

# Assisted and Automated Driving – International Insurance Views

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Assisted and Automated Driving  
Definition and Assessment



# ADAS Today

Passive to Active Safety

Crash testing has traditionally focused on Passive safety, helping you survive a crash, Active helps prevent the crash in the first place



A key first active safety technology was Electronic Stability Control (ESC). ESC equipped vehicles are 25% less likely to be involved in a serious or fatal crash



Other Active Safety technologies like Blind Spot Information, Speed Assist, Lane Keep Assist and Active Lighting are all on the market showing potential



The Volvo XC90 AEB system is able to prevent a collision against a stationary target up to the same speed as the Euro NCAP frontal test

# AEB VRU

New Euro NCAP Test Procedures to protect vulnerable road users

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Car to Pedestrian - 2016



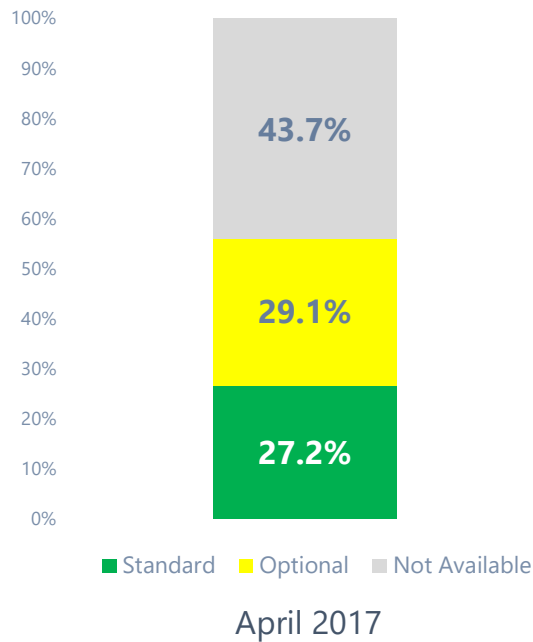
Car to Cyclist - 2018

# ADAS

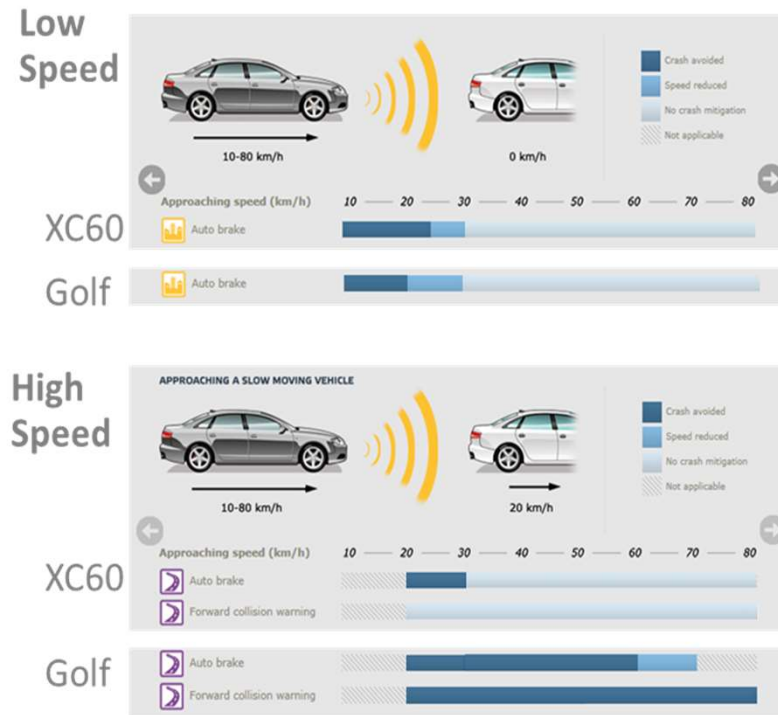
Thatcham and AEB

Thatcham has been instrumental in developing AEB test procedures in Euro NCAP and RCAR and analysing the real-world effect of these systems

