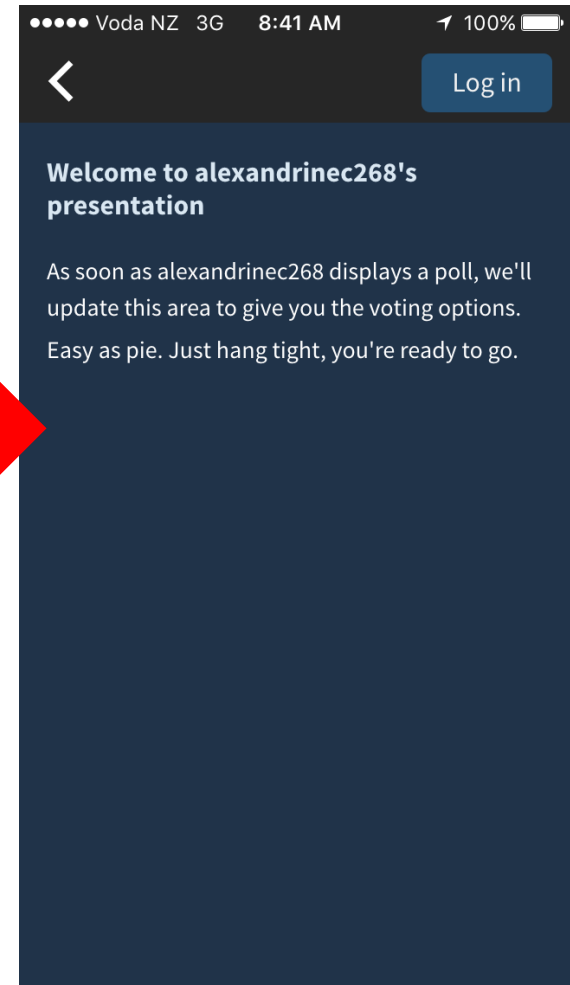
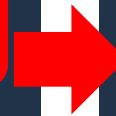
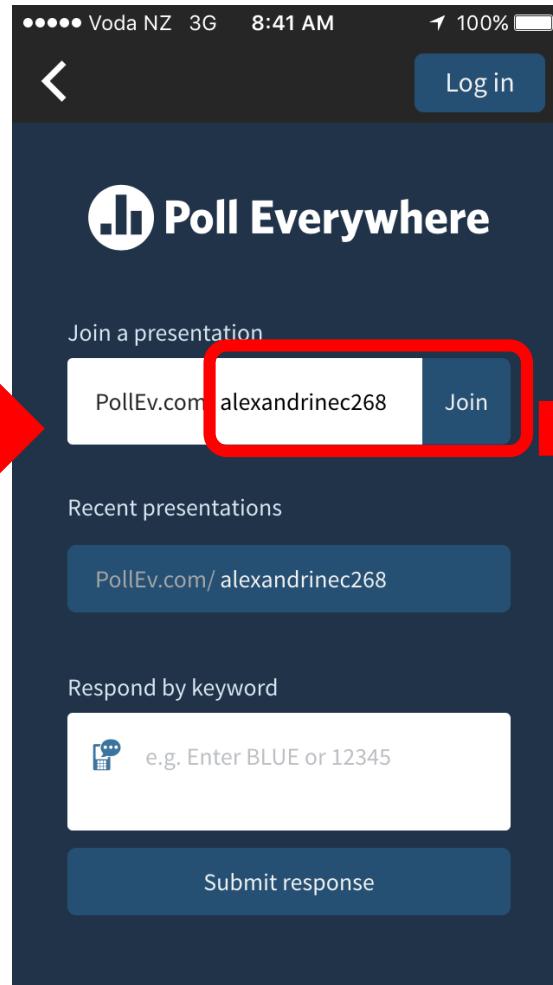
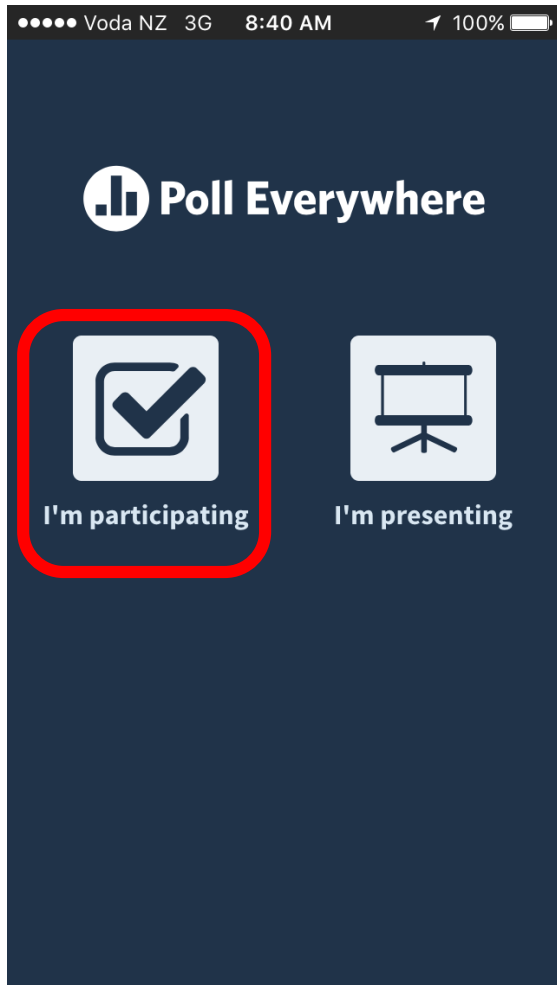


