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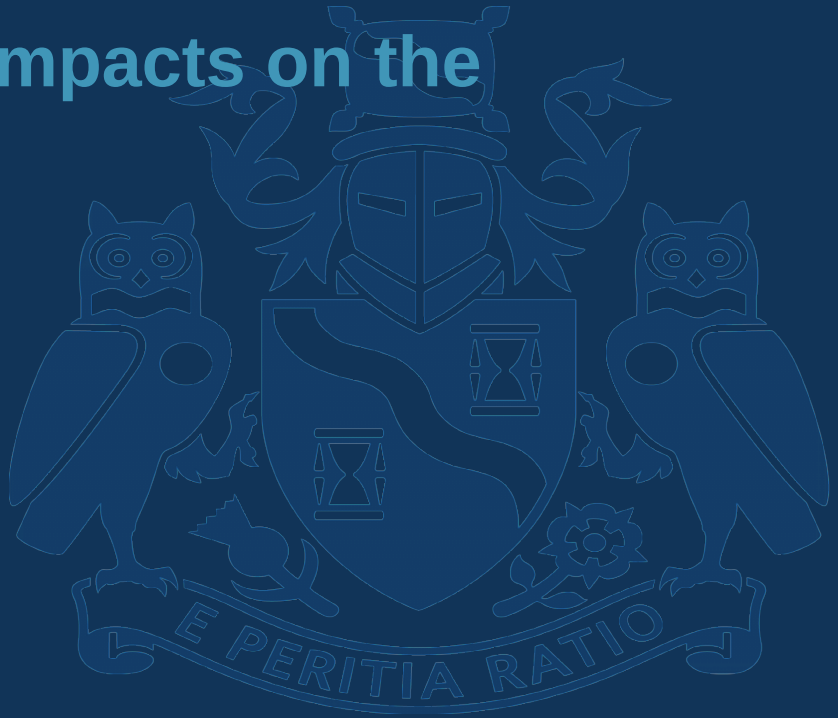
Autonomous Vehicles and impacts on the wider insurance industry



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Agenda

17:50-17:55 - Opener - Veekash Badal

17:55-18:10 - **Session 1 - Scene Setting**

- Scene setting presentation - Neil Fulton
- 5 levels of autonomous driving and car park change – Dave Baldwin

18:10-18:30: **Panel Discussion** - Neil Fulton; Dave Baldwin; Niall Edwards; Zvi Ebert; Christopher Jones

18:30-18:35: Short break for panel switch over

18:35-18:55: **Session 2 - Impacts on the future insurance market**

- Consumer acceptance - Deborah Newberry
- Data Science - Andy Goldby

18:55 -19:25 **Panel Discussion** - Deborah Newberry; Andy Goldby; Nick Silk; Tom Sambrook; Veekash Badal

19:25-19:30 Chair's comments and thanks for coming

19:30 Close

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Autonomous Vehicles, The Drivers……..

Neil Fulton

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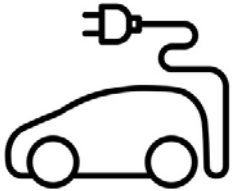
CATAPULT Connected Places

ACES

Automation

Connectivity

Electrification



Sharing

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CATAPULT Connected Places

Automation

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CATAPULT Connected Places

Connectivity

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CATAPULT Connected Places

Electrification

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Sharing

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Thank you

neil.fulton@cp.catapult.org.uk

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Levels of Automation

Dave Baldwin

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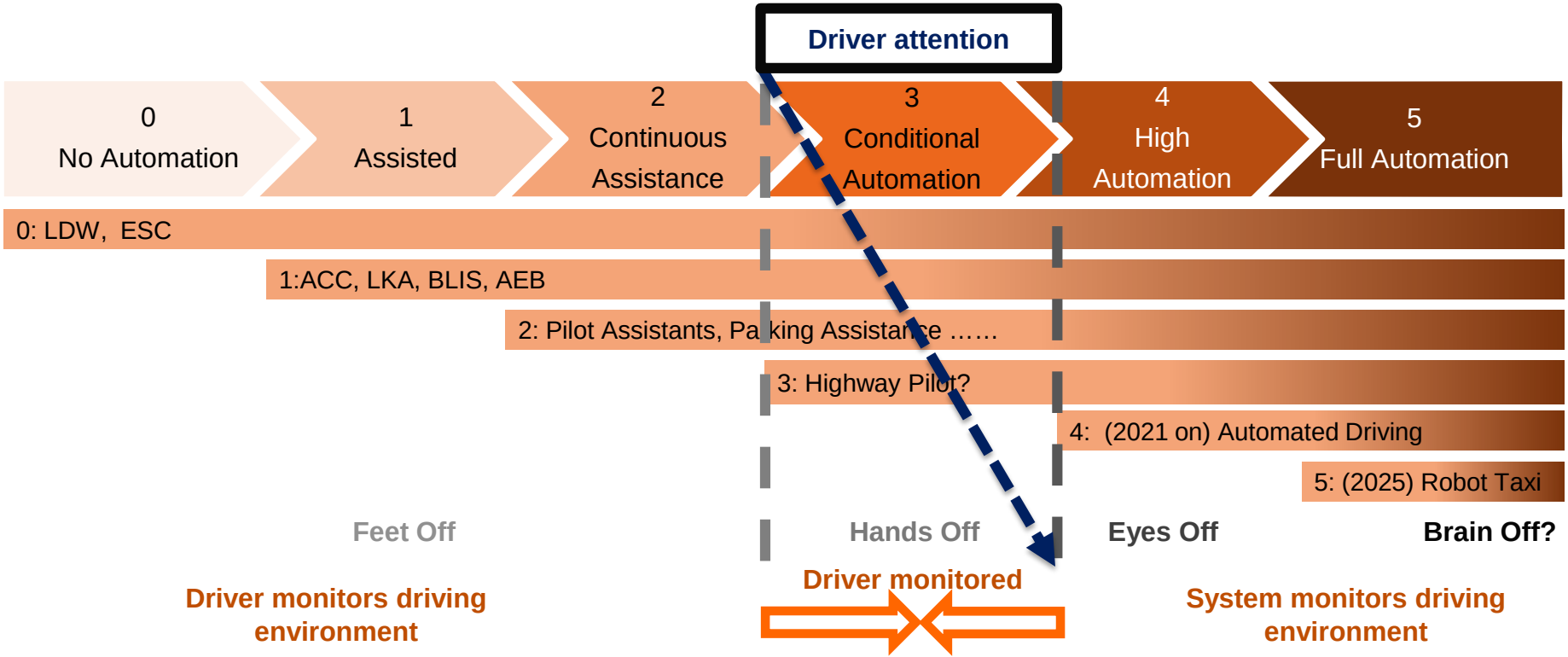
The Autonomous Car



