manufacturing, and warehousing types of environments. With a deployed base of over 3,000 AMRs, the company has enjoyed a





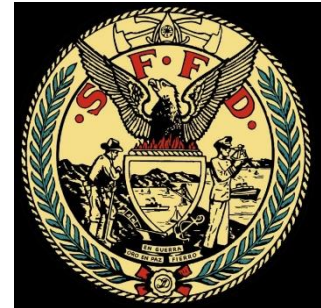
boom in orders from the logistics industry due to the high demand for such systems worldwide. More information is at [this link](#).

International CAV News


Autonomous Vehicle (AV) developers such as **Waymo** and **Cruise** have long claimed that AVs are safer than human-driven cars. Waymo is now backing its safety claims by collaborating with the major insurance company **SwissRe** to compare collision data for AVs versus human-driven vehicles. According to the analysis by Waymo and SwissRe, AVs have reduced bodily injuries due to motor vehicle collisions by 100%, and those causing property damage by 76%. The Swiss Re's data analysis is based on over 600,000 claims and over 125 billion miles (201 billion kilometres). Back in July 2023, Cruise ran a full-page ad in the **New York Times** and several local newspapers in which the company claimed its autonomous taxis are safer than those driven by humans. Both companies point to the fact that driverless cars observe all the rules of the road such as speed limits, and never get drunk, tired, or distracted, which enables them to avoid the human errors that so often lead to crashes and deaths due to these factors. More information is at [this link](#).



Despite Cruise's and Waymo's claims that their robotaxis are safer drivers than human-driven cars, unsettling incidents get reported by first responders in the city of San Francisco; where both companies operate large fleets of robotaxis. An incident in mid-August 2023 is particularly alarming. According to the **San Francisco Fire Department** (SFFD), while SFFD personnel were assisting a severely injured pedestrian hit by a car, the only exit from the street was blocked by two **Cruise** robotaxis. By the time the road was cleared and the patient sent to hospital, precious minutes were lost. SFFD maintains that this could have contributed to the injured person's death. In another incident involving a **Waymo** robotaxi on I-280 freeway, SFFD says that while approaching the Waymo vehicle from behind with their emergency lights flashing, the Waymo vehicle stopped in its travel lane on a busy highway. The fire crew switched off their flashing lights and the Waymo vehicle started to move again. More details about these incidents and others at [this link](#). The SFFD field report about the fatal pedestrian incident can be viewed at [this link](#).



Bloomberg, the well-known supplier of business and financial information, news and insight around the world, has published dueling op-eds: two side-by-side opinion pieces that provide opposing viewpoints. One is *Why Robotaxis Can Make Cities Safer*, and the other is *Why Robotaxis Have No Place in the City*. They are well-written and provide interesting and contrasting perspectives. The op-eds are [here](#).



Autonomous Vehicle developers normally survey and map their area of operation with very high accuracy and at great cost. The area of operation has come to be known as the *Operational Design Domain* (ODD). Autonomous driving is usually tailored to the particular ODD that the automated vehicle will be operating in. Due to importance of ODD in automated driving, in August 2023, the **International Standards Organization** (ISO), published *ISO 34503:2023* specifically to address the ODD issues. The new standard is called *Road Vehicles — Test scenarios for automated driving systems — Specification for operational design domain*. The intent of this new standard is to define the minimum safety requirements for *Automated Driving Systems* (ADS) developers in their designs, and to allow end users (e.g., insurers, national, local, and regional governments), operators and regulators to reference a minimum set of ODD attributes and performance requirements in their procurements. *ISO 34503:2023* is available for purchase from ISO for CHF 145. More information is at [this link](#).




An article in **gwinnettpostdaily.com** titled *Are self-driving cars a national security risk?* delves into security and privacy issues associated with autonomous vehicles as well as regular vehicles. It quotes concerns expressed by the Director of the **Federal Bureau of Investigations** (FBI) regarding AVs, and how they could be potentially used to harm people. The Director also has privacy concerns about the massive amounts of data gathered by AVs falling into the wrong hands.



Echoing the Director's privacy concerns is a U.S. Congressman championing the *Vehicle Data Access* caucus. One of the main objectives of this caucus is to examine the practices of insurance companies who monitor driver behavior and adjust premiums based on the data they collect, e.g., if the driver is observing the speed limits, school zones or does high acceleration or hard braking. The article also gives some examples of how connected vehicles have been hacked and highlights misuse of data by Tesla employees collected from Tesla vehicles. The article can be viewed at [this link](#).

Autonomous Vehicles are generally perceived as a job killer for workers in the passenger transportation and logistics industries. For this reason, labour unions are not big fans of AVs . In a surprise move, it appears that GM-owned **Cruise** has signed agreements with two major labour unions to employ dozens of workers to construct and staff Cruise's car-charging facilities. Cruise operates a fleet of electrically-powered *Chevrolet Bolts* fitted with driverless technology in San Francisco. The two labour unions are the **International Brotherhood of Electrical Workers** Local 6, and **Service Employees International Union** Local 87. More information is at [this link](#).





And finally, a very useful marriage of autonomous technology and artificial intelligence (AI) has led to the development of a toilet-cleaning robot. Developed by the New York-based company **Somatic**, the robot is able to autonomously navigate its way through floors, elevators and corridors, find the various toilets and urinals, and automatically clean them using its high-powered disinfectant and water sprays, lifting the lids to clean underneath, then vacuuming everything dry and stowing the vacuum on its back before going on its way. The company is renting out the robot at US\$1,000 per month, with no up-front fees.



The robot's training comes from a person walking the floor plan of the building, going in and out of all the elevators and bathrooms and mapping the building with video and 3D depth data. The gathered data is then transferred to the robot by a person wearing a VR headset and going through the motions of cleaning a toilet. Somatic has raised US\$7.5 million in venture capital so far. More information is at [this link](#). A 3.5 minute YouTube video of the robot in action can be viewed at [this link](#).

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

October 19-20, 2023	Last Mile Delivery Conference & Expo (LMD-2023), Las Vegas NV
October 24-26, 2023	Automotive Testing Expo , Novi MI
November 7-10, 2023	Aerial Evolution Association of Canada Conference & Exhibition , Ottawa, Ontario
November 15-16, 2023	AutoTech Europe , Berlin, Germany
February 1, 2024	J.D. Power Auto Summit , Las Vegas NV

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](#)

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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