

# SPIAO FALL 2018 WORKSHOP

Autonomous Vehicles:  
Legal, Risk Management and Societal Implications

by Christine Carter and  
Gwen Tassone



Papazian | Heisey | Myers Barristers & Solicitors



# Definition

## WHAT IS AN AUTONOMOUS VEHICLE?

WHILE DEFINITIONS DIFFER, SAE INTERNATIONAL HAS DEVELOPED A SYSTEM THAT'S GAINING TRACTION ACROSS THE INDUSTRY. THESE LEVELS AND DEFINITIONS ARE LAID OUT IN SAE J3016:

*LEVEL 0: NO AUTOMATION.* HUMAN DRIVERS UNDERTAKE ALL ASPECTS OF DRIVING, EVEN WHEN THEY ARE ASSISTED BY WARNING OR INTERVENTION SYSTEMS.

*LEVEL 1: DRIVER ASSISTANCE.* USING INFORMATION ABOUT THE DRIVING ENVIRONMENT, A DRIVER-ASSISTANCE SYSTEM EITHER STEERS OR ACCELERATES AND DECELERATES CARS IN A MODE-SPECIFIC WAY, WITH THE EXPECTATION THAT HUMAN DRIVERS WILL PERFORM ALL OTHER ASPECTS OF DYNAMIC DRIVING.

*LEVEL 2: PARTIAL AUTOMATION.* USING INFORMATION ABOUT THE DRIVING ENVIRONMENT, ONE OR MORE DRIVER-ASSISTANCE SYSTEMS EXECUTE BOTH STEERING AND ACCELERATION–DECELERATION IN A MODE-SPECIFIC WAY, WITH THE EXPECTATION THAT HUMAN DRIVERS WILL PERFORM ALL REMAINING ASPECTS OF DYNAMIC DRIVING.

LEVEL 3: CONDITIONAL AUTOMATION. AN AUTOMATED-DRIVING SYSTEM UNDERTAKES ALL ASPECTS OF DYNAMIC DRIVING MODE-SPECIFICALLY, WITH THE EXPECTATION THAT THE HUMAN DRIVER WILL RESPOND APPROPRIATELY TO REQUESTS FOR INTERVENTION.

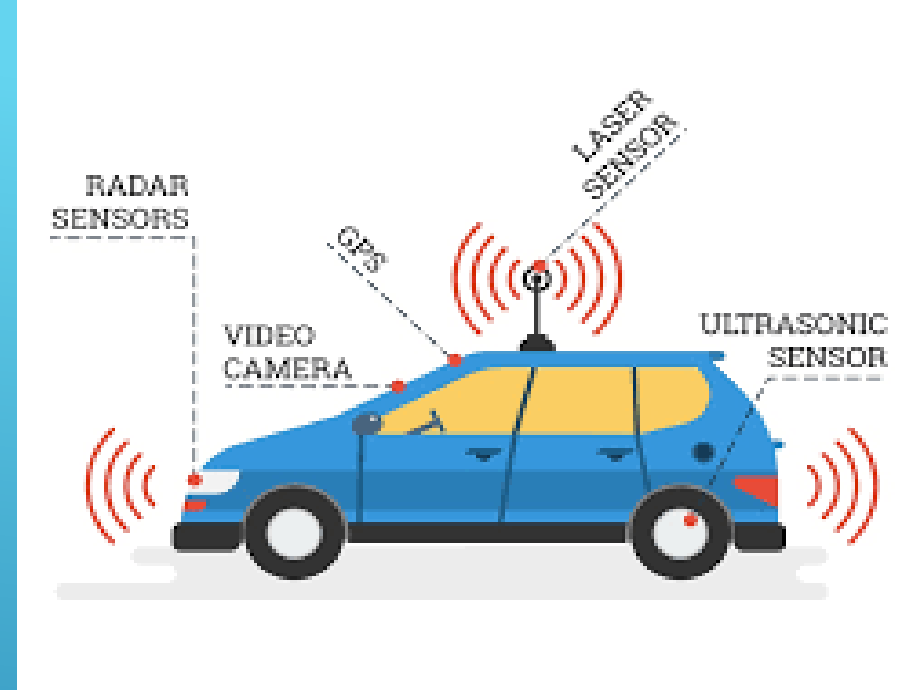
LEVEL 4: HIGH AUTOMATION. AN AUTOMATED-DRIVING SYSTEM UNDERTAKES ALL ASPECTS OF DYNAMIC DRIVING MODE-SPECIFICALLY, EVEN IF HUMAN DRIVERS DO NOT RESPOND APPROPRIATELY TO REQUESTS FOR INTERVENTION.