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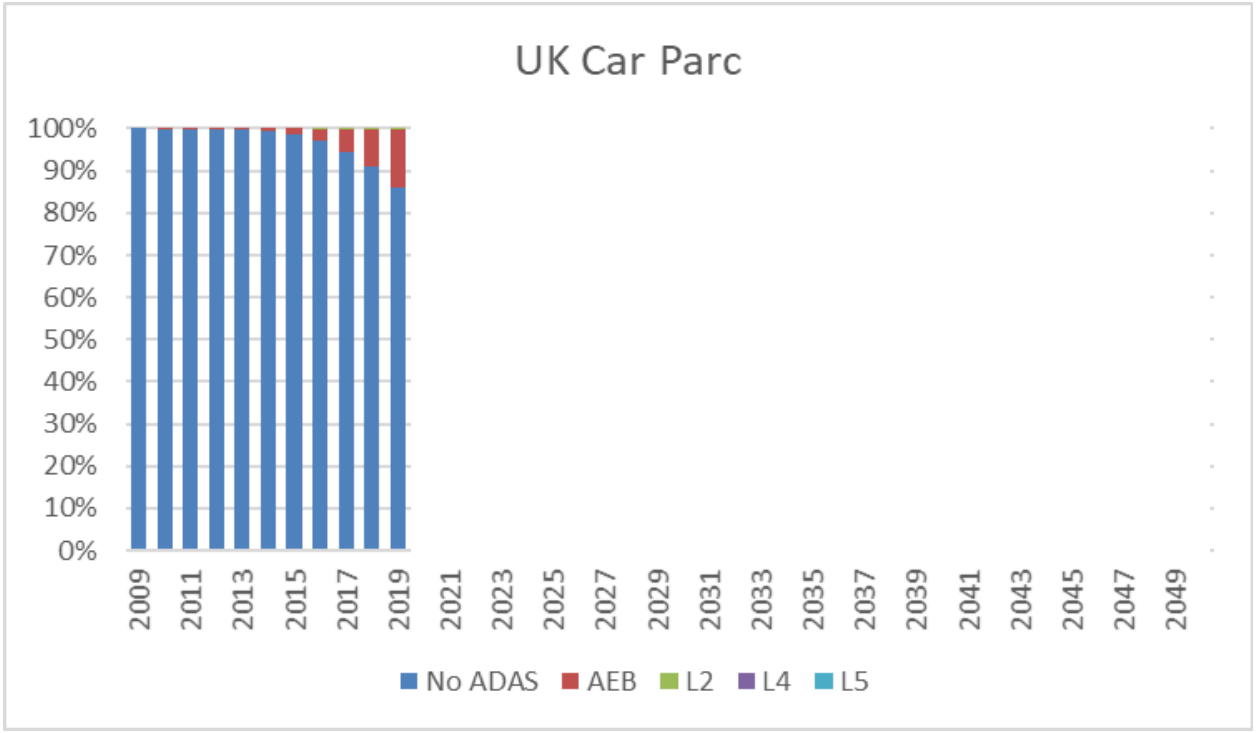
Autonomous Vehicles on the Road



