

Venturer Trial 2: interactions with other vehicles

Centre for Transport and Society

Winter Conference

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CTS and Autonomous vehicles

Venturer: Trial 1, **Trial 2** and Trial 3, and **acceptance**

Flourish: consumer demands and expectations, especially of an ageing society

CAPRI: design, development and testing of a pilot pod for airports, hospitals, business parks, shopping and tourist centres, on-road public trials at London's Queen Elizabeth Olympic Park.

Highways England CAV Pilot Implementation Projects: support in technology integration, real world demonstrations and trials, simulation, designing experiments, public participation and on-line surveys, qualitative and quantitative analysis, ethics

CAV3: ?



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Challenge: typical urban roads

Range of:

- Road types (arterial roads, distributor roads, high streets, access roads and local streets)
- User types (vehicles and drivers, pedestrians, cyclists)



Variability in:

- Lane types and widths
- Forms of junction control
- Levels of traffic regulation
- Levels of place as well as movement function



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Gap acceptance vs trust and comfort

Description	Headway (car following) (seconds)	Critical gap (gap acceptance at junctions) (seconds)
Passive	2.5	5.1
Neutral	2.0	4.0
Assertive	1.5	2.8

- Headway = time gap a driver leaves to vehicle in front (Lewis-Evans et al., 2010)
- Critical gap = gap 50% of drivers would accept (Ashalatha and Chandra, 2011).

Trust

0 = 'no trust' to 10 'complete trust'

Comfort

Post- questionnaires and nausea rating scores

Personality questionnaires

- Driving experience
- Distractibility
- Faith and Trust in General Technology
- Personality
- Sleep
- Trust in automation
- Mood
- Impulsivity
- Cognitive workload
- Self-control
- Risk taking



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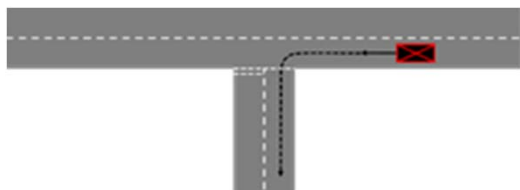
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Trial 2 events

