CAVCOE

CAV Update

A monthly newsletter on the CAV ecosystem

March 2023

From the Editors

Two key technologies, automated freight and Blockchain, can help make Canada's supply chain more efficient and competitive. In *CAV Update*, we have included many articles about using CAVs for freight, but the use of Blockchain is less well-known. It is an approach to data management for goods at all stages in the supply chain that allows stakeholders who are suppliers, manufacturers, transportation service providers, and recipients of these goods to cooperatively add to a common dynamic record that is secure and decentralized.

CAVCOE and our partners, **ITS Canada** and **AIoT Canada**, are pleased to offer a free webinar on Blockchain on Wednesday April 19 at 12:00n ET. The webinar will be an introduction to Blockchain as part of Canada's supply chain of the future. The panel will explain how Blockchain uses an architecture that is very different to current, centralized, server-based database systems.

We are fortunate to have three panelists who will share their expertise in this area:

- Erik Valiquette, CEO BCSA (**Blockchain Supply Chain Association Global**);
- Heather Deehan, Director General a.i., Centre for Immunization Readiness, **Public Health Agency of Canada**, and
- Martin Gelb, Director, Intelligent Supply Chain, **Health Canada**.

Erik will describe Blockchain, its properties, status, and potential, and then Heather and Martin will jointly describe a proof-of-concept project that used Blockchain in the COVID vaccine supply chain. The panel will be moderated by Barrie Kirk, Executive Director, CAVCOE.

To register for this free webinar, please click here. If this does not work, please copy and paste https://register.gotowebinar.com/register/8253495458685487197

Canadian CAV News

Ottawa-based **Area X.O** has invested heavily in creating the necessary infrastructure for testing and developing CAV technologies over the past several years. One of its latest initiatives is to provide virtual access to its infrastructure through advanced simulation software developed by **Ansys, Inc.** This is

achieved through a *digital twin* of Area X.O's facilities; which will allow qualified organizations working in the CAV and ADAS space access to the digital twin. This is a low cost way of trying out various schemes for CAVs and ADAS prior to testing in the real physical world. More information about this initiative at Area X.O's site at this link. The funding for this project is from **Government of Canada** through the **Federal Economic Development Agency for Southern Ontario**.

CSA Group's Standards Development organization facilitates the development of technical and management standards in many areas, including Connected & Automated Vehicles (CAV). The recently published guidelines aim at supporting the integration of CAVs into transportation systems across North America by addressing the following areas:

1. Digital infrastructure (more information is at this link)
2. Physical infrastructure (more information is at this link)
3. Cybersecurity, privacy, and data management (more information is at this link)

More detailed information about CSA Group's CAV-related standards and research can be viewed at their site at this link.

In February 2023, **ITS Canada** published a 23-page report titled *Connected Electric & Autonomous Shuttles (CEAS), Current Practices Paper*. CEAS includes *Low Speed Autonomous Shuttles* (LSAS), which have been deployed in both public and private roadways such as office parks, campuses, airports, and theme parks. They typically carry between 4 to 15 passengers on fixed circuit routes. Speeds are generally kept under 20 km/h. In Canada, several cities have initiated pilot projects to introduce these automated shuttles to the public. The report was produced by ITS Canada's own CEAS Technical Committee and can be downloaded freely by ITS Canada members in good standing. More information is at ITS Canada's site at this link.

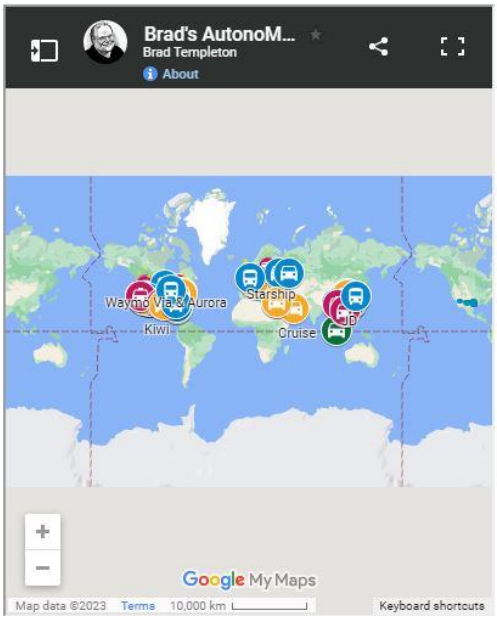
The **University of Windsor** and **Telus Corporation** have announced a $5 million partnership for establishing an R&D centre for advancing 5G communication technology. Part of the R&D work addresses applications of 5G technology in agriculture, advanced manufacturing, and connected and autonomous vehicles (CAVs). Other partners collaborating on the CAV research are the **Ontario Vehicle Innovation Network** (OVIN), *Original Equipment Manufacturers* (OEMs) and policymakers. The goal is to utilize 5G connected vehicles to solve cross border challenges, including congestion and supply chain issues. Furthermore, in collaboration with **Mitacs** (a non-profit national research organization), these efforts will