Today – 10%+ AEB

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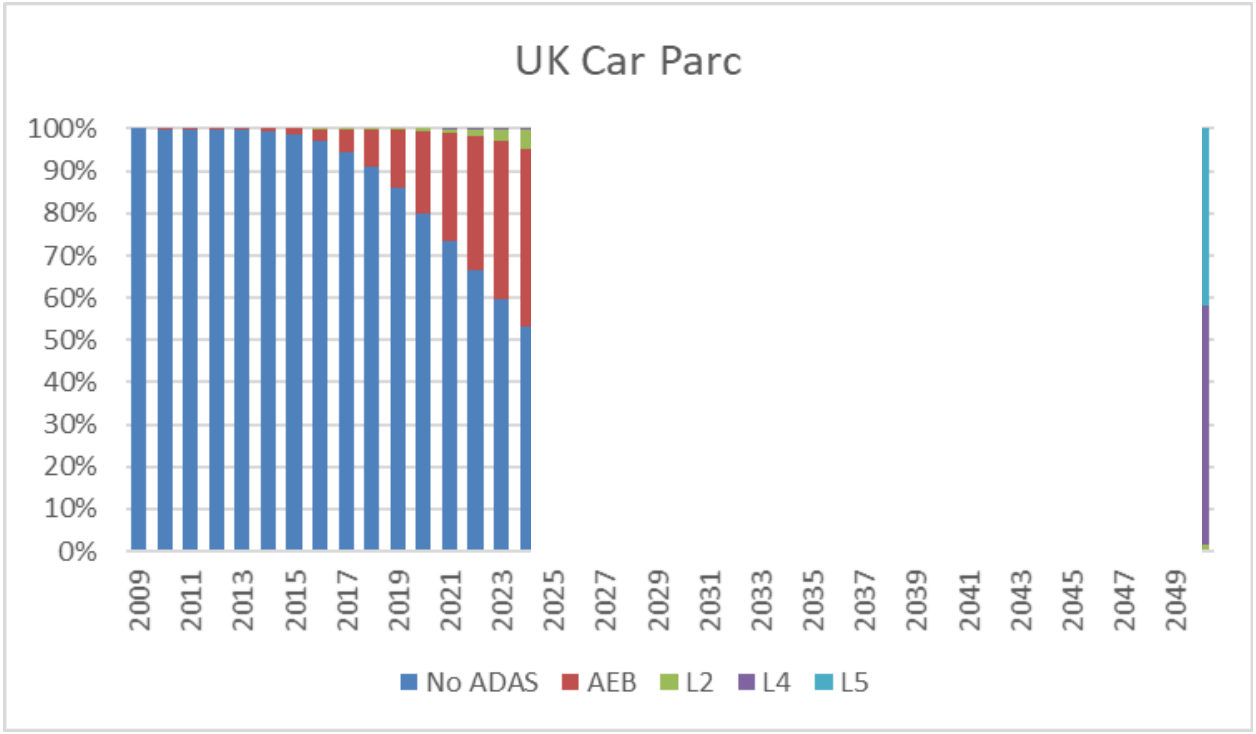
Autonomous Vehicles on the Road



Today – 10%+ AEB

5 years – 5% of Fleet have L2 assistance

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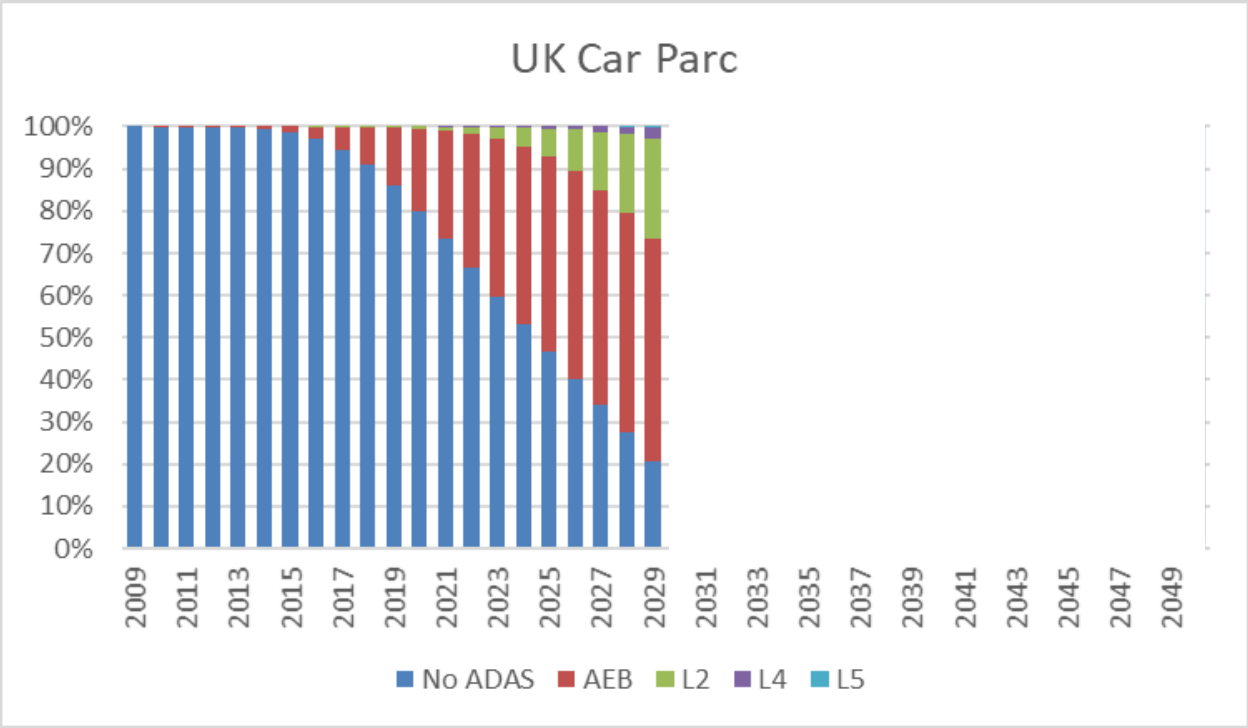
Autonomous Vehicles on the Road



