CAVCOE

CAV Update

A monthly newsletter on the CAV ecosystem

October 2021

From the Editors

The key section in this issue is winter weather testing. There have been multiple announcements from the **Thompson, Manitoba, Winter Weather Testing Campus;** these are described in the section on Winter Weather Testing.

CAVCOE is pleased to be a part of this initiative. Through this work, we have confirmed that the scope for winter weather testing is far more than road vehicles. We cannot reveal (yet) all the organizations we are talking to, nor the details of those conversations. It is fair to say that almost anything that operates outside in Canada must be able to do so reliably in Canadian winters. And testing in real-world conditions is essential.

Canadian CAV News

On September 29, 2021, **Alberta's Minister of Transportation** announced the launch of a truck platooning pilot project in Alberta. This builds on a similar project sponsored by **Transport Canada** in Québec a few years ago. The current project will see platooned trucks deployed on Alberta's public highways (Calgary to Edmonton and Calgary to Banff). The official name of the project is *Cooperative Truck Platooning System* (CTPS). The project is led by **Alberta Motor Transport Association** (AMTA). Partners are: Alberta Transportation, Transport Canada, U of A, Bison Transport, Pronto AI and others. More information is at AMTA's site this link. A short video and report can also be viewed at this link.

On October 1, 2021, **The Globe & Mail** published an opinion piece titled *Not coming to a road near you any time soon: Self-driving cars*. The article focused on how the AV industry has been overpromising and underdelivering on AVs going mainstream. It points to rosy pictures painted by **Google**, **Tesla**, **Apple** and others on how AVs will be here any day now, and how **Uber** and **Lyft** left the AV industry altogether. It also touches on the unresolved liability issues and the lack of a legal framework for AVs. It suggests government funding could be better used spent on public transportation instead of getting the road infrastructure ready for AVs. The article can be viewed on G&M's site at this link or at this link.

By contrast, **Invest Ontario** (a provincial agency dedicated to attracting investments to Ontario) is quite upbeat about the prospects of autonomous vehicles. On its website, it has brief profiles for ten Ontario-based companies who are all working on some aspect of AVs. The companies are:

- *AutoGuardian by SmartCone*
- *Acerta*
- *Cyberwork Robotics*
- *Gatik*
- *LeddarTech*
- *Nuport Robotics*
- *Provectus Robotics Solutions*
- *Sensor Cortek*
- *Untether AI*
- *Waabi*

More information is at Invest Ontario's site at this link.

A new partnership between the **University of Waterloo**, **Magna International** and **Natural Sciences and Engineering Research Council of Canada** (NSERC) is focused on developing mehods, tools and software to ensure safety of connected and autonomous vehicles. Waterloo is contributing $400,000 to this project while Magna and NSERC are contributing $600,000 each over 5 years. Magna will also provide a test vehicle for this project. The findings of this R&D project will benefit Magna in developing advanced CAV systems. More information is at this link.

General Motors Canada and **Telus Corporation** have announced an expanded partnership to enable future GM vehicles to use into the Telus 5G network. Starting in 2025, Chevrolet, Buick, GMC, and Cadillac vehicles will be factory-equipped to access Telus's 5G network. The older GM vehicles equipped with 4G-LTE will be able to upgrade to the faster 5G network. GM vehicles with 5G connectivity will be able to receive *over-the-air* (OTA) software updates, live traffic information, fast video downloads and entertainment services, remote vehicle commands such as door unlock and remote diagnostics, e-commerce services and a host of other functions enabled by 5G connectivity. More information is at this link.

Gatik is a developer of automated trucks with presence in Toronto and Palo Alto. It has partnered with Loblaws in Canada and Walmart in the U.S. to deploy its automated trucks on short *middle mile* routes. Its latest partnership is with the tiremaker **Goodyear**. Goodyear has innovated a lot of intelligence into its tire products. Automated vehicles are also on its radar. Goodyear *SightLine* technology detects and transmits information on tire wear, tire load, tire-road friction, tire leaks, tire pressure, tire type and can monitor the tires of a parked vehicle. Some or all of these are useful information for an automated vehicle. More information is at this link.

A short YouTube video of Goodyear's *SightLine* capabilities can be viewed at this link.

On September 25, 2021, in what is claimed to be the first of its kind in the world, a drone developed by Quebec-based company **Unither Bioélectronique** delivered a human lung for a transplant operation from **Toronto Western General Hospital** to **Toronto General Hospital**. The flight duration was only 6-minutes over a distance of 1.5 Km, but it highlighted the capabilities of drones in critical care in a dense urban area. The selection of Toronto General Hospital was deliberate and symbolic. This hospital completed the world's first lung transplant in 1983 and the first double lung transplant in 1986. The double lung transplant operation was successful. More details are at this link.

