

# CAV Update

A monthly newsletter  
on the CAV ecosystem

April 2023

## ***From the Editors***

We find that too many people talk about the arrival of CAVs as a light-switch moment. It won't be. We need a more nuanced perspective recognizing the gradual deployment. Some ways of using CAVs are easier than others; these are here now or will be soon. Examples are service vehicles (off-road and on-road), automated freight (especially in closed environments and on fixed routes), and passenger vehicles on geographically constrained fixed routes. We also agree with those who say that large-scale deployment of Level 5 passenger vehicles that can go anywhere, anytime, in almost any weather are years away.

We believe that history is an important guide to the future. The first steam-powered prototype vehicle was in 1672. Mass production of the Model T Ford started 236 years later in 1908. And today, 115 years later, cars are still evolving. The deployment of Cars 1.0 has been incremental over many years, and the deployment of Cars 2.0 / CAVs will follow the same trajectory, although significantly faster.

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## ***Canadian CAV News***

**Area 55** is now part of the **SubZero North** winter weather testing ecosystem in Thompson MB. Barrie Kirk recently visited Thompson and learned that the buildings and related infrastructure have been recently acquired by the **Thompson Regional Airport Authority**. Area 55 includes garages, truck-sized cold chambers (in case Thompson is not cold enough!), over a dozen hoists capable of lifting up to 5,440 kilograms, as well as fuelling and charging stations. For many years, the facility was owned by **Ford Motor Company** for its winter weather testing. Ford will remain a primary client of the site, but others can now use some or all of the facility when Ford is not using it. The complete Thompson winter weather testing ecosystem now includes SubZero North, Area 55, and the **Glacier** jet engine test facility that is jointly owned by **Rolls-Royce** and **Pratt and Whitney**. SZN has a number of partners, including universities, and has also signed MOUs with organizations in Manitoba, Ontario, and internationally. More information is [here](#).





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CAVCOE and our partners - **AIoT Canada** and **ITS Canada** - recently hosted a webinar on *Blockchain for the Intelligent Supply Chain in Canada*. The background is that Canada's supply chain of the future will include automated freight, Blockchain, AI, Internet of Things (IoT), and Intelligent Transportation Systems (ITS). We call it an ecosystem of ecosystems. To help move this along, we had a webinar on automated freight in late 2022, then this Blockchain webinar.

Our speakers on Blockchain were excellent:

- Erik Valiquette, CCLP, **Blockchain Supply Chain Association**
- Heather Deehan, **Public Health Agency of Canada | Agence de la santé publique du Canada**
- Martin Gelb, **Health Canada | Santé Canada**

Erik provided an introduction to Blockchain; and Heather and Martin described the use of Blockchain in vaccine delivery logistics and their proof-of-concept work for Covid vaccines.

The webinar video is available at [https://youtu.be/cLqXow\\_MEvM](https://youtu.be/cLqXow_MEvM)

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Established in 2019, St.Catharines-based robotic company **Social Robots** is in the business of developing robots that engage, educate and entertain. The purpose of these *companion robots* is to improve the quality of life for older adults. The robots are primarily designed for staff and residents in retirement homes and long-term care facilities. The goal is to reduce the impact of social isolation, loneliness and boredom. The mobile robot dubbed *Mindy* is about 1 metre tall, weighs about 13 Kg and is equipped with a 10" screen on its chest. *Companion robots* have long been in use in Japan and are very popular there. More information on Social Robot's site at [this link](#). A short YouTube video showing *Mindy* in action can be viewed at [this link](#).



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Edmonton-based **Stantec Inc.** has been active in the AV ecosystem through its *GenerationAV* initiative. It provides a suite of tools for AV planning, deployment, risk assessment and consideration of operational safety of AVs. Stantec has now partnered with Michigan-based **May Mobility** to plan and deploy this company's *AV microtransit* technology in cities, campuses, airports and other locations worldwide. More information is at [this link](#).



## **International CAV News**

Texas-based **Fox Robotics** is a developer of automated fork lift vehicles. The company states that its *FoxBot* autonomous forklifts can run 24 hours a day, 7 days a week, 365 days. The automated forklifts are specifically designed by unloading trailers. The driverless forklifts are capable of unloading a trailer at a rate of 25 pallets per hour. One human operator can remotely manage 5-6 FoxBots at a time. The company claims that its technology can save up to 40% on labour costs. Conventional forklifts run on propane. The automated forklifts made by Fox Robotics are electric with less environmental impacts. More information is on Fox Robotics site at [this link](#). A short YouTube video of *FoxBots* in action can be viewed at [this link](#).