Today – 10%+ AEB

5 years – 5% of Fleet have L2 assistance

10 years – 3% of Fleet have L4 automation

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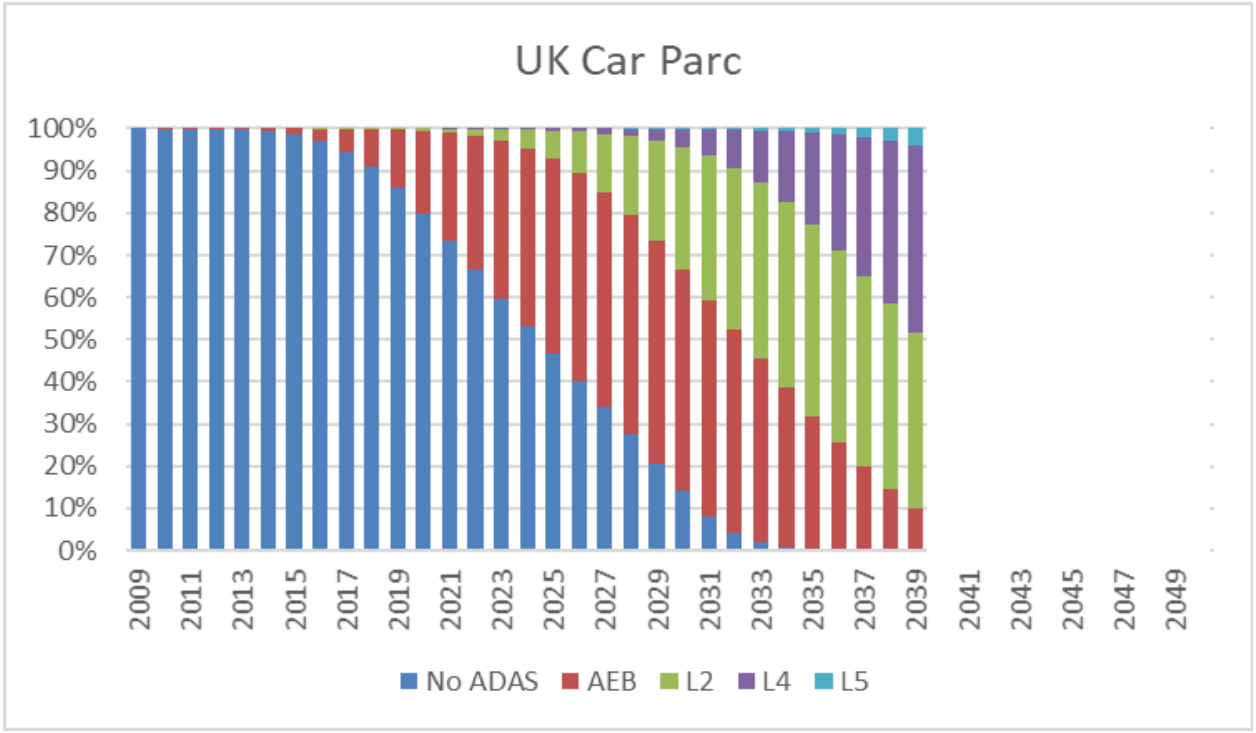
Autonomous Vehicles on the Road



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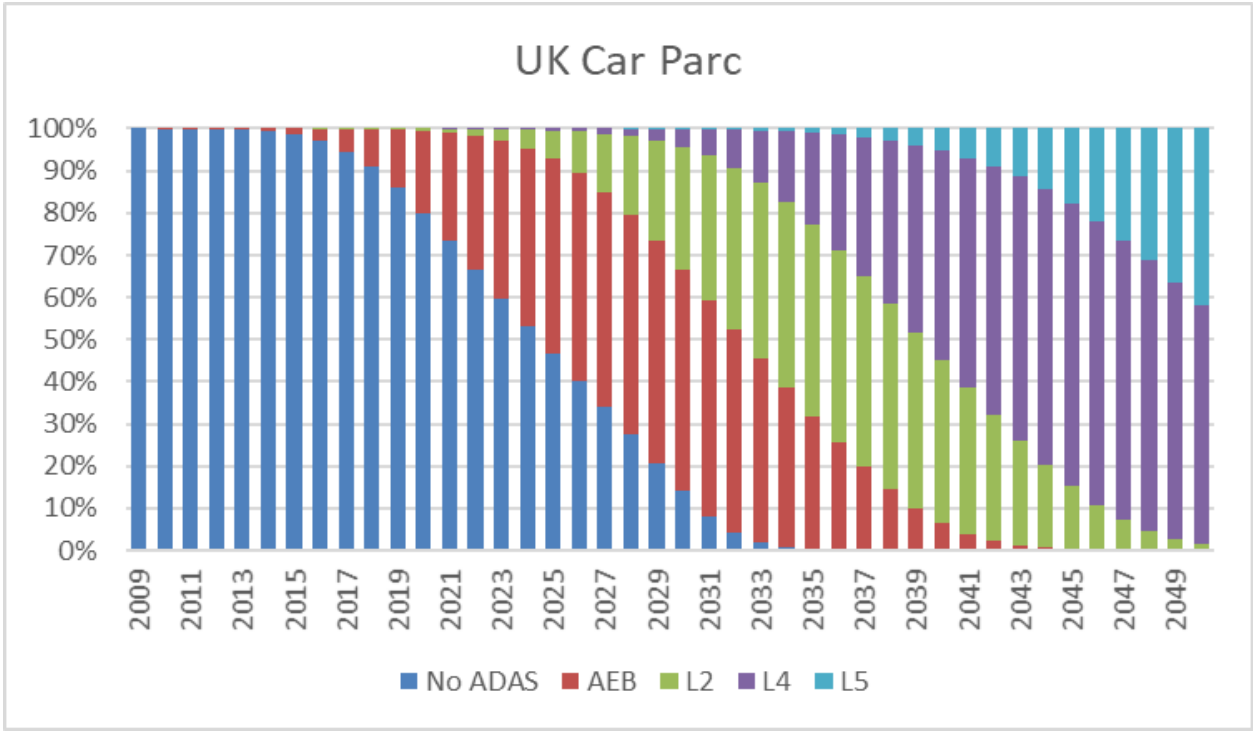
20 years – 50% of Fleet have L4 automation, 4% L5