explore the use of artificial intelligence (AI) and deep learning to identify potential vulnerabilities and access points in CAVs, enhancing safety and security. More information is at this link.

In another university-related development, The **University of Ottawa** and British CAV developer **Aurrigo International plc** have signed a collaboration agreement to jointly work on CAV projects. Of particular interest to Aurrigo is UOttawa's *Smart Connected Vehicles Innovation Centre* (SCVIC). SCVIC enables low-cost experimentation and testing for connected and autonomous vehicles. It allows researchers and industry partners to access self-driving car prototypes, drones, and certain types of ground robots. It has an indoor experimental test bed and is paired with state-of-the-art computing infrastructure for collecting extensive data collection. More information is at Aurrigo's site at this link.

International CAV News

Brad Templeton is one of the luminaries of the CAV world. One of his latest efforts is the creation of a map called *AutonoMap*. Created on Google Maps, this map shows all the major deployments of autonomous vehicles worldwide where AVs are out on roads and sidewalks carrying members of the public or cargo with no safety driver or other employee in the vehicle. This includes deployments of robotaxis, autonomous trucks and sidewalk and delivery robots. Furthermore, the map has two layers, one for robotaxis and one for delivery robots. Only autonomous delivery robots — including class 4 trucks from **Gatik** — are in that layer. The Robotaxi layer includes some projects which are not yet live and some with safety drivers which are marked with blue and orange markers. Most of the deployments are in the U.S. and China with a few in Europe. The map shows both commercial deployments as well as those on a pilot or experimental basis. The map will be updated as more deployments take place. More information and access to the map is at this link. A short YouTube video provides additional information at this link.



California-based **Ottonomy Inc.** is a developer of last-mile delivery robots. Its robotic delivery vehicle called *Yeti* has been deployed in multiple locations including malls, airports and office buildings. *Yeti* can deliver to a person, drop a package at an address or deposit it in a customer's lockbox. The robot enables companies to offer automated deliveries to their customers at the curbside and parking lots. The robot's range is about 6.4 Km. At selected airports, it can deliver food directly to the travelers at their gates. The company's pricing model is dependent on how many robots a company wishes to deploy and the number of restaurants and retailers included in the delivery footprint. More information is at Ottonomy's site is at this link. A short YouTube video of *Yeti* in action can be viewed at this link.

According to media reports and the company's own website, French company **Navya** is in receivership. Navya was once one of the prominent companies in the autonomous shuttle space. More information is at this link. The announcement at Navya's own site and dated February 1, 2023, is at this link.

Only a few months after **Ford Motor Company** withdrew its support from **Argo AI** forcing the company to shutdown, Ford has formed a new subsidiary called **Latitude AI** to continue with development work for automated driving systems for its vehicles. To staff Latitude AI, Ford has hired back 550 former employees of Argo AI with expertise in various areas such as; machine learning and robotics, cloud platforms, mapping, sensors and compute systems, test operations, systems and safety engineering. Latitude AI will focus on the development of a hands-free, eyes-off-the-road automated driving systems. The intent is to relieve drivers of some of tedious driving functions such as bumper-to-bumper traffic, stop/go traffic or long highway journeys. More information is at Ford's site at this link.