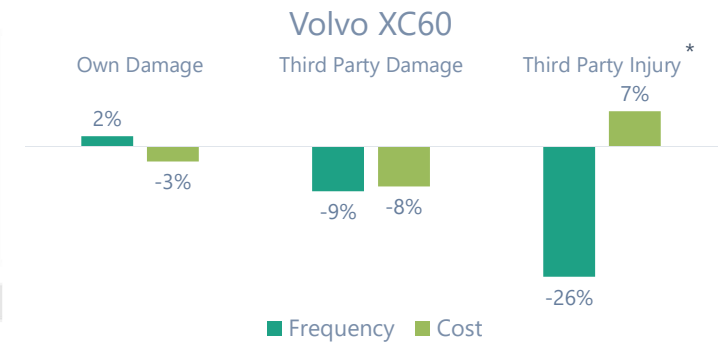
## New car AEB fitment



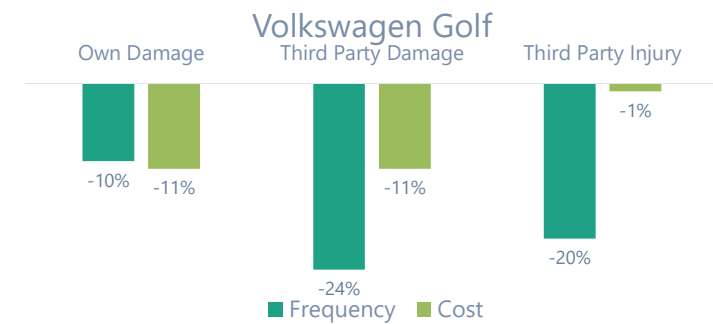
## AEB testing



## Real-world analysis

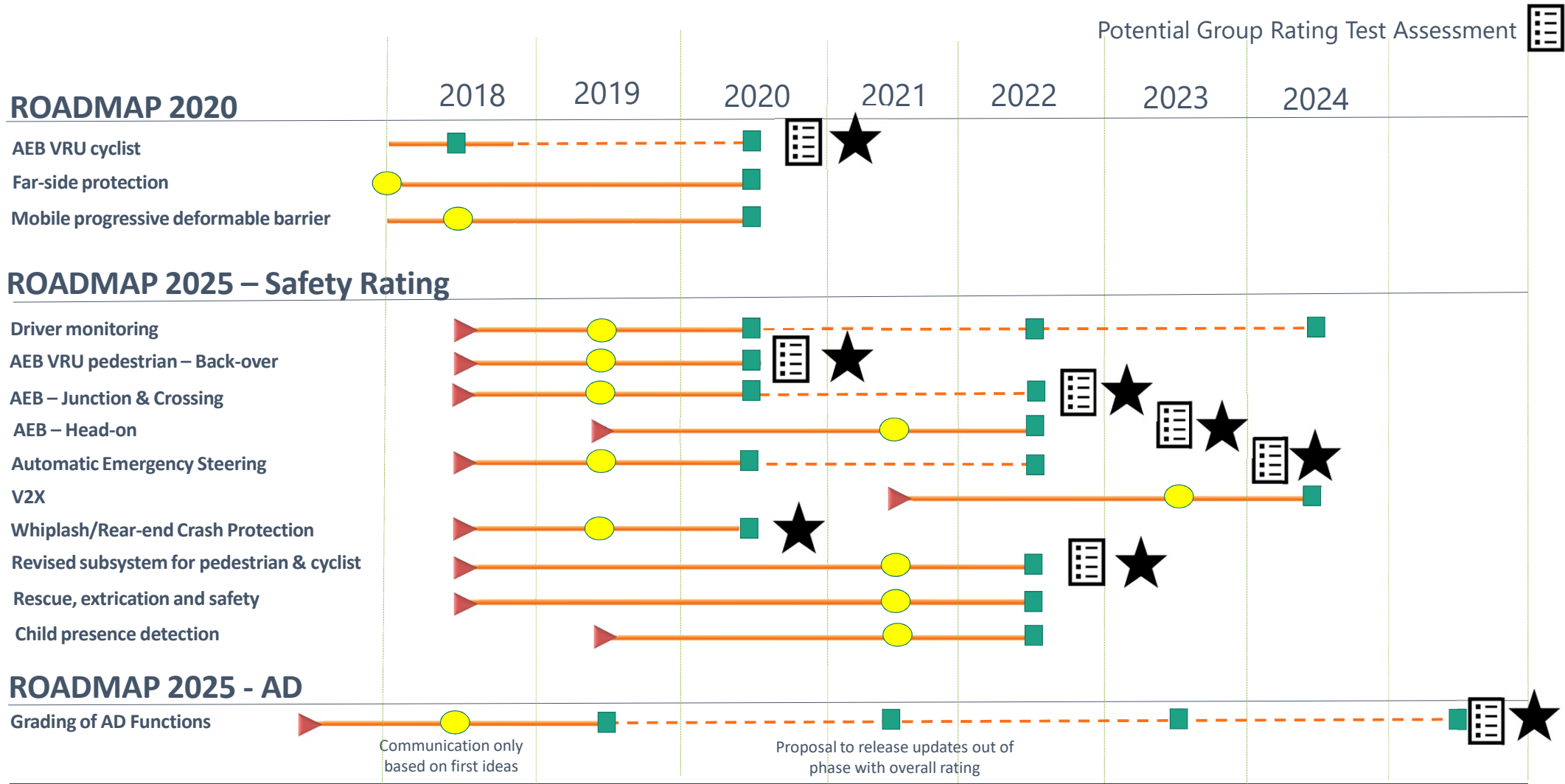


\* Increasing costs due to raising of average cost through elimination of lower value whiplash cases



# Euro NCAP 2025 Roadmap

Timeline



Communication only based on first ideas

Proposal to release updates out of phase with overall rating

Potential Group Rating Test Assessment

# AEB Next Gen

Future