Autonomous Vehicles on the Road



Today – 10%+ AEB

5 years – 5% of Fleet have L2 assistance

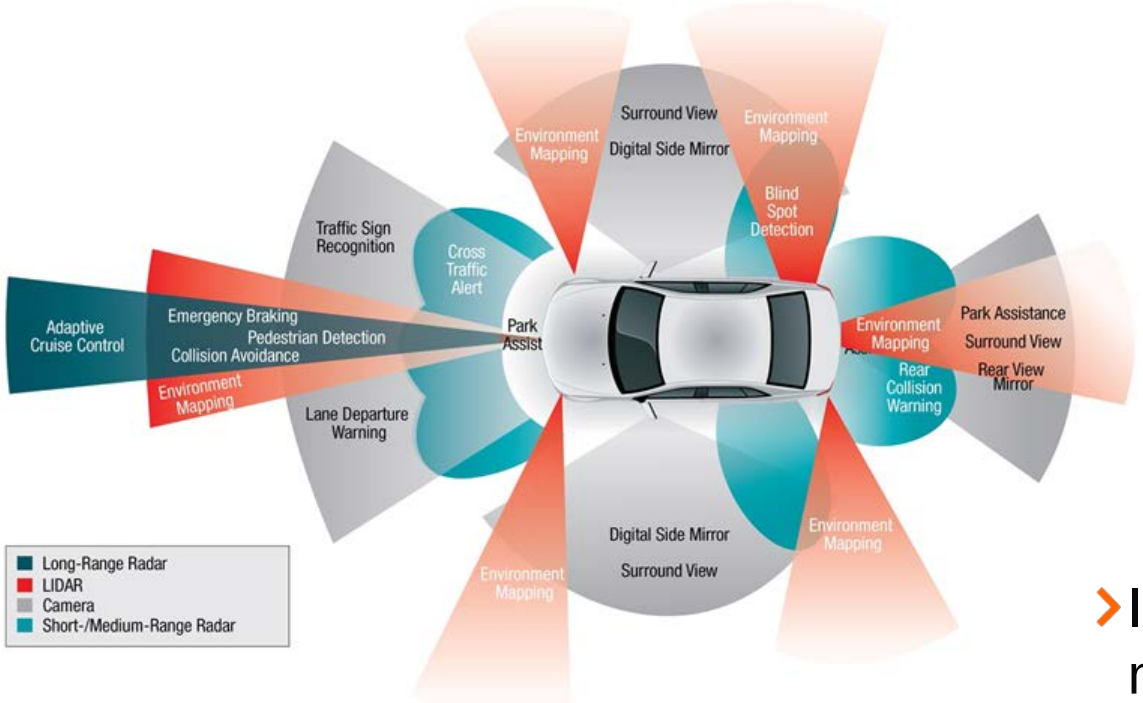
10 years – 3% of Fleet have L4 automation

20 years – 50% of Fleet have L4 automation, 4% L5

30 years – Almost all Fleet have some automation

Mixed driving fleet for foreseeable future

Autonomous Vehicles – Cost of Use



- System only works in some areas
- Crashes still happen
- Sensors in vulnerable locations
- More complexity = more cost
- Much harder to repair – likely to replace
- Less crashes but write off on first accident?

- Insurance cost savings may be limited

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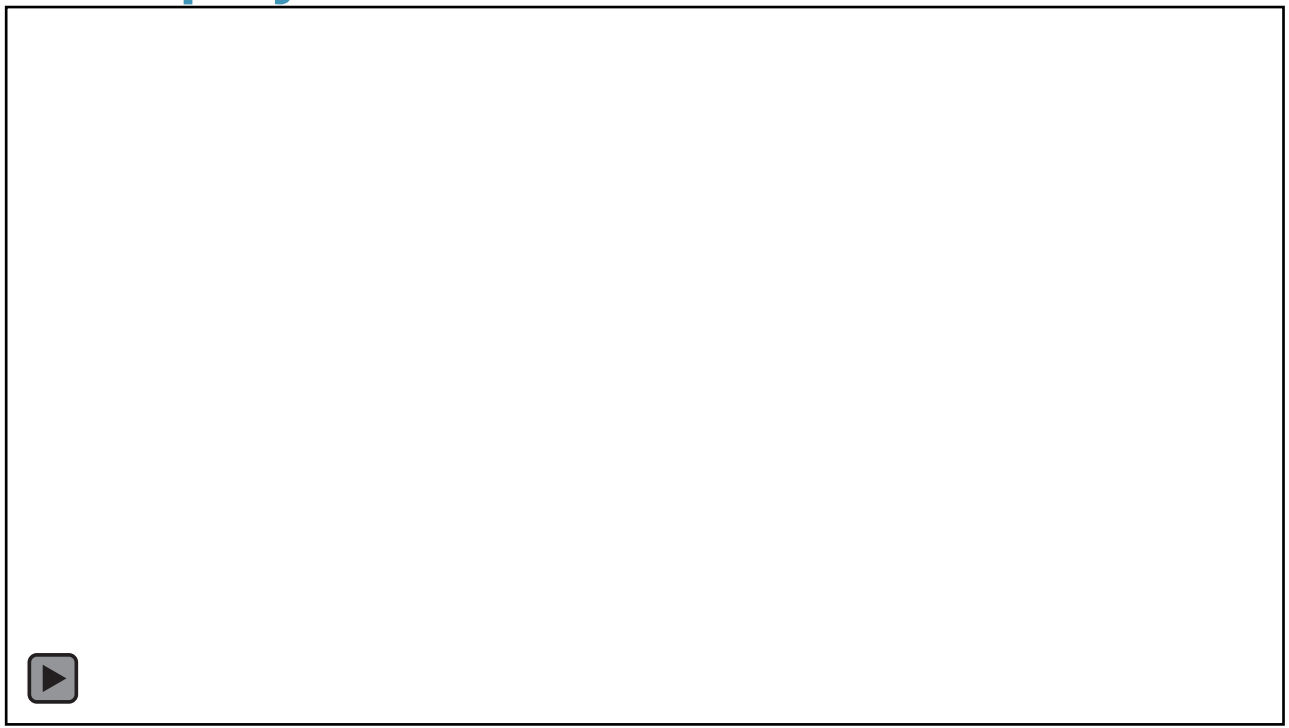
Video to be played whilst sessions are switched