**The Kroger Company** is one of the largest and oldest grocery chains in the United States. It was established in Ohio 140 years ago. Currently, Kroger operates 2,849 stores in 33 states. Kroger is the latest grocery chain to collaborate with **Gatik** to deploy its automated box trucks for transporting goods from its warehouses to its retail stores. Gatik automated trucks will be delivering goods multiple times a day, seven days a week for Kroger. The routes include semi-urban and highway driving at speeds of up to 70 miles per hour (112 Km/h). The routes average 60 miles per round trip (97 Km). As we reported in the October 2022 issue of *CAV Update*, Gatik has also partnered with **Loblaws Inc.** in Canada for a similar scheme. **Walmart** and **Georgia-Pacific** have also deployed Gatik's technology in their operations. More information is at [this link](#).



**Japan** is experiencing labour shortages in all sectors. This includes a severe shortage of truck drivers. Accordingly, the Japanese government is encouraging all technologies that address the labour shortage. To this end, plans are being made to turn one of the lanes of Japan's busiest highway between Tokyo and Nagoya into a dedicated automated truck lane. This 100 Km stretch of the highway will be equipped with road infrastructure such as cameras and sensors to provide continuous monitoring of the automated lane. It is not known at present if human-driven trucks will be allowed on this





dedicated lane or not. The highway will also be covered by 5G high-speed low-latency communication equipment as part of this project. Initial trials are planned for 2024. More information is at [this link](#).

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Munich-based **TÜV Süd AG** is a major technical services company with a focus on testing and certification of automotive systems. It employs 25,500 employees and has revenues of over 2.7 billion euros. It has now been designated by the **German Federal Motor Authority** (KBA) as a qualified organization to conduct tests and certifications for autonomous vehicles. As such, TÜV Süd can perform assessment of safety management systems and safety concepts for vehicles with automated or fully automated driving functions in defined *operational design domains* (ODDs). It can also oversee the type approval and operation of vehicles with fully automated driving functions. To this end, the company will carry out physical tests on its own and third-party proving grounds and provide detailed safety reports to KBA. More information is at [this link](#).



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Staying with testing and certification companies, Swiss-based **SGS S.A.** is a multinational company headquartered in Geneva. It has 97,000 employees and operates a network of 2,650 offices and laboratories worldwide. Among its certification streams, one is for *Cellular-to-Everything* (C-V2X) technology. C-V2X is the current wireless standard for connected vehicle technologies such as V2V, V2I and V2P. SGS recently awarded the very first C-V2X certification to a Chinese company for fully complying with all the current standards and specifications for C-V2X communication. The company is the Shanghai-based **Quectel Wireless Solutions**. More information is at [this link](#).




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A recent article in **Forbes** magazine titled *While On-Road Driverless Slows, Ag-Tech Autonomy Players Are Plowing Ahead*, delves into commonalities and differences between AVs designed for public roads and those designed for limited-access farms and construction sites. Many of the technologies and sensors developed for on-road automated vehicles have found their way onto various automated farm machinery. **John Deere** is cited as the leading company developing automated agricultural machinery; as well as precision equipment for delivering the precise amount of fertilizer or pesticide to individual plants on a farm. For example, Deere claims its *See & Spray™ Ultimate* system can reduce fertilizer use by up to 60%. Some newly developed automated weeding systems are reported to be capable of zapping up to







100,000 individual weeds per hour using precision guided laser beams. Many startups are active in automated farm systems too. Some of these have been acquired by larger companies such as John Deere. More details are on Forbes site at [this link](#).

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**Caterpillar Inc.** is the world's leading manufacturer of construction and mining equipment. The company has kept up with modern technologies by developing fully-autonomous haul trucks, semi-autonomous vehicles and remotely controlled heavy equipment such as bulldozers used for excavation. Caterpillar showcased its high tech products at the at 2023 *Consumer Electronic Show (CES)* in Las Vegas. Caterpillar states that its fully-autonomous haul trucks are equipped with 64 lasers, radar, cameras, and GNSS for precise location, electronic sensors, compute power, and the necessary associated software to replace the human driver. Caterpillar suggests that this product results in zero lost time due to injury, a 30% boost in productivity, and a 20% cost reduction. More information is at this [link](#). A 16-minute YouTube video shot at CES has a Caterpillar representative explain the fully autonomous, semi-autonomous and remotely controlled vehicles. The video can be viewed at [this link](#).