Amazon-owned **Zoox Inc.** is under investigation by the **National Highway Traffic Safety Administration** (NHTSA). NHTSA's *Office of Defects Investigation* (ODI) had issued an order to Zoox on March 3, 2023, notifying it of this investigation. The reason for the investigation is the self-certification procedures employed by Zoox for compliance laid out by the **Federal Motor Vehicle Safety Standards** (FMVSS). FMVSS defines the minimum safety standards for vehicles manufactured in the United States or imported from abroad. It is up to manufacturers to meet or exceed these standards through a self-certification process. NHTSA has a right to audit the self-certification processes and procedures. It appears that NHTSA has some doubts on

whether Zoox has fully complied with these regulations despite Zoox's claim to the contrary. More information is at this link. A copy of NHTSA's order can be viewed/downloaded at this link.

In another sign of trouble in the automated trucking industry, on March 3, 2023, San Francisco-based **Embark Trucks** announced that it is going out of business. The main reason given by the company's CEO was the difficulty in raising additional capital funds to continue with their development work. The company will lay off 70% of its workforce and keep the other 30% to facilitate an orderly wind down of the company. Embark was established in 2016. It attracted nearly US$100 million in venture capital funding prior to going public through a SPAC process in November 2021. At its peak, the company's market value was in excess of US$5 billion. More information is at this link.

Back in January 2023, **Google's** parent company **Alphabet Inc**. laid off approximately 12,000 people. Some of the cuts were in its Waymo business unit which spearheads its AV development efforts. In a more recent move, the company shut down its *Everyday Robots* business unit. This was an internal Google project involving about 100 robots. They were mostly deployed in Google's cafeterias to clean tables, separate trash and recycle. Google's intent for pouring money and resources into these expensive robots was to develop new ways of teaching robots to do tasks through *machine learning language models* (similar to ChatGPT) to be able to make robots carry out tasks by instructing it in plain English; as opposed to detailed coding for every possible function. For example, the robot could be instructed to fetch cleaning materials if a drink is spilled on a table. More information is at this link. A short YouTube video showing the robots in action can be viewed at this link.

As more commercial driverless robotaxis are deployed in U.S. cities, new and unusual operational issues come to the fore. One such case happening in San Francisco is erroneous 911 calls. According to San Francisco authorities, on three occasions, **Cruise** operations centre called 911 to check on their robotaxi when the passenger in the vehicle had become unresponsive to the two-way voice link installed in each car. Each time, police and firefighters rushed to the scene but found the same thing: a passenger who had fallen asleep in their robot ride. City officials are unhappy about these false alarms stating that these incidents wasted public money and potentially diverted resources from people truly in need. More details are at this link

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And finally, in February 2023, **Ford Motor Company** submitted a patent application to the **U.S. Patent and Trademark Office** titled *Systems and Methods to Repossess a Vehicle*. The intent of this patent is to take escalating action against people who have missed several car payments. The proposed system begins by sending messages to the person with missing payments to warn them about the situation. If no response is received, the system will start disabling certain functions of the vehicle remotely, eg. the car's heater or air-conditioning. If still no response, the actions escalate by the vehicle making a continuous and annoying noise — a beep, a chime or a radio station you can't turn off. Ultimately, if the vehicle is semi-autonomous or fully autonomous, it could drive itself to a spot of Ford's choosing such as an impound lot. More information is at this link. A copy of the 14-page patent application by Ford can be viewed/downloaded on the U.S. Patent Office site 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

April 19, 2023	Blockchain for the Intelligent Supply Chain in Canada, webinar co-organized by ITS Canada, CAVCOE and AIoT Canada
June 4-7, 2023	UITP Global Public Transport Summit, Barcelona, Spain
June 7-8, 2023	AutoTech: Detroit, Suburban Collection Showplace, Novi MI, USA
June 12-15, 2023	Hexagon | AutonomouStuff News, Autonomy & Positioning Reality Summit, HxGN LIVE Global 2023, Las Vegas NV
June 14-16, 2023	ITS Canada 2023, Windsor ON

June 20-22, 2023	Autonomous Ship Expo and Conference, Amsterdam, The Netherlands
June 21-23, 2023	ADAS & Autonomous Vehicle Technology Expo, Stuttgart, Germany
July 12-13, 2023	VTM Michigan Vehicle & Transportation Technology Innovation Meetings, Novi MI
Oct 19-20, 2023	Last Mile Delivery Conference & Expo, Las Vegas

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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