
DISCUSSION PAPER ON CONNECTED AND AUTOMATED VEHICLES

Issue

This report summarizes the “Discussion Paper on Connected and Automated Vehicles”, which was completed by IBI Group for TAC.

Overview

In late 2018, TAC issued a request for proposals to prepare a Connected and Automated Vehicles Discussion Paper, enabled by the Board’s allocation of reserve funds. Seven proposals were received, and IBI Group was selected as the preferred consultant. IBI’s project leader presented some preliminary findings to the CAV Task Force meeting in April 2018, and TAC recently made IBI’s full report available through the “Publications and Resources” page of its website. It is important to acknowledge the financial support provided for this project by Transport Canada through its contribution agreement with TAC.

The discussion paper’s principal audience is internal—TAC’s Board of Directors, CAV Task Force, councils and committees. It will build their awareness of key issues, help them understand their respective roles and relationships, and inform the development and implementation of technical work over the next three to five years. The report addresses two overarching issues:

- *What is TAC’s overall role within the CV/AV ecosystem?* The answer to this question is informed by stakeholder interviews, a literature scan, and an examination of comparable jurisdictions. It considers the roles and interests of TAC’s key partners and stakeholders, TAC’s vision and mission as identified in its *Strategic Plan*, and the needs of TAC members.
- *What are the most important technical issues to be addressed by TAC, and what are the associated responsibilities of TAC’s internal bodies?* The answer considers TAC’s role in the CV/AV ecosystem, the state of CV/AV technology development and application, technical concerns of TAC councils and committees, TAC’s *Strategic Plan*, and the established roles of TAC bodies.

The CAV Discussion Paper provides a detailed description of Canada’s CAV ecosystem, which comprises many stakeholders (governments, standards development organizations, technical organizations and businesses) that are actively developing vehicle, infrastructure, and road user systems. The discussion paper suggests that TAC has two major roles (helping TAC members enable the operation of CVs and AVs; and helping TAC members manage the use of CVs and AVs) and it suggests almost 40 possible actions within the realms of oversight, providing guidance, or collaborating and sharing with partners.

Appendix A contains the Executive Summary of the report.

**APPENDIX A –
EXECUTIVE SUMMARY: DISCUSSION PAPER ON CONNECTED AND AUTOMATED VEHICLES**

This discussion paper is intended to inform efforts by the Transportation Association of Canada (TAC) related to connected vehicles (CVs) and automated vehicles (AVs).

Introduction

In Section 1, the paper introduces two key questions:

- What is TAC’s role in the Canadian CV/AV ecosystem?
- What are the most important technical issues for TAC to address, and what are the associated responsibilities of TAC’s internal bodies?

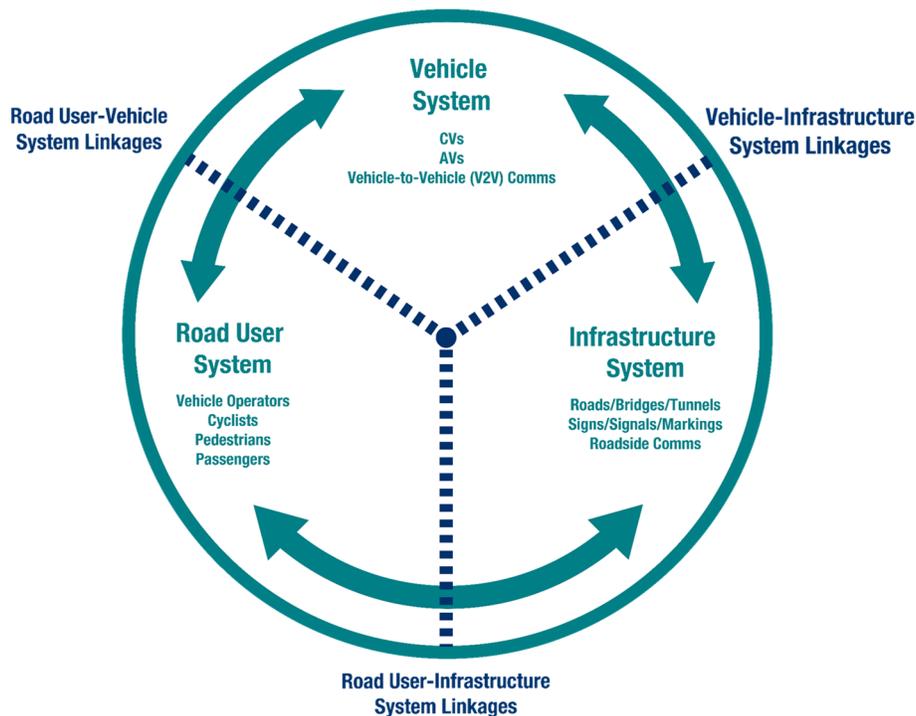
It outlines the work conducted to answer these questions, and gives important context regarding TAC and its Connected and Automated Vehicles (CAV) Task Force.

