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& AUTOMATED
TRANSPORT

Automated vehicles in Australia

Rahila David, Executive Director, CCAT

The Centre for Connected and Automated Transport (CCAT) is a collaboration of government, industry, academic and community organisations with a common goal of facilitating the transition to connected and automated transport.

CCAT is the next iteration of the Australia & New Zealand Driverless Vehicle Initiative (ADVI).

Presentation outline

1. What are automated vehicles?
2. Potential benefits and challenges of automated vehicles
3. Automated vehicle use cases
4. How should Australia prepare for automated vehicles?
5. Conclusion

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What are automated vehicles?

Automated vehicles (AVs) are vehicles with an automated driving system in them.

An automated driving system (ADS) is the hardware and software collectively capable of performing the entire dynamic driving task on a sustained basis without human input.

Other key terms:

- Operational design domain
- Fallback-ready user

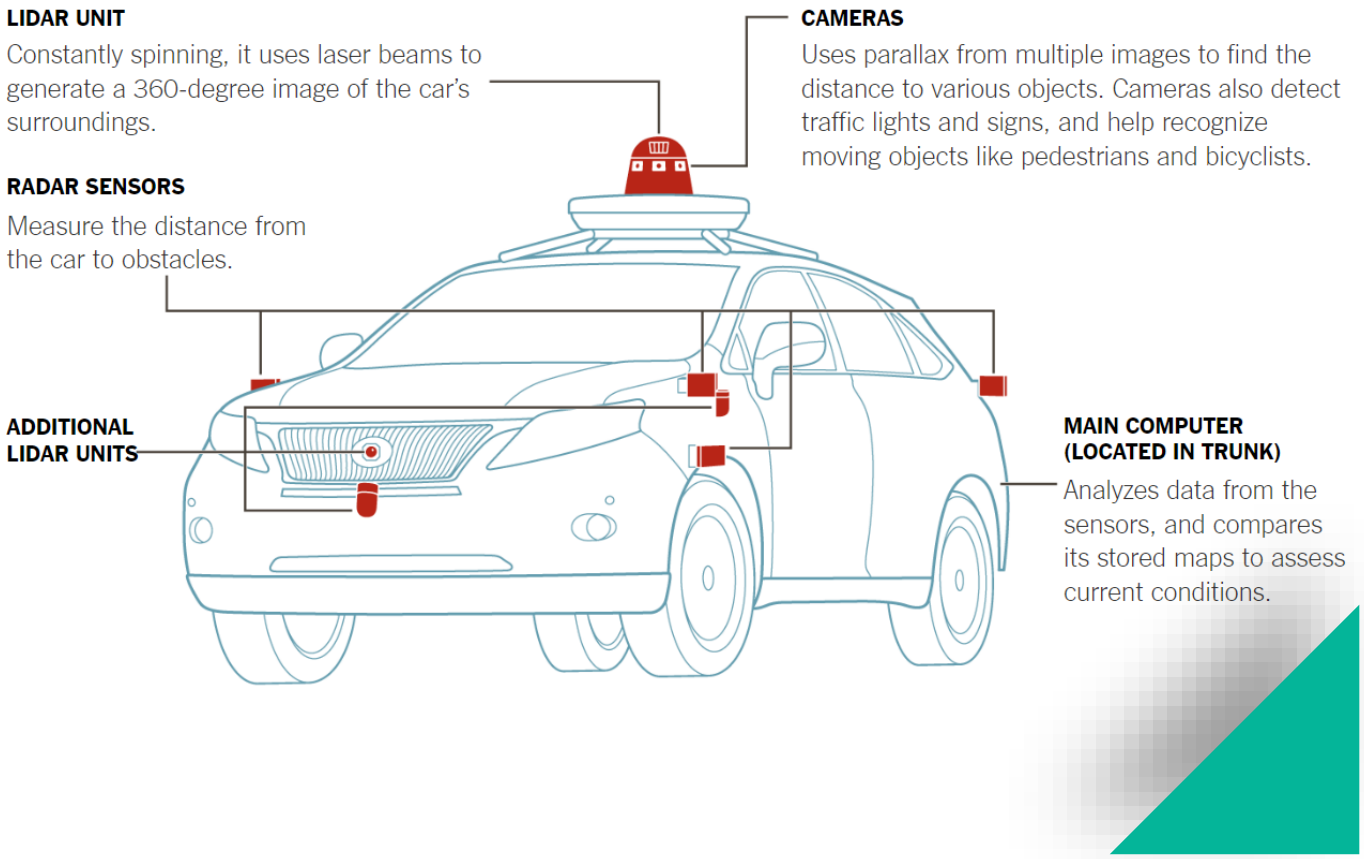

Image source: Google and New York Times

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SOCIETY OF AUTOMOTIVE ENGINEERS (SAE) AUTOMATION LEVELS

Full Automation

0
No Automation
Zero autonomy; the driver performs all driving tasks.

1
Driver Assistance
Vehicle is controlled by the driver, but some driving assist features may be included in the vehicle design.