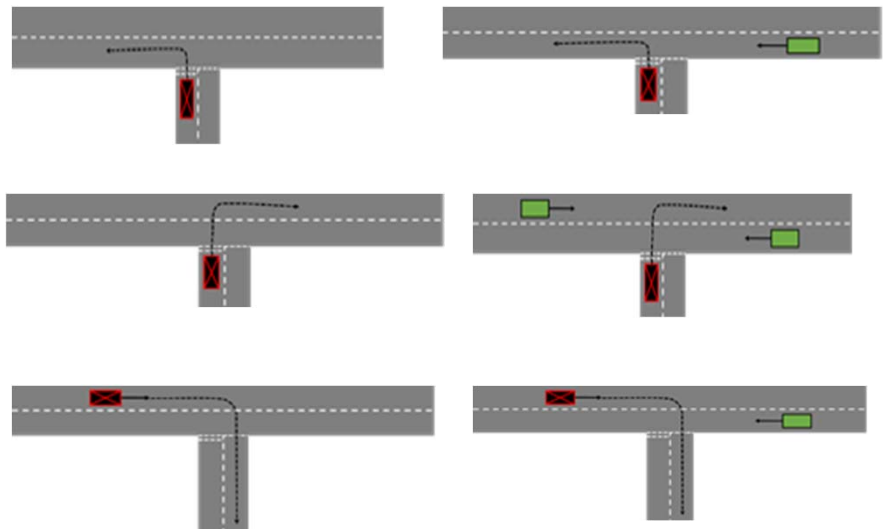
Links



Left turn into side road



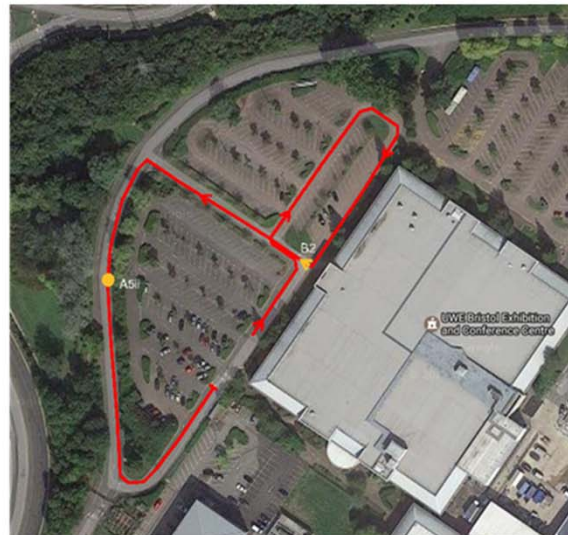
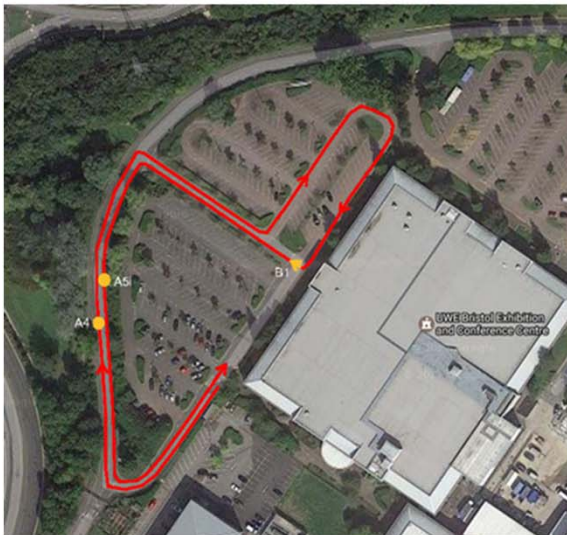
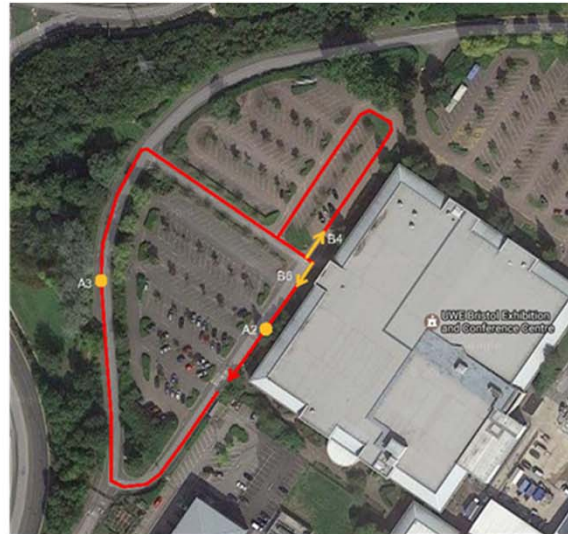
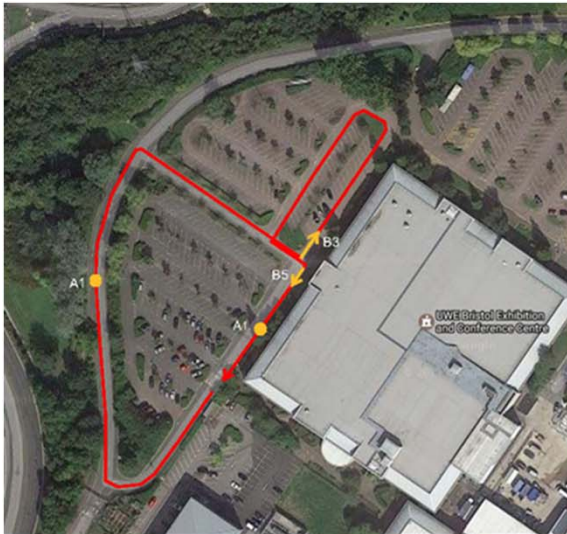
Give ways



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Trial 2 Participants

	Wildcat	Simulator
AV giving way	✓	✓
AV not giving way		✓

- 46 Participants (20 female)
- 8 (17%) \geq 65 years, 4 (8%) relatively inexperienced < 5 years driving
- Three observations per event
- Within subjects analysis comparing:
 - Between events
 - Between platforms
- Between giving way and not (in simulator only)



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Trial 2 – Initial Findings

Personality data

- Trust scores valid & reliable (higher general trust in technology = higher trust in trial events)
- Driver age & experience not associated with trust ratings of events

Wildcat, trust higher:

- On empty link compared to overtaking a parked car with & without an oncoming vehicle
- Overtaking a parked car with an oncoming vehicle than without
- Turning right into and out of side road with on-coming than without

Venturer Simulator, trust higher:

- On empty link compared to overtaking a parked car with & without an oncoming vehicle
- Overtaking a parked car without oncoming vehicle than with
- Turning right into side road with an on-coming vehicle than without