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Many experts share the view that non-passenger CAVs such as delivery and sidewalk robots will go mainstream before passenger CAVs. There have been many small-scale deployments of non-passenger AVs in the U.S., Canada and Europe. Some brands are better known than others, e.g., **Starship Technologies**, **Nuro** and **Amazon**.

Starship Technologies is an Estonian company that is working on automated delivery vehicles. The company has its main office in San Francisco, California, and has engineering facilities in Helsinki, Finland, and Tallinn, Estonia. Starship has deployed 2,000 autonomous delivery robots in the field, and they have collectively driven 10 million kilometres over the past 7 years.



Other developers are also active in this space. A website called [e-vehicleinfo.com](#) has compiled a list of 10 companies in the autonomous delivery sector with a short description of each. Check [this link](#) for further information.



Pittsburgh-based **Aurora Innovation Inc.** is one of the leading AV developers. Its *Aurora Driver* software system has been developed for cars, trucks and other vehicle types. On April 13, 2023, Aurora announced the opening of its first trucking terminal designed specifically for its own autonomous truck fleet as well as those of its customers such as **FedEx**, **Schneider**, and **Uber Freight**. The service operates between Dallas and Houston. The terminal is located about 44 Km south of Dallas and close to I-45 that connects the two cities. This custom-built terminal will house, maintain, prepare, inspect, and deploy autonomous trucks. It is equipped to handle requirements specific to driverless operations such as sensor calibration ranges, high-speed data offload, and launching and landing zones. In common with the traditional trucking terminals, this terminal also has fueling and weigh stations as well as on-site maintenance facilities. More information is at [this link](#).



Staying with **Aurora** and its autonomous trucking operations, the company along with **Waymo** has petitioned the U.S. **Federal Motor Carrier Safety Administration** (FMCSA) for a 5-year exemption from certain trucking regulations to enable them to deploy driverless trucks on public roads. Their petition has been strongly opposed by the **Transport Workers Union of America** who have asked FMCSA to reject the exemption request from Aurora and Waymo. The main issue appears to be installation of warning devices such as reflective triangles and flares to alert other vehicles about the presence of a stopped truck and lessen the chance of a crash. The warning devices are presently installed by the people operating the truck. A driverless truck by its virtue is unable to do this. Aurora and Waymo have suggested using forward and rearward-facing amber flashing lights as warning devices. No ruling from FMCSA as of this writing. More details are at [this link](#).



And finally, a little light humor concerning driverless cars. A short YouTube clip called **Driverless** uses comedy to portray the shape of things to come in a driverless car world. The movie describes itself as: *When all that's good about middle-class workers meets all that's bad about corporate millionaires and all that's wrong with technology, the inevitable result is a hysterical new comedy short that slashes the tires of corporate America.* The main





character (Glen) a world-weary office worker on his first day on the job at a mercilessly mismanaged driverless car company. The YouTube clip can be viewed at [this link](#).

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## **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](mailto:speakers@cavcoe.com)

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## **Upcoming CAV-Related Events**

May 30, 2023	<a href="#">Webinar on Public Mobile Robots</a> by Urban Robotics Foundation
June 4-7, 2023	<a href="#">UITP Global Public Transport Summit</a> , Barcelona, Spain
June 7-8, 2023	<a href="#">AutoTech: Detroit</a> , Suburban Collection Showplace, Novi MI, USA
June 12-15, 2023	<a href="#">Hexagon   AutonomouStuff News, Autonomy &amp; Positioning Reality Summit</a> , HxGN LIVE Global 2023, Las Vegas NV
June 14-16, 2023	<a href="#">ITS Canada 2023</a> , Windsor ON
June 20-22, 2023	<a href="#">Autonomous Ship Expo and Conference</a> , Amsterdam, The Netherlands
June 21-23, 2023	<a href="#">ADAS &amp; Autonomous Vehicle Technology Expo</a> , Stuttgart, Germany
June 27, 2023	<a href="#">Webinar on Public Mobile Robots</a> by Urban Robotics Foundation
July 12-13, 2023	<a href="#">VTM Michigan</a> Vehicle & Transportation Technology Innovation Meetings, Novi MI



September 20-21, 2023	<a href="#">ADAS &amp; Autonomous Vehicle Technology Expo</a> , Santa Clara CA
September 24-27, 2023	<a href="#">2023 Transportation Association of Canada (TAC) Conference &amp; Exhibition</a> , Ottawa, Ontario
October 19-20, 2023	<a href="#">Last Mile Delivery Conference &amp; Expo</a> (LMD-2023), Las Vegas

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## **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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