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Panel 1 Discussion

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Consumer Acceptance

Deborah Newberry

Kennedys

3 January 2020

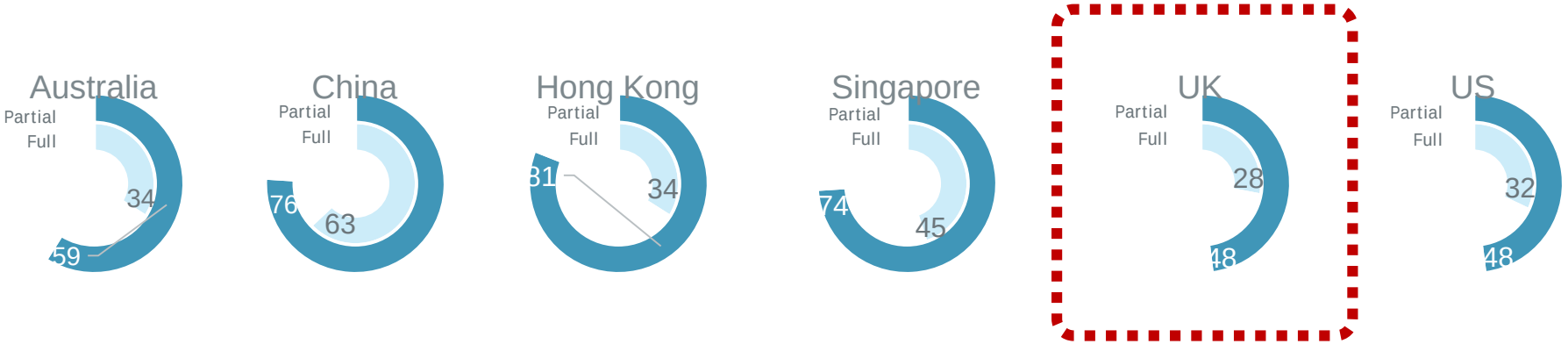
Who is winning the race: national profiles (2019)

2019 Ranking	Country	Policy and legislation	Technology and Innovation	Infrastructure	Consumer acceptance
1	**The Netherlands**	**5**	**10**	**1**	2
2	**Singapore**	**1**	**15**	**2**	1
3	**Norway**	**7**	**2**	**7**	3
4	**United States**	**9**	**3**	**8**	6
5	**Sweden**	**10**	**6**	**6**	4
6	**Finland**	**4**	**8**	**11**	5
7	**United Kingdom**	**2**	**9**	**12**	10
8	**Germany**	**6**	**4**	**13**	13
9	**United Arab Emirates**	**11**	**14**	**5**	7
10	**Japan**	**15**	**5**	**3**	18

Kennedys

Support for more AVs… but only up to a point

Q. Broadly speaking, do you support the use of fully autonomous or partially autonomous vehicles? *(% Yes)*



Australia: n=1,066
China: n=878
Hong Kong: n=990
Singapore: n=1,027
UK: n=1,067
US: n=1,093

Just 4% globally believe that road vehicles should be able to drive themselves in all conditions without the option of a human override

A question of trust: computer over human

Q. Why do you not support the use of **fully** autonomous vehicles? *(Top 4 reasons)*

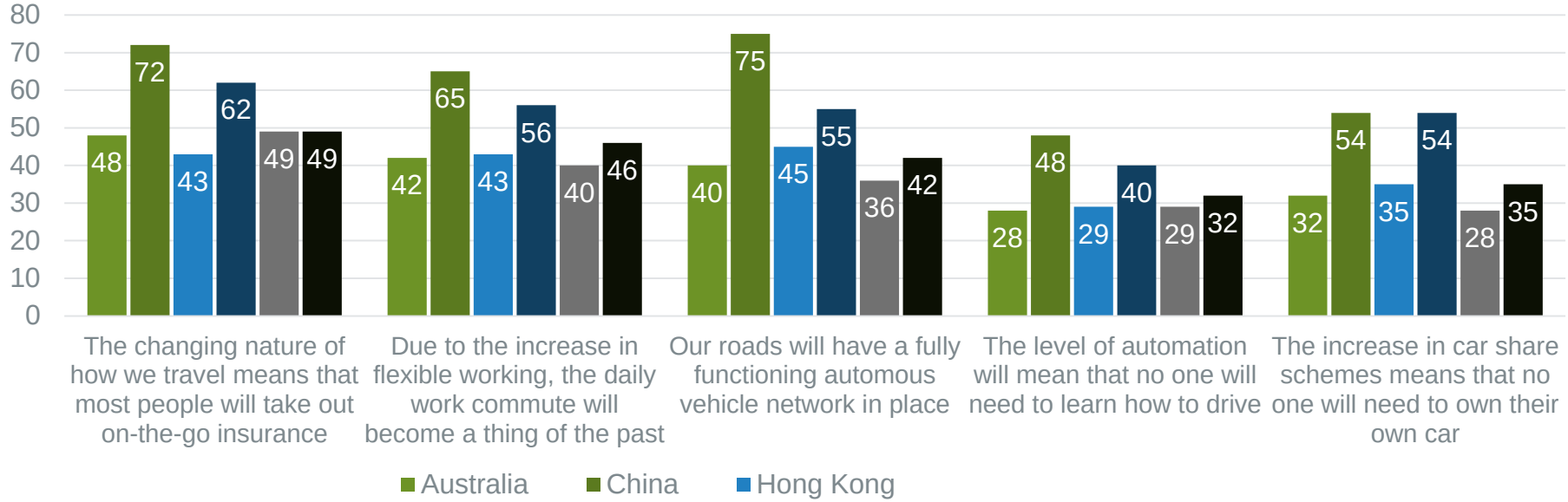
01	02	03	04	05	06	07	08
Fear of the technology failing / I do not trust the technology to keep me safe	I don't trust the judgement of a computer over that of a human	The costs associated with fixing the technology when it fails	Fear about the ability to hack into the cars computer systems	They would be a danger to pedestrians and animals	They would be a danger to other moving cars	I enjoy driving my own car and don't want a computer doing it for me	Insurers would put up the cost of insurance
Australia 67%	Australia 57%	Australia 57%	Australia 57%	Australia 53%	Australia 48%	Australia 51%	Australia 50%
China 47%	China 31%	China 39%	China 41%	China 33%	China 31%	China 24%	China 28%
Hong Kong 66%	Hong Kong 49%	Hong Kong 48%	Hong Kong 58%	Hong Kong 56%	Hong Kong 46%	Hong Kong 37%	Hong Kong 44%
Singapore 63%	Singapore 59%	Singapore 57%	Singapore 66%	Singapore 59%	Singapore 57%	Singapore 35%	Singapore 52%
UK 67%	UK 63%	UK 57%	UK 56%	UK 54%	UK 51%	UK 48%	UK 45%
US 68%	US 61%	US 57%	US 59%	US 58%	US 55%	US 51%	US 44%