2
Partial Automation
Vehicle has combined automated functions, like acceleration and steering, but the driver must remain engaged with the driving task and monitor the environment at all times.

3
Conditional Automation
Driver is a necessity, but is not required to monitor the environment. The driver must be ready to take control of the vehicle at all times with notice.

4
High Automation
The vehicle is capable of performing all driving functions under certain conditions. The driver may have the option to control the vehicle.

5
Full Automation
The vehicle is capable of performing all driving functions under all conditions. The driver may have the option to control the vehicle.

Image source: US National Highway Traffic Safety Administration

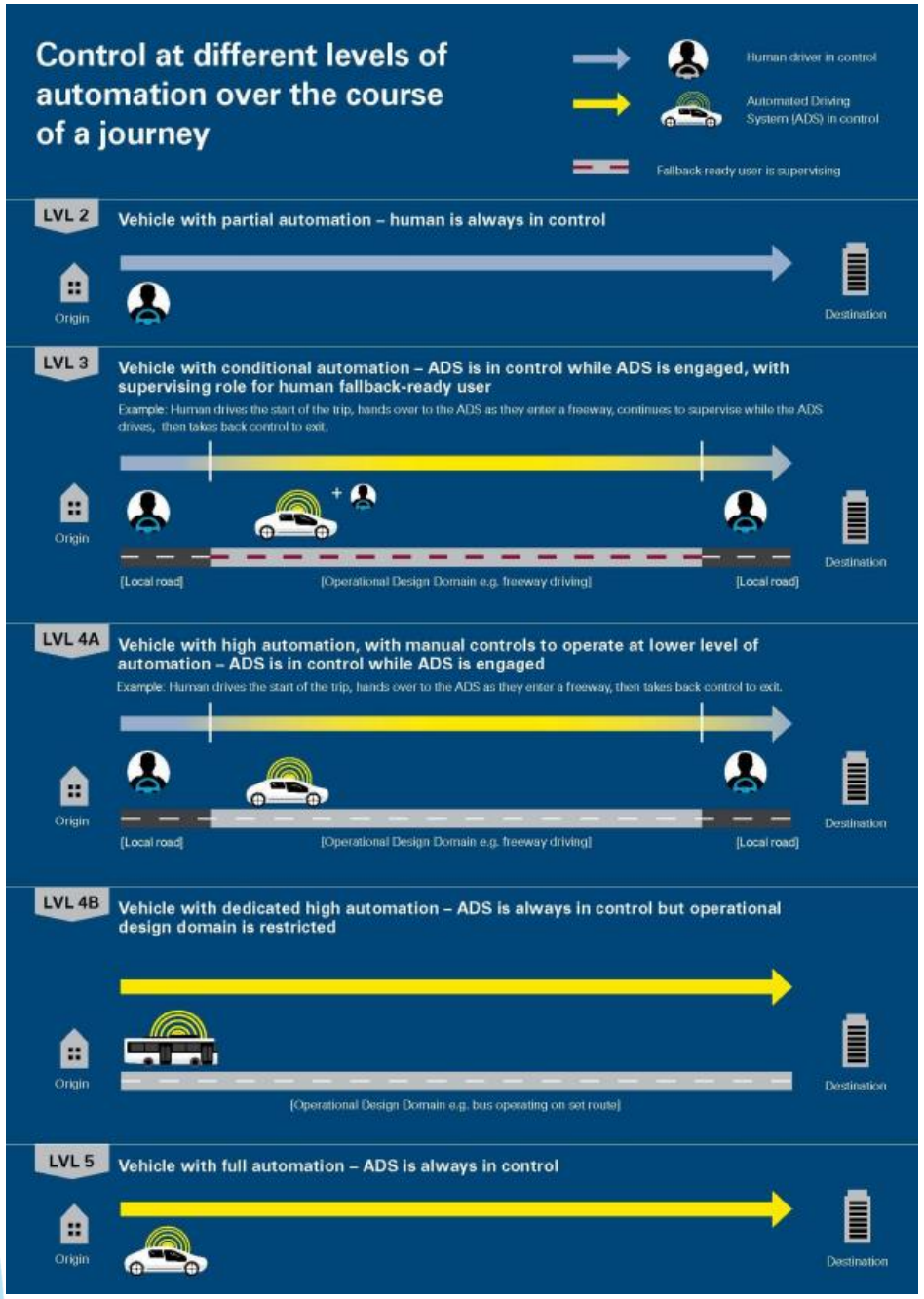

Image source: National Transport Commission

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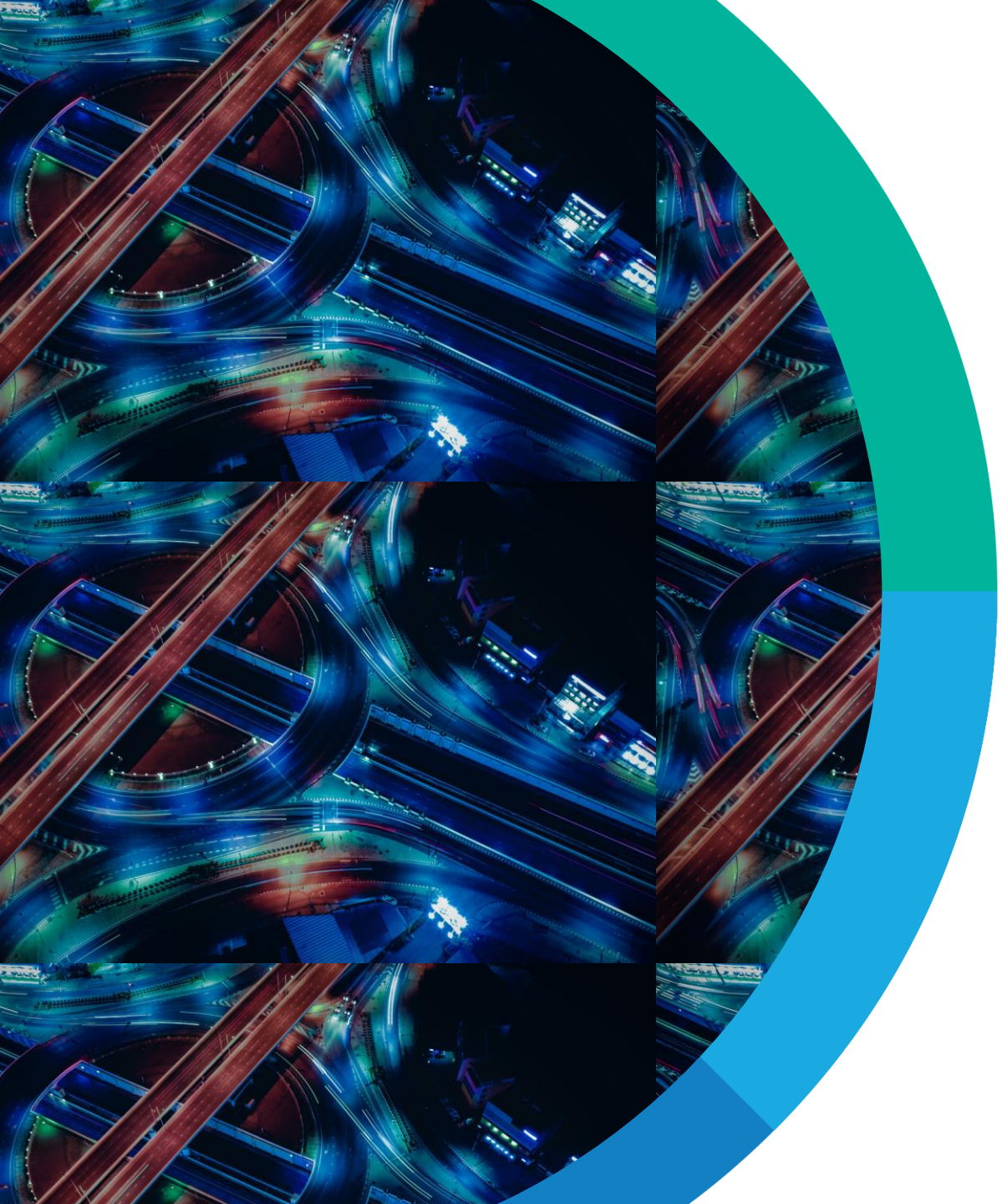