Winter Weather Testing

During October, there were multiple announcements related to the Thompson, Manitoba, winter weather testing ecosystem:

- The **Thompson Winter Weather Testing Campus** has been re-launched with this new name.
- In parallel, the **Thompson Community Development Corporation** has also been relaunched and the Campus is now part of the TCDC.
- **Swap Robotics** (formerly Top Hat Robotics), the world leader in robotic snow removal, grass cutting and sidewalk inspections, now has a sidewalk snow clearing robot in Thompson and will be testing it this winter.
- TCDC has signed Memoranda of Understanding with:
  - Alberta Motor Transport Association (AMTA)
  - EnviroTREC
  - North Forge
  - Red River College
  - University College of the North (UCN)
- The Campus is also in discussions with its academic partners regarding research projects.
- The first North American Winter Weather Testing Conference will be held on November 16, 2022.

The background is that for over 25 years, Thompson has hosted organizations conducting winter weather testing for cars, trucks, gas turbine engines, snowmobiles, etc.

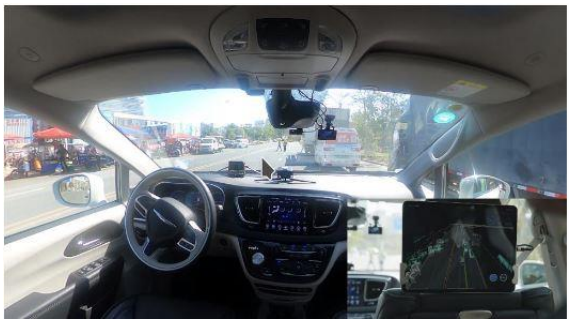
As we reported in May 2021, the Province of Manitoba is moving towards regulations that will allow testing of CAVs on public roads in Manitoba.

The combination of these two items means the CAV developers will be able to do extensive testing of CAVs in real-world winter conditions in Northern Manitoba in the near future.

For more information on the Thompson announcement, including contact details, please see the full news release here.

International CAV News

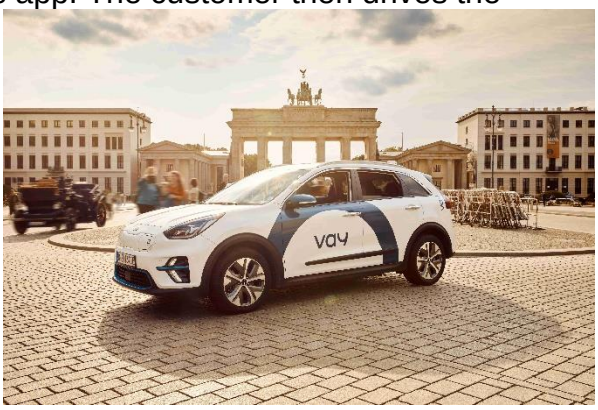
A recent article in **Forbes** magazine titled *Most Self-Driving Demonstrations Are Theater, Here's How To Make Them More Real;* suggests that most videos published by AV companies are not a true reflection of how the AV may be performing in real life. The author (Brad Templeton) points out that the videos all seem flawless. He suggests that the lack of mistakes is no accident, i.e. AV developers cherry pick the best bits of a test run and display that to the public. He has a few suggestions for AV companies to make their tests and assoicated videos more believable. For example, it is suggested that the AV compaines announce that a demo will be undertaken on a specific day/time on a large number of possible routes, select a random route at the appointed hour and then live stream the test drive to the web so the public can see for themeselves. The Forbes article can be viewed at this link or this one.



In a similar vein, in its September 2021 issue, **Scientific American** magazine published an article titled *'Self-Driving' Cars Begin to Emerge from a Cloud of Hype*. The article's author, Steven Shladover - a veteran of advanced transportation systems, discusses at length the overpromising and underdelivering of the AV industry over the past decade. In his opinion, the peak of the AV hype occurred in 2016. Since then, reality has dawned on the industry and financial backers that the true automated driving is a much tougher technical challenge than anyone imagnied. And this is not to mention all the regulatory hurdles that must be negotiated by the industry before AVs have a hope of hitting the mass market. The author predicts that long-haul automated trucking and delivery robots are the most likely areas of automated driving to emerge in the next few years. Full automated Level 5 vehicles remain a very long range goal. The article can be viewed at this link .

SCIENTIFIC AMERICAN

The German AV developer **Vay** has taken a different tack in developing its automated driving technology. Vay uses *teledrivers* to drive its for-hire vehicles to the pickup point where the customer has summoned it to via its app. The customer then drives the vehicle to its destination. At that point, a Vay teledriver will again remotely drive the car to its next customer. This concept is called keeping a *human-in-the-loop* (HIL). Vay considers this a sensible step on the way to higher levels of autonomy. The **Society of Automotive Engineers** (SAE) recently reclassified its levels of automation and recognized vehicles driven via teledrive as another level of automation. Vay's remote drivers have all the vehicle controls (accelerator, steering wheel, brakes, signals, etc.) at their disposal at their control room. More information is at this link. A short YouTube video of how the Vay system works can be viewed at this link.