Australia: n=762 | China n=434 | Hong Kong: n=689 | Singapore: n=661 | UK: n=835 | US: n=815

A different future: insurance on-the-go, car ownership & the daily commute

Q. And finally, to what extent to you agree that the following describe how the world will look in the year 2039?

(% somewhat / strongly agree)



Australia Base: n=1,066 | China Base: n=878 | Hong Kong Base: n=990 | Singapore Base: n=1,027 | UK: n=1,067 | US Base: n=1,093

Is there a technological threshold beyond which the public’s appetite for further automation becomes exhausted?

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Data Science

Andy Goldby

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Motor Vehicles are Evolving

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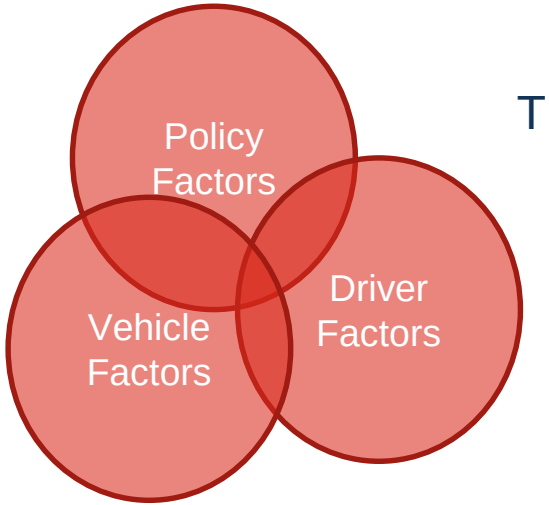
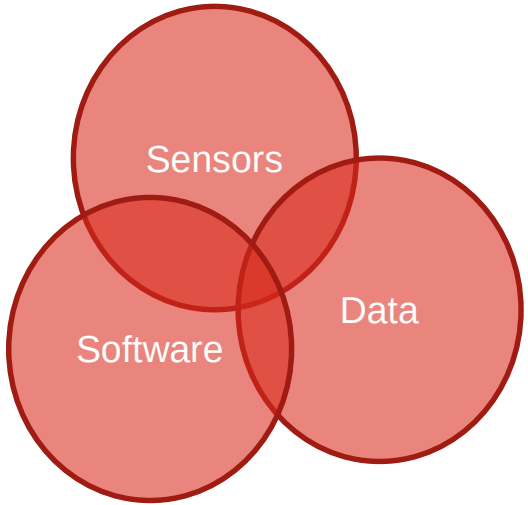
Rating needs to keep up



Annual Factors

The Nature of Risk is Changing



1Hz+ Factors

Autonomous Vehicles Working Group

Understanding telematics is a good start

- Moving from Annual to more frequent data
- Understanding the dynamics of driving styles

But it is not the whole story ….

- How do you process 1-20TB of data per vehicle per hour ?
- How do you standardise across vehicle make/models?
- What data will we actually get (raw or KPI) ?
- What sensors are fitted / active?
- What systems are fitted / active?

CAR AUTOMATION SENSORS & DATA VOLUMES		
Sensor type	**Quantity**	**Data generated**
Radar	4–6	0.1–15 Mbit/s
LIDAR	1–5	20–100 Mbit/s
Camera	6–12	500–3,500 Mbit/s
Ultrasonic	8–16	<0.01 Mbit/s
Vehicle motion, GNSS, IMU	-	<0.1 Mbit/s
TOTAL ESTIMATED BANDWIDTH		
3 Gbit/s (~1.4TB/h) to 40 Gbit/s (~19 TB/h)		