2. Potential benefits and challenges of automated vehicles

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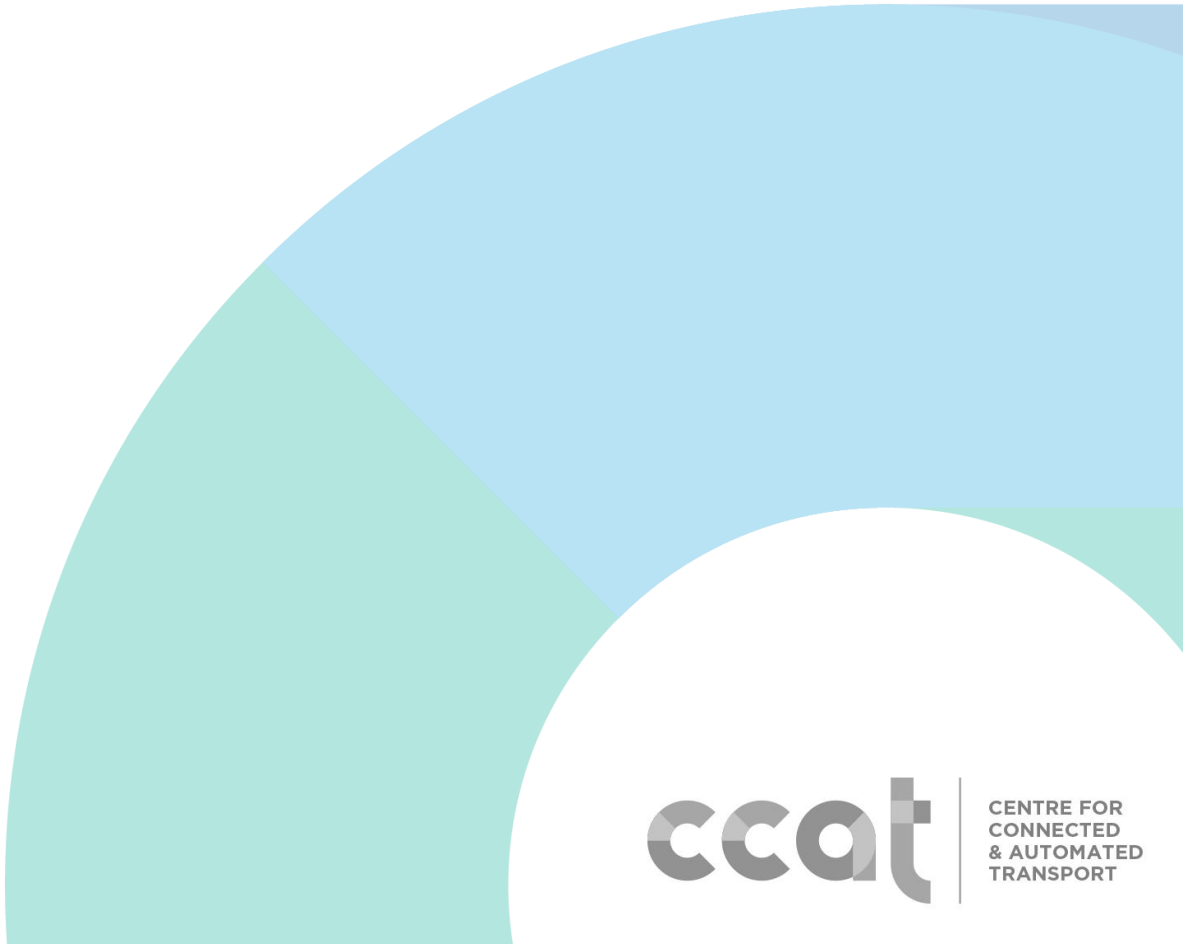
Potential benefits of automated vehicles

- Safety
- Productivity
- Efficiency and sustainability
- Accessibility and mobility
- Reduced carbon emissions
- Economy and society