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Alternatively you can access these polls via the website: [PollEV.com/alexandrinec268](https://PollEV.com/alexandrinec268)

# Is Autonomous Vehicle technology better suited to trucks and buses?

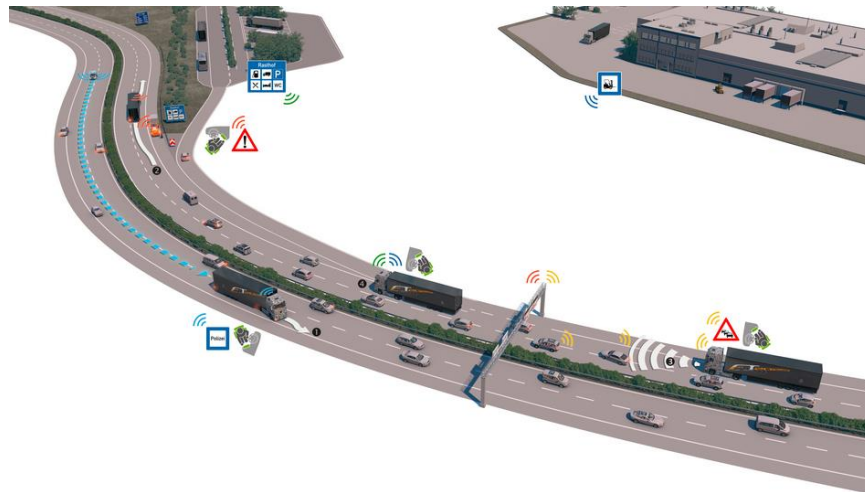


Alexandrine Campbell and Andy Lightowler



# Outline

- Brief introduction
  - Definitions
  - Capabilities
- Advantages of Autonomous Buses & Trucks
- Autonomous Bus & Truck Trials
- Ethics of Autonomous Vehicles



# Autonomous Vehicles

- Automated driving & routing
- Improved vehicle-to-vehicle communication
- Faster reaction times & more precise control
- Improved safety





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# Advantages of Autonomous Buses and Trucks



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# Advantages of Autonomous Buses and Trucks

What if bus services were every 10 minutes or less (if not already)?



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# Advantages of Autonomous Buses and Trucks

What if the bus service was door to door?



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# Advantages of Autonomous Buses and Trucks

- Driverless Vehicles:
  - Labour costs are typically 60-70% of the operating cost
- Hours of operation not constrained by:
  - Available drivers
  - Legal rest requirements
- Services are no longer dependent on availability of drivers for each shift:



# Advantages of Autonomous Buses and Trucks

- For the same number of buses we can:
  - Increase frequency
  - Increase operating hours
  - Reduce delays/variability



# Advantages of Autonomous Buses and Trucks

- Improved Road Safety:
  - Road incidences cause delays & congestion
  - The bigger the incident, the longer the delays
  - The bigger the vehicles involved... the bigger the disruption (often)



# Advantages of Autonomous Buses and Trucks

- Network operating efficiency:
  - Travel time
  - Optimised vehicle routing to minimise travel
  - Reduce impact of unforeseen delays (e.g. breakdowns) with an optimised routing & re-routing system



# Autonomous Vehicle Trials

- Robot Taxi in Japan
- Autonomous buses:
  - Driverless shuttles for the Northern California Office Park
  - Driverless bus prototype in Yutong, China
- Driverless Trucks:
  - Already in operation on mine sites
  - Daimler have been cleared to drive a self-driving truck on US Roads.