Between Platforms, trust higher in Venturer Simulator

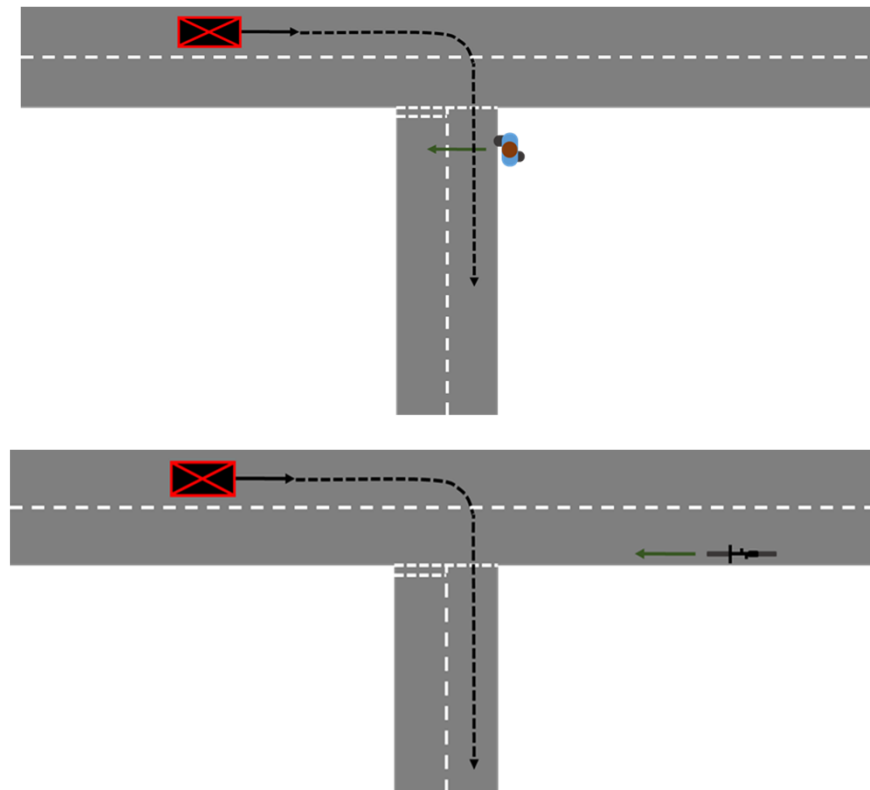
- On an empty link and over taking a parked car with and without on-coming vehicle
- Turning left with and without on-coming traffic



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Trial 3



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Some concluding observations

Frenzy of interest

Visions for public realms: comfortable, attractive, safe, sustainable, equitable

Transport-industrial complex: AI versus incrementally features and comms.

Policy: a vacuum apart from 'safety', also implicitly cost cutting, re-deployment, gain and maintain automotive market share, commuters would gladly give up daily grind

Trust: high, but it always is in technology

Fulfil our best visions, or corrupt other visions?

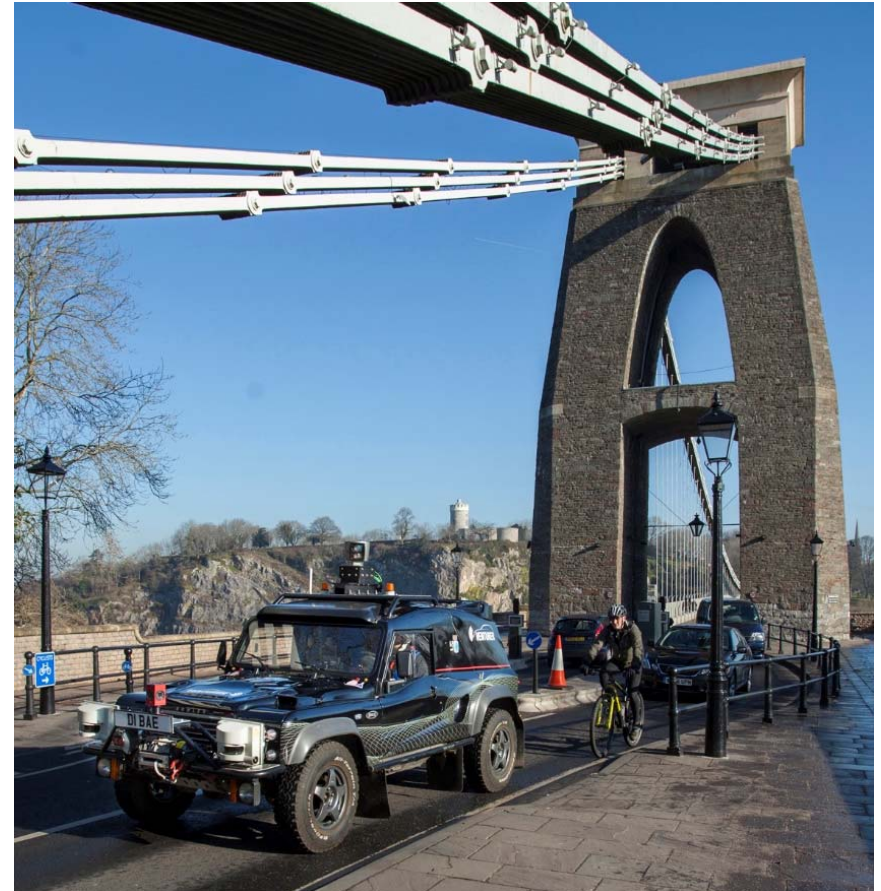
We could mandate for speed and acceleration limits tomorrow, so why wait for technology to be cautious on our behalf?

<https://www.ice.org.uk/news-and-insight/the-civil-engineer/december-2017/do-we-trust-autonomous-vehicles>



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