Potential challenges of automated vehicles

- Design risks
- Organisational risks
- Operational/use risks



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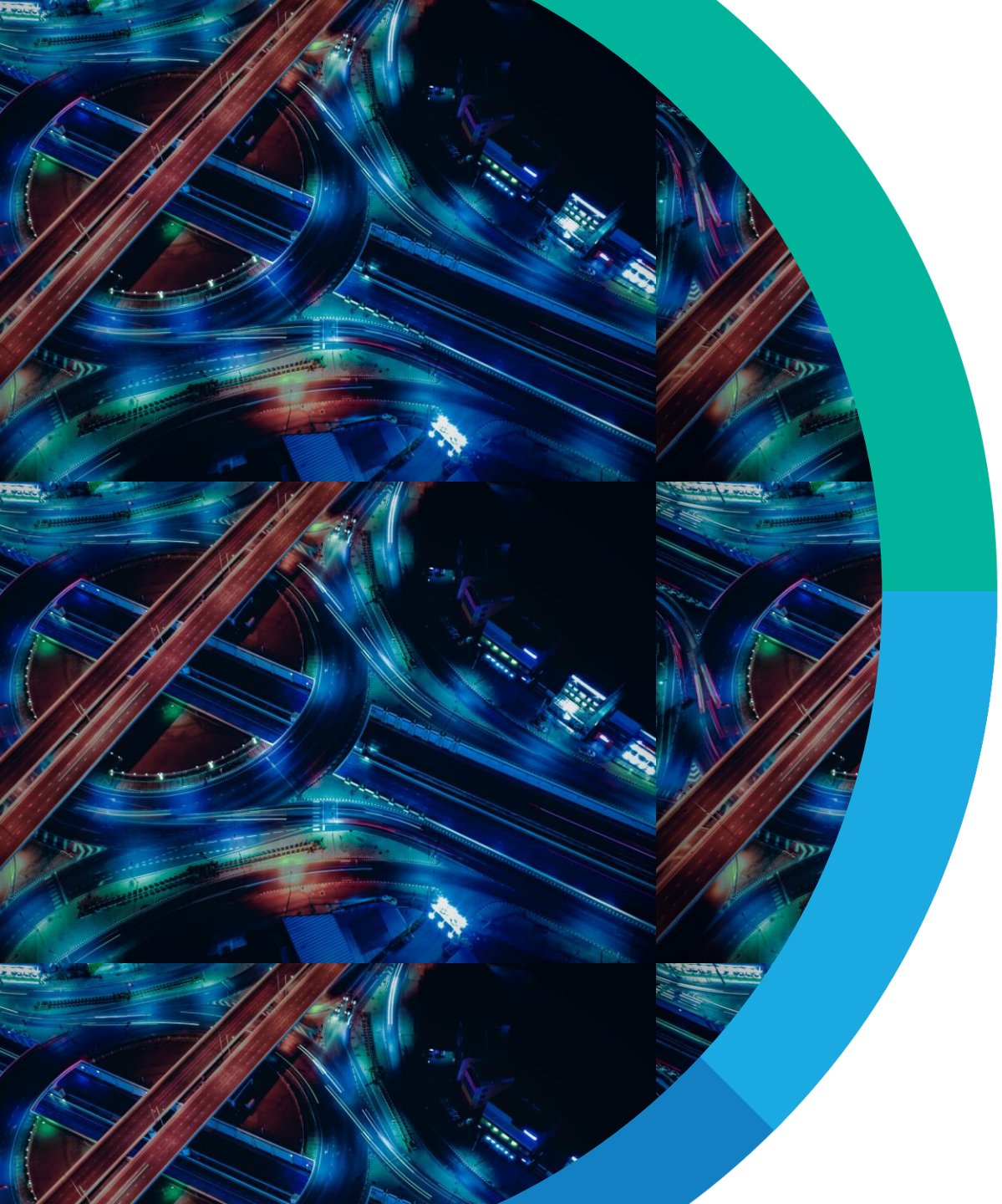
Connected vehicles

Vehicles with internet connectivity.

Three main types of things the vehicle can connect to:

- V2V – vehicle-to-vehicle communications
- V2I – vehicle-to-infrastructure communications
- V2X – vehicle-to-everything communications



3. Automated vehicle use cases

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On-demand last-mile public transport in Hamburg

- Shuttle bus, 6 passengers, 18 km/h
- 7.3 km route
- Last mile – link between station/stop and home
- App-based booking

Image source: EasyMile

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Public transport route in Chongqing

- Minibus, 19 passengers, 40 km/h
- 10 km route
- Bus route with stops
- Regular ticketing

Image source: The Sunday Times

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Tender for full-sized bus in Sydney