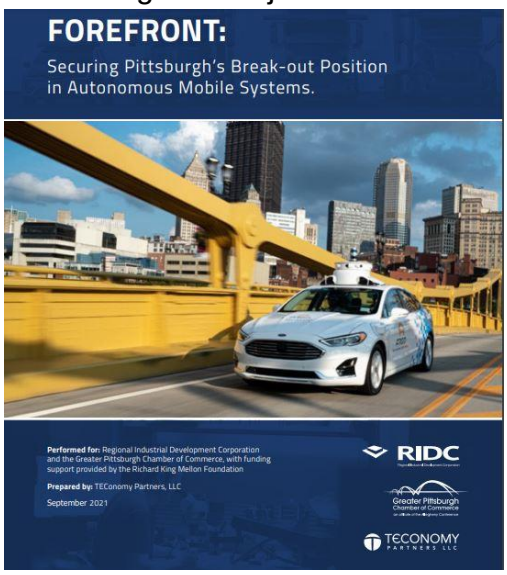
Logistic companies and trucking firms have a deep interest in the development of automated trucks. The reasons are expected lower operating costs and to address a severe dearth of long-distance truck drivers. One of the latest firms to get involved in this is **FedEx Corp.**. It recently announced a partnership with **Aurora Innovation Inc.** to trial automated trucks for hauling cargo between Houston and Dallas. The truck supplier in this partnership is **PACCAR Inc.** whose brands include Peterbilt and Kenworth. For the time being, the trucks making the 500-mile round trip will have safety drivers onboard. The hope is that by 2023, these trips will truly be autonomous with no safety driver. More information is at this link.

Staying with autonomous trucking, *Volvo Autonomous Solutions*, a division of **Volvo Trucks** has announced its plans for assembling its automated trucks at its assembly plant in Dublin, Virginia. While Volvo provides the vehicle platform, the automated drive technology comes from its partner **Aurora Innovation Inc**. The Volvo *VNL-760* long-haul model is integrated with the *Aurora Driver* technology. More information is at this link. A short YouTube video of the VNL-760's unveiling can also be viewed at this link.

San Francisco is a favourite location by AV developers for testing their vehicles on that city's road network. **Cruise**, **Waymo** and others all operate large test fleets in San Francisco. Some of the residents of this city are unhappy about the large numbers of AVs using their neighbourhoods. One resident complained that at times there are up to 50 AVs using the nearby roads on a given day. The AV companies counter by saying they obey and observe all traffic regulations. This is little comfort for the unconvinced residents.

Residents of Chandler, Arizona where Waymo operates another large robotaxi service were also unhappy about the number of AVs traversing that city's streets. There were some incidents of violence against Waymo's AV as reported by the media. More information is at this link.

Many cities and regions view the emergence of autonomous systems as a potential economic driver for future prosperity, growth and creation of high-value jobs. One such city is the City of Pittsburgh which has been a hub of AV development for several years. A major study into the economic impact of autonomous systems was recently sponsored by Pittsburgh's **Regional Industrial Development Corporation** (RIDC) and the **Greater Pittsburgh Chamber of Commerce**. The 153-page report prepared by **TEConomy Partners, LLC** takes a deep dive into the so-called *full stack* autonomous systems which includes not only cars, but aerial, marine, industrial and other types of autonomous systems. The report estimates that the *terrestrial autonomous mobile systems* market alone is worth US$802 billion globally by 2025-26. If you add aerial, marine, and defense autonomous systems, the total likely climbs above US$1 trillion in total market size till the end of this decade. Any city or region capturing even 1% of this market is looking at a US$10 billion economic benefit. A copy of the report can be viewed/downloaded at this link.



And finally, the **City of Huntington Park** in California has deployed a *Robocop* in one of its city parks to keep an eye on what is going on and to give the local residents more piece of mind about their security. Dubbed the K5 and developed by the Mountain View-based company **Knightscope**, it is designed to patrol 24/7/365 in parks, parking lots/structures, shopping malls, hospitals and corporate campuses. The company claims that the K5 has already logged over 1,000,000 hours of service with paying clients across the U.S. It provides eye-level mobile surveillance to create deterrence, increase awareness, conspicuous physical presence and high-quality evidence to prosecute offenders when necessary. A 2-minute video showing the K5 Robocop in action can be viewed at this link.

Upcoming CAV-Related Events

Nov 17-18, 2021	ADVI Summit, Australia and New Zealand Driverless Vehicle Initiative.
Nov 23-24, 2021	Monetizing the Digital Car, live virtual event, UK
Dec 1-2, 2021	Autonomous Vehicles Europe 2021, Berlin, Germany
Dec 14-17, 2021	UITP Global Public Transport Summit; Melbourne, Australia
Feb 27 – Mar 2, 2022	Ontario Good Roads Association's Conference; Fairmont Royal York, Toronto
Mar 1-2, 2022	Autonomous Vehicle Technology Expo, San Jose CA
June 20-23. 2022	HxGN LIVE Global, Las Vegas, Nevada

About CAV Update

CAV Update is a free, monthly summary of news and analysis in the world of connected and automated vehicles, and the 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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