LEVEL 5: FULL AUTOMATION. AN AUTOMATED-DRIVING SYSTEM UNDERTAKES ALL ASPECTS OF DYNAMIC DRIVING THROUGHOUT A DRIVE, UNDER ALL ROADWAY AND ENVIRONMENTAL CONDITIONS THAT HUMAN DRIVERS CAN MANAGE.



# THE TECHNOLOGY

Light Detection and Ranging (LIDAR) uses a pulsed laser to measure variable distances. In AVs, the LIDAR bounces these lasers off of objects in its surroundings (such as pedestrians and other vehicles) to map them in 3D so that the AV knows where it is positioned relative to those objects. See: United States National Ocean Service, *What is LIDAR?*; and Tom Simonite, “Self-Driving Cars’ Spinning-Laser Problem,” *MIT Technology Review*, 20 March 2017.  
6 Ontario Centres of Excellence, “How it Works,” *Connected Vehicle/Automated Vehicle (CVAV) Program*, 2016.





# SOME CANADIAN STATISTICS

As many as 94% of traffic collisions are caused by human error and poor decision-making

KPMG predicts a 35% to 40% decline in the collision rate and a 25% to 30% increase in repair costs over the next decade.



# INTERFACE WITH MUNICIPAL INFRASTRUCTURE

Painted lines

Stop signs

Traffic signals

Bicycles

Pedestrian crosswalks

Potholes

Snow and ice



# FINANCIAL IMPLICATIONS

- ▶ Decreased revenue sources
- ▶ Increased liability exposure





# ONTARIO REGULATION 306/15

Highway Traffic Act

ONTARIO REGULATION 306/15

PILOT PROJECT - AUTOMATED VEHICLES

## Application

2. (1) This Regulation applies to an automated vehicle, with or without the automated driving system being engaged.
- (2) This Regulation does not apply to a motor vehicle with an automated driving system that operates at driving automation Level 0, 1 or 2.



## **Pilot Project**

### **Pilot project established**

3. (1) A pilot project to evaluate the use of automated vehicles on highways is established.
- (2) The Minister shall conduct and complete an evaluation of the use of automated vehicles on highways under the pilot project before the tenth anniversary of the day this Regulation comes into force.
- (3) The Minister may from time to time during the course of the pilot project conduct interim evaluations of the use of automated vehicles with an automated driving system that operates at driving automation Level 3 or 4 to determine if there is a need to continue to evaluate such vehicles under the pilot project.

## **Prohibition and Permitted Use**

### **Prohibition**

4. No person shall drive or permit the operation of an automated vehicle on a highway, except as permitted by this Regulation.

## Permitted use of automated vehicles

5. A person may drive or permit the operation of an automated vehicle on a highway if,
  - (a) the owner of the vehicle has been approved under section 9 to test automated vehicles;
  - (b) the vehicle meets the requirements of sections 11 and 12;
  - (c) the vehicle is in good working order;
  - (d) the driver holds any of the following that authorizes him or her to drive the vehicle:
    - (i) A valid Class A, B, C, D, E, F or G driver's licence.
    - (ii) A valid driver's licence issued by another jurisdiction.
    - (iii) A valid International Driver's Permit;
  - (e) the driver complies with section 13; and (f) the vehicle is being driven only for testing purposes under the pilot project established by this Regulation.
  - (f) the vehicle is being driven only for testing purposes under the pilot project established by this Regulation.

## Application of Act

6. The Act applies to the operation of an automated vehicle, to a person who drives an automated vehicle and to the owner of an automated vehicle.

## Driver's Duties

13. (1) The driver of an automated vehicle shall remain at all times in the driver's seat of the vehicle and shall monitor the vehicle's operation.
- (2) The driver of an automated vehicle shall carry a copy of the approval in the vehicle.
- (3) The driver of an automated vehicle shall present a copy of the approval upon the demand of any police officer or officer appointed for enforcing or carrying out the provisions of the Act.
- (4) In the event of a collision or traffic stop, the driver of an automated vehicle shall advise the attending police officer or officer appointed for enforcing or carrying out the provisions of the Act that the vehicle is an automated vehicle and is being tested under the pilot project established by this Regulation.

# ONTARIO'S PILOT PROJECT

There are currently seven participants, including BlackBerry's QNX, Magna, Uber and the University of Waterloo. All of the participants have expressed interest in testing vehicles without drivers, a government spokesman said.



# THE SHIFTING TIDE

From human error and no fault to product liability involving manufacturer and soft ware

Likely increased focus on interface with municipal infrastructure





# AI AND HUMAN INPUT

- ▶ <http://moralmachine.mit.edu/>



# Thank You for Listening

Gwen Tassone: [gtassone@jltcanada.com](mailto:gtassone@jltcanada.com)



[Christine Carter: carter@phmlaw.com](mailto:carter@phmlaw.com)