- Full-sized connected and automated bus
- Type of trial to be determined

NSW GOVERNMENT | Transport for NSW

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Connected buses

- For operators – fleet management
- For users – trip information

Image source: Volvo

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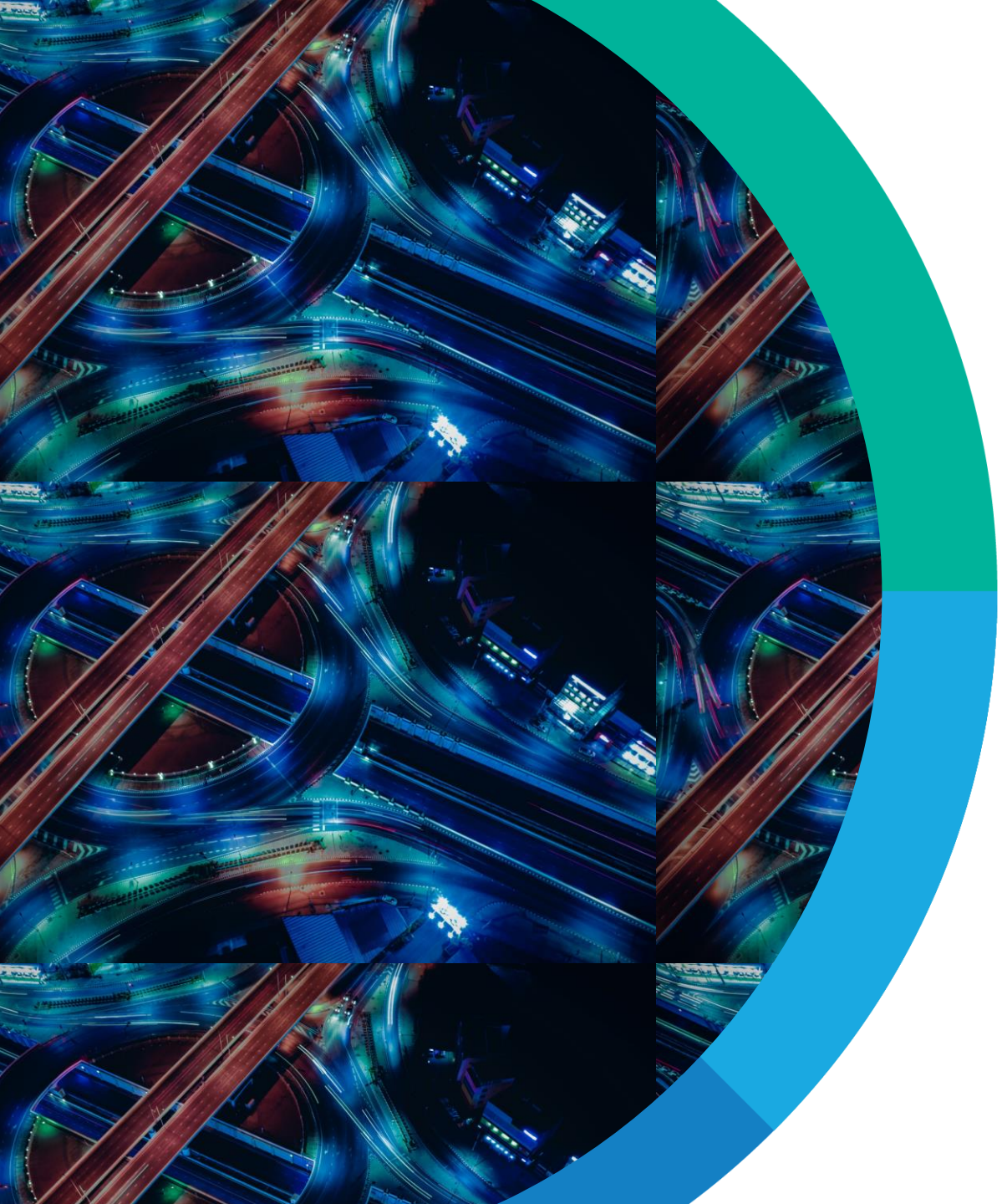

4. How should Australia prepare for automated vehicles?

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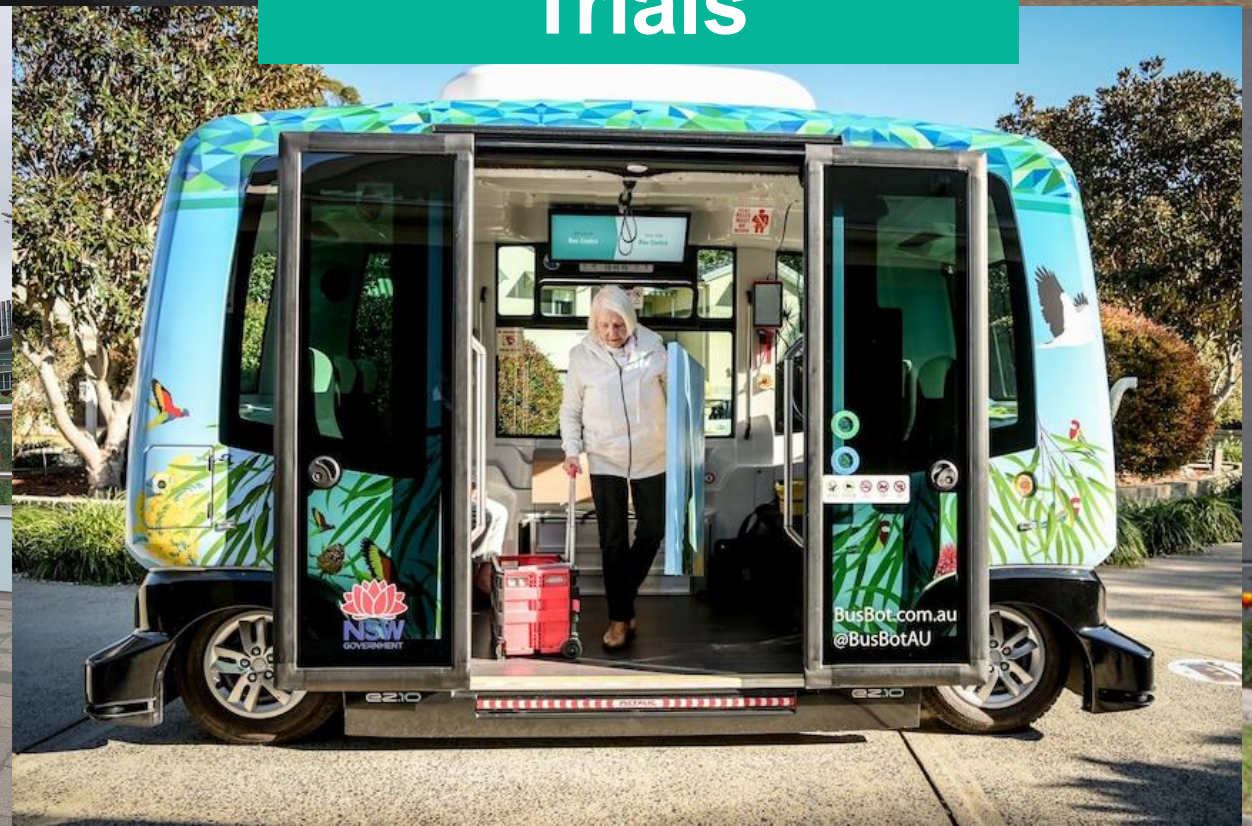
BOSCH-8