# Autonomous Vehicle Trials

- The NZ Ministry of Transport ITS Action Plan states it is “looking to identify barriers to the continued deployment of ITS technologies in NZ”.



# Ethics of Autonomous Vehicles - Crashes

- Legal responsibility/liability



# Ethics of Autonomous Vehicles



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# Ethics of Autonomous Vehicles



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# Ethics of Autonomous Vehicles



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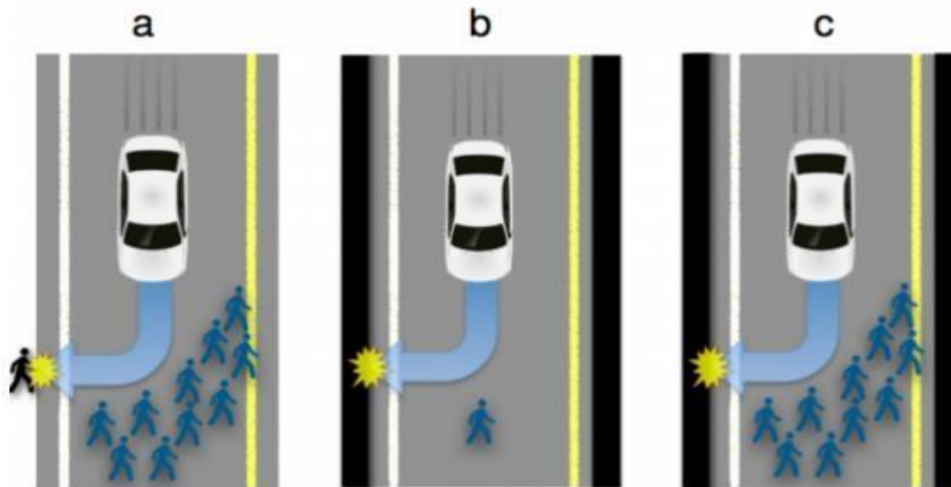
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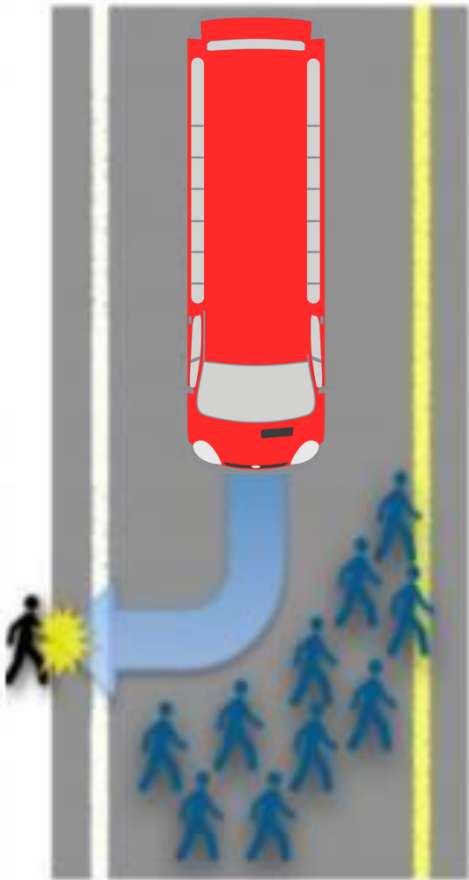
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# Ethics of Autonomous Vehicles

- Jonathan O'Callaghan's survey to ask how people would react in these situations found
  - People were willing to sacrifice the driver in order to save others
  - Most were only willing to do so if they were not the driver
  - 75% of respondents thought it would be moral to swerve
  - 65% thought the cars would actually be programmed to swerve



a



Now what if I were to swap the autonomous car for a bus (full of people)?

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# Conclusions

- Autonomous Buses & Trucks hold more potential than autonomous cars – they benefit more employers & consumers AND they have a bigger impact on safety



# Questions