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CANdrive **AUTOMATED VEHICLE TRIAL**

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CANBERRA



TRANSPORT INDUSTRIES SKILLS CENTRE

INTRODUCTION

CAN drive is an industry development and research program between the ACT Government, Seeing Machines and local universities. CAN drive is using automated vehicle (AV) technology to develop a world-leading road safety program aimed at promoting local industry and providing the evidence base to inform transport policy to reduce road trauma and support mobility.

THE EVIDENCE BASE

Automated vehicles are coming. Tesla currently offers an autopilot feature while General Motors launched the world's first level 2 semi-autonomous driving function, SuperCruise, in the Cadillac CT6 in late in 2017.

There is a growing appetite internationally to understand issues such as when and how drivers will use automated driving functions and how it might impact their awareness of the environment around them, as well as their ability to take control of steering and speed functions from the vehicle when required. While there are many laboratory studies and several on-road demonstrations and trials on automated driving being conducted within Australia and around the world, few of these laboratory studies and trials have a focus on monitoring the behaviour of the driver in real-time.

It is still unknown how and when drivers will engage with the technology and how this will influence their behaviour and safety. CAN Drive is addressing this critical gap.

TECHNOLOGY TO IMPROVE ROAD SAFETY

Seeing Machines is a global company founded and headquartered in Canberra, Australia and a world leader in computer vision technologies which enable machines to see, understand and assist people. The company's machine learning vision platform delivers real-time understanding of drivers through AI analysis of heads, faces and eyes. This insight enables Driver Monitoring Systems (DMS), which monitor driver attention state and can identify drowsiness and distraction across multiple transport sectors.

Seeing Machines' automotive DMS debuted in General Motors' Cadillac CT6 Super Cruise in late 2017 and is being integrated into three other global automotive OEMs across Europe and the US with models launching in the 2020 to 2022 timeframe. DMS is now considered a core safety technology for the Automotive industry as well as across the Commercial Transport & Logistics industry globally.

CAN drive will support the continued growth of Seeing Machines and the ongoing development of its DMS technology, as the company expands to additional transport sectors around the world, with its platform safety technology.

CAN DRIVE PROGRAM

CAN drive is being conducted in two phases.

Phase 1 is a test track trial to measure the impacts of semi-automated vehicle functionality on driver states and behaviours. The regulatory environment in Australia does not currently support conducting these types of trials on open public roads.

A test track provides an environment where driver behaviours and technology performance can be examined in realistic on-road conditions whilst ensuring the driver's safety and without risk to other road users.

Phase 2 is being scoped later in 2018 and may involve some amount of testing on public roads, pending regulatory processes being developed that support this activity.



Track trial overview

The trial plans to recruit members of the ACT community. The number of drivers will be balanced across a range of age groups and will be split by gender. All drivers will need to have a currently valid full driver licence (not probationary). Drivers must have no traffic or criminal convictions in the preceding 12 months and must not be experiencing any medical condition that might impair their driving ability.

In this phase, all data collection is being conducted at the Sutton Road Training Centre. Prior to the driving session, participants are given an overview of the aims and description of the trial. The introduction to the trial is also provided in the form of an Explanatory Statement that outlines the objectives, risks, and the protocols that govern data collection, storage and use. Participants are required to sign a consent form that acknowledges that they understand the content of the trial and how their background information and driving data will be used.

Driving session on the track

Participants are asked to drive the test car in accordance with instructions provided. The test vehicle is a Tesla Model S with the autopilot function. A range of sensors are fitted inside the vehicle with the key sensor being Seeing Machines' automotive driver monitoring system (PC-DMS) which represents our core technology offering to automotive manufacturers (OEMs). These sensors are used to log data only, with no interference to the vehicle's operating systems or the driver's interaction with the vehicle. Other sensing includes aftermarket advanced driver assistance systems, and additional cameras that record what is happening on the forward roadway as well as focusing on driver behaviour inside the vehicle.

Before data collection, participants are given a training session to become familiar with the Autopilot function of the Tesla Model S, the sensing technologies inside the vehicle, and the secondary tasks used to manipulate their engagement level during driving. These tasks include interacting with the centre console and handheld devices which can be done safely in a low-speed test track environment. Participants are asked to drive the car and engage or disengage the Autopilot in accordance with the experimenter's instruction when they feel safe to do so. All sensors will continuously record drivers' data during the task and the collected data will be de-identified and stored securely.

CAN DRIVE GOALS

The key goals of CAN drive are to:

- drive improvements in vehicle technology and road safety strategy;
- drive community interest and acceptance of new vehicle technologies;
- assess the potential for automated vehicle technologies to address social mobility challenges; and
- build Canberra's reputation as Australia's technology testbed.

The goals recognise that Canberra's relative affluence, high proportion of dual-income families, existing quality of road infrastructure, and car dependence mean that are likely to be benefits for Canberra to be an early adopter of AV technologies. To realise the benefits from increasing levels of automation in vehicles, the ACT will need to navigate a range of complex policy, technological, infrastructure, regulatory, and planning issues. Fundamental to these efforts is the need to ensure safety and build community awareness and confidence in order to fully realise the benefits of AV adoption in the community.

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Figure 1: Illustration of candidate sensing technologies to be included in Phase 1



CAN DRIVE LAUNCH

Led by the ACT Government and supported closely by Seeing Machines, CAN drive was launched onsite at the Sutton Road Driver Training Centre, hosted by ACT Minister Rachel Stephen-Smith MLA and supported by Kate Lundy, co-chair ACT Automated Vehicle Trial Committee. The event achieved significant media coverage across radio, television and in print and has resulted in an overwhelming response to the call for driver volunteers in Phase 1.



[CLICK HERE TO WATCH THE LAUNCH VIDEO.](#)

CURRENT STATUS

Following the successful launch in April 2018, the test track trial is well underway thanks to the overwhelming interest and support from the local community. The second phase of testing will occur in late 2018 with the final outcomes to be delivered in June 2019.

For more information on CAN drive, please contact Seeing Machines at CANdrive@seeingmachines.com

80 Mildura Street, Fyshwick
ACT 2609, Australia

SEEINGMACHINES.COM