Transurban
Future-ready roads
Technology trial in progress
transurban.com

Trials


ADELAIDE CONVENTION CENTRE
AURRIGO
SOUTH
AUSTRALIA
podzero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Regulation

- Current: legislative barriers, state and territory regulatory frameworks, ADS disrupts separate vehicle and driving frameworks
- Future: national regulatory framework including new duties and regulated parties, increasing international harmonization as vehicle standards develop

Insurance

- Access to compensation if ADS at fault
- Rights of recovery
- Access to data to assess claims
- Changes in insurance market

Infrastructure

- What are the requirements to enable automated vehicles?
- What are the opportunities to encourage new technologies, applications and business models?

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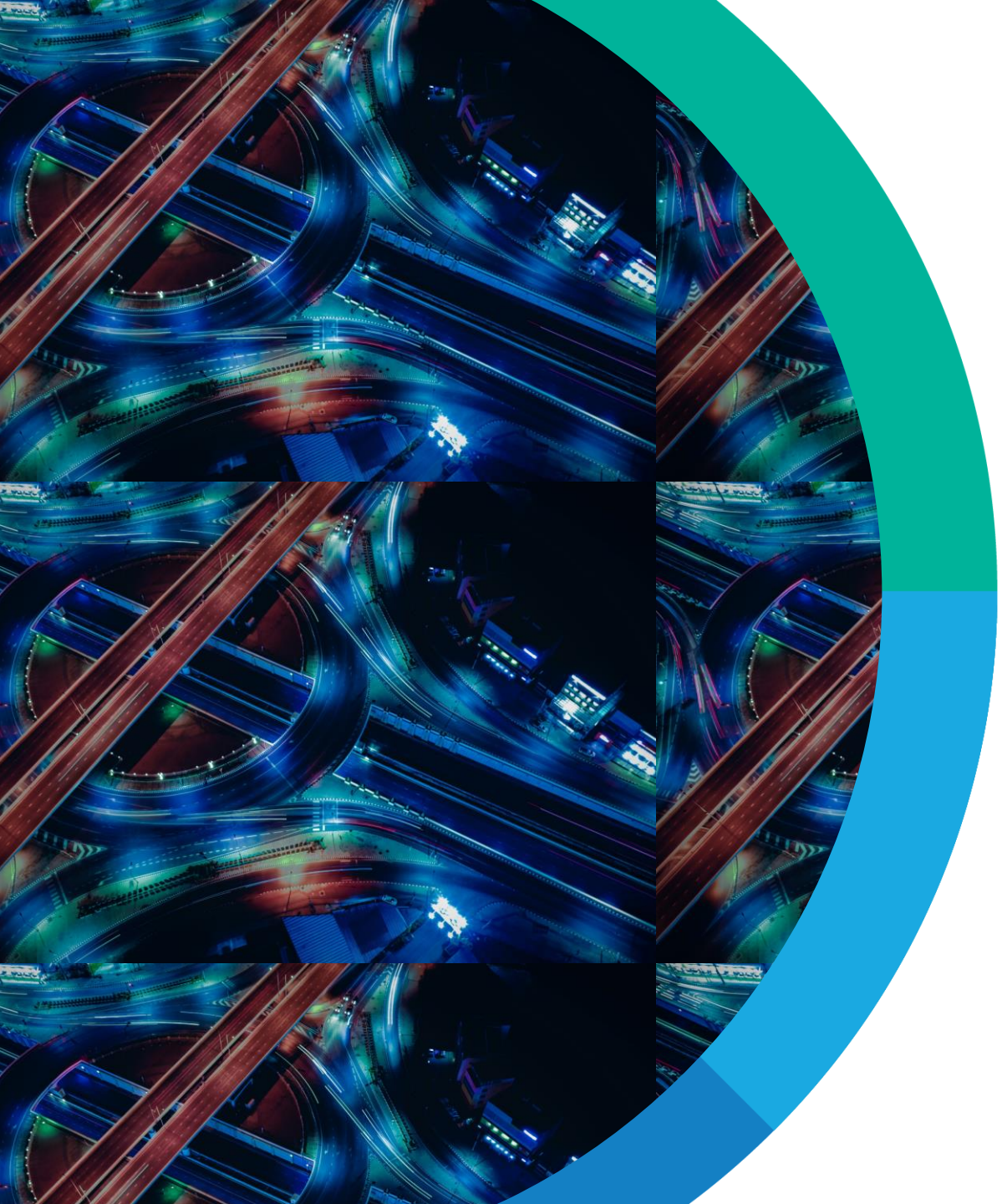
Public acceptance