Adapted from source: Stephan Heinrich of Lucid Motors

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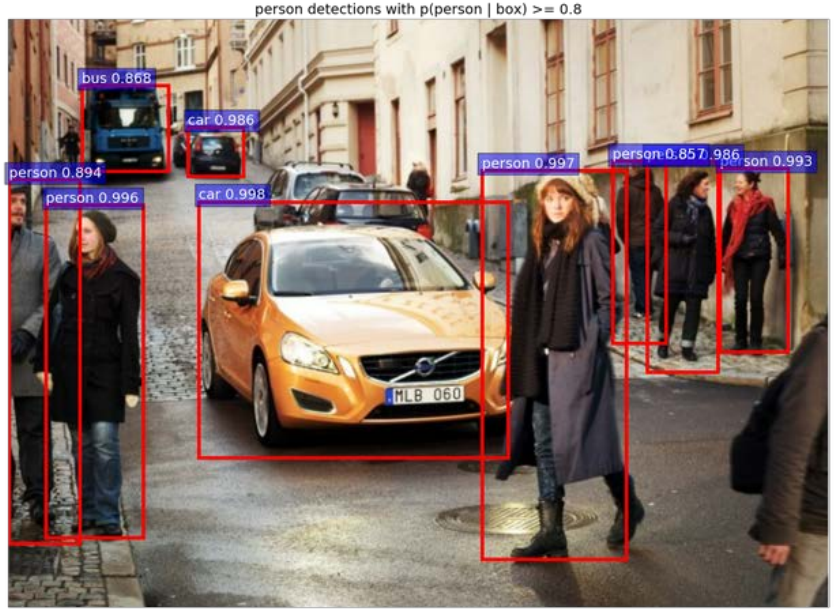
Understanding the data is only the start …



- Who / What is actually driving?
- Which version of the software?
- When was it updated?

- What happens next depends on the ‘object’

- ‘Simple’ rules
  - Follow the road
  - Stay in the lane
  - Pause at junctions
  - Maintain at least 5m in front of vehicle
  - If Human doesn’t pay attention just stop

- ’Complex’ rules
  - If vehicle in front brakes hard: Brake or Go Around?
  - Oncoming vehicle in your lane: Stop / Use wrong lane / Enter pavement ?
  - If Human doesn’t pay attention pull over somewhere safe

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… and general mobility is changing as well

- Where will autonomous features be used first?
  - Cities?
  - Motorways?

- Will the improved infrastructure required reduce risk anyway?

- Shift of ownership of vehicles
- Rise of P2P
- Shift from personal to commercial insurance?
- Shift from personal liability to product liability?

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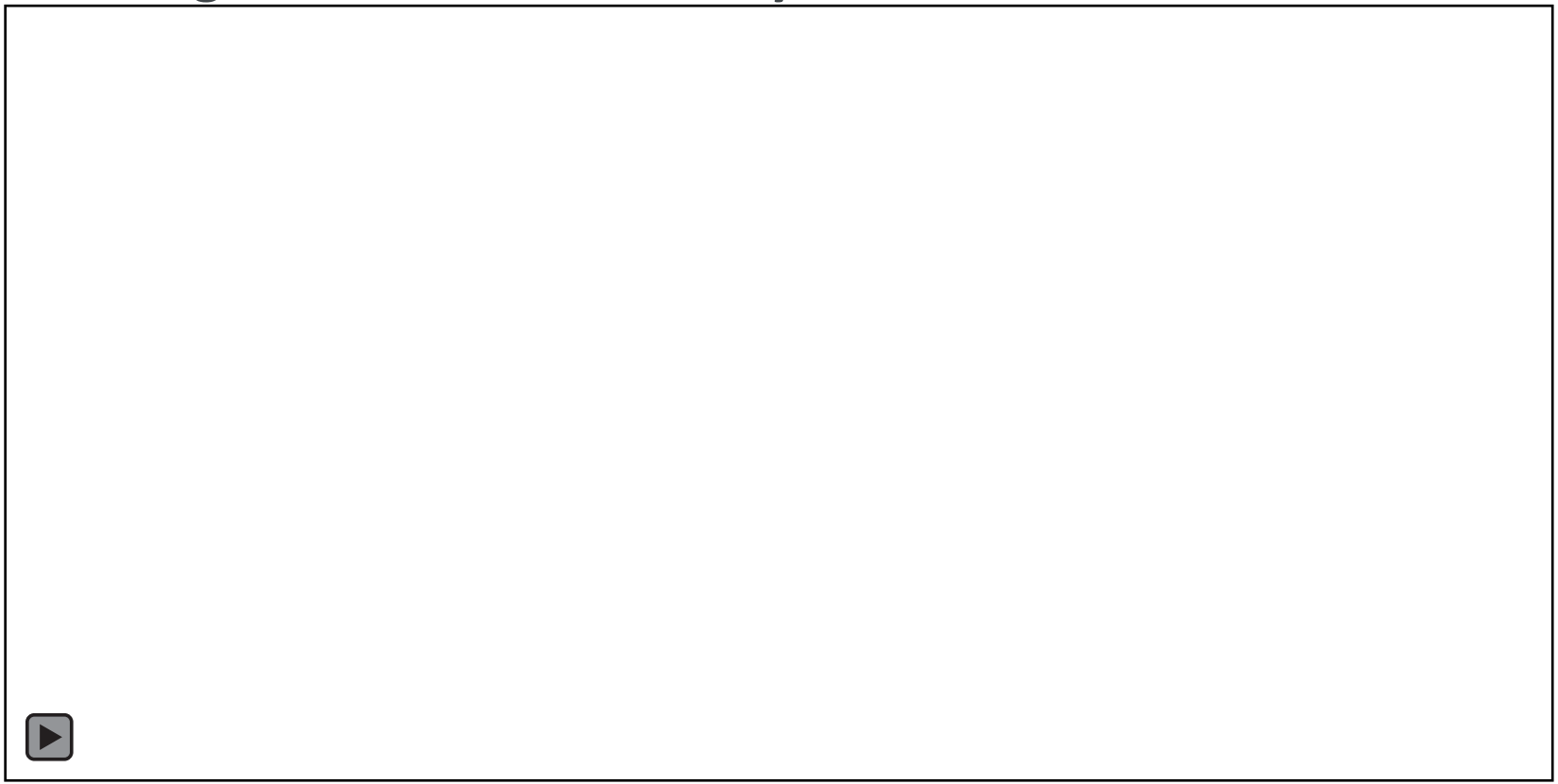
… how good do autonomous systems have to be ?



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Panel 2 Discussion

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