Canada’s CV/AV Ecosystem

In Section 2, the paper describes the three main components of Canada’s CV/AV ecosystem (i.e. vehicle system, infrastructure system, road user system), and the linkages between them (see Exhibit E 1).

The paper then identifies and discusses four groups of key stakeholders within the three systems (see Exhibit E 2): the private sector, technical organizations, standards development organizations, and governments. It also provides a summary of recent CV/AV tests and trials that have been conducted in Canadian jurisdictions.

Exhibit E 1: Core Systems and Linking Elements of the Canadian CV/AV Ecosystem

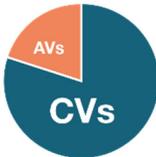
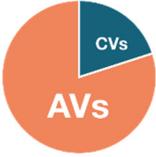


TAC’s Role

In Section 3, the paper identifies and describes two major roles for TAC in the Canadian CV/AV ecosystem (see Exhibit E 3):

- Help TAC members enable the operation of CVs and AVs
- Help TAC members manage the use of CVs and AVs

Exhibit E 3: TAC’s Roles in the Canadian CV/AV Ecosystem

Key dimensions	Relative emphasis on CVs or AVs	Relative timeline
Role A. Help TAC members <u>enable the operation</u> of CVs and AVs		
Road infrastructure Roadside infrastructure Data management		Greater emphasis on <u>short-term</u> and <u>mid-term</u>
Role B. Help TAC members <u>manage the use</u> of CVs and AVs		
Safety for all road users Right-of-way management Special vehicles Community impacts		Greater emphasis on <u>mid-term</u> and <u>long-term</u>

Key Issues and Possible Actions for TAC

In Section 4, the paper identifies four types of actions within these two roles (see Exhibit E 4):

- Gathering information
- Sharing knowledge
- Developing technical guidance
- Supporting workforce development

Within this framework of roles and action types, Section 4 identifies the technical focus areas of TAC that are most closely related, the key technical issues that TAC could address, and a range of possible actions for TAC’s councils and committees. These actions include:

- Engaging with a range of potential partner organizations to acquire and exchange knowledge
- Disseminating lessons learned and emerging guidelines or standards
- Advancing TAC members’ understanding of their roles in data security and privacy
- Identifying gaps in TAC’s technical guidance related to enabling and managing CV/AVs
- Conducting technical projects to develop new guidance

- Identifying needs and opportunities for educating and training Canadian transportation practitioners, and either delivering learning activities or supporting their delivery by others

Finally, Section 4 suggests next steps for TAC’s Secretariat and volunteer bodies, including the development and maintenance by the CAV Task Force of a tracking document to monitor the activities and progress of TAC’s various councils and committees.

Exhibit E 4: Action Framework for TAC

Action TYPES		TAC focus areas	
Role A. Help TAC members <u>enable the operation</u> of CVs and AVs			
Knowledge	A1. Gather information	 SAFETY  MOBILITY  INFRASTRUCTURE AND ASSET MANAGEMENT	 ENVIRONMENT AND CLIMATE CHANGE  TECHNOLOGY  WORKFORCE DEVELOPMENT
	A2. Share knowledge		
Guidance	A3. Develop technical guidance	 SAFETY  MOBILITY  INFRASTRUCTURE AND ASSET MANAGEMENT	 ENVIRONMENT AND CLIMATE CHANGE  TECHNOLOGY  WORKFORCE DEVELOPMENT
	A4. Support workforce development		
Role B. Help TAC members <u>manage the use</u> of CVs and AVs			
Knowledge	B1. Gather information	 SAFETY  MOBILITY  INFRASTRUCTURE AND ASSET MANAGEMENT	 ENVIRONMENT AND CLIMATE CHANGE  TECHNOLOGY  WORKFORCE DEVELOPMENT
	B2. Share knowledge		
Guidance	B3. Develop technical guidance	 SAFETY  MOBILITY  INFRASTRUCTURE AND ASSET MANAGEMENT	 ENVIRONMENT AND CLIMATE CHANGE  TECHNOLOGY  WORKFORCE DEVELOPMENT