- Need to bring the public along for the journey
- Positive feedback from trial participants
- Overall public perception research shows mixed views about automated vehicles

Broader considerations

- What are the policy supports necessary to gain the expected benefits of automated vehicles? E.g. eased congestion, accessibility.
- What are the cross-cutting policy challenges? E.g. future jobs, capability within government and other sectors, data exchange.
- How is Australia placed as an attractive place to invest?
- What is the best path to take when technology, business models and applications are uncertain?



5. Conclusion

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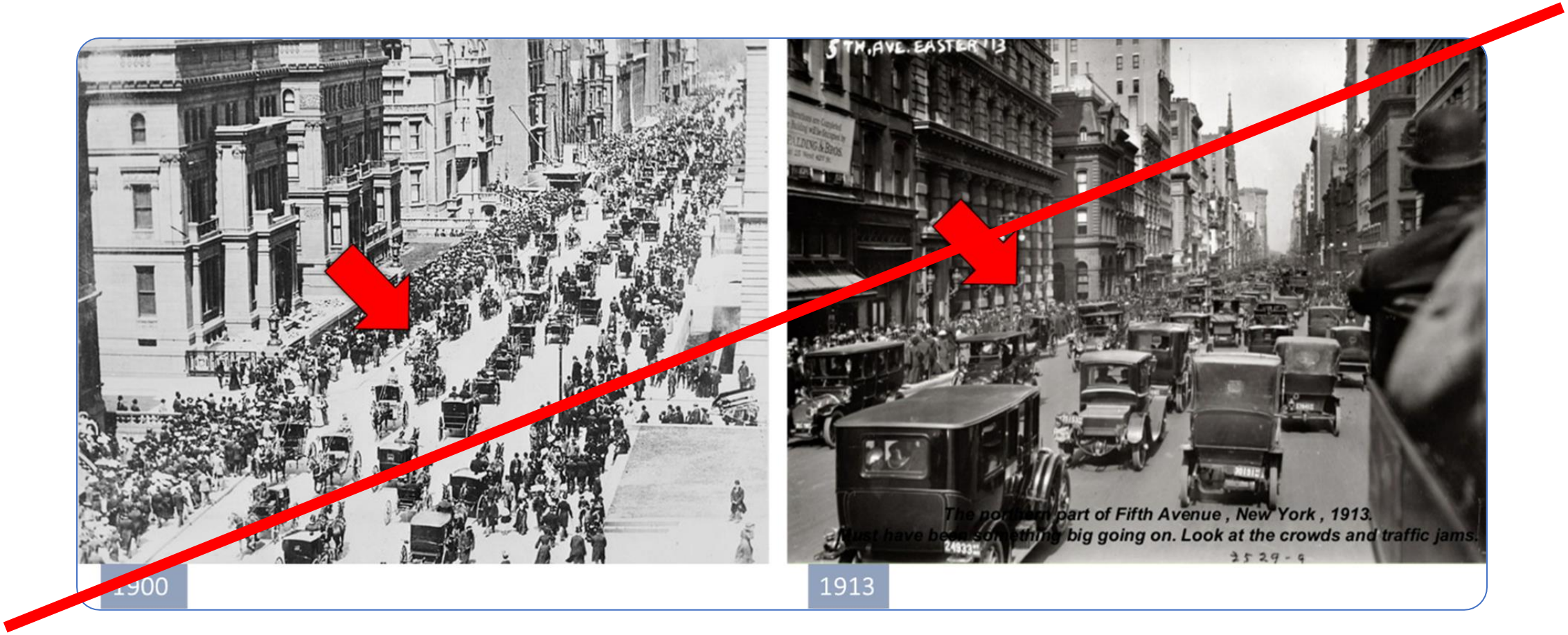
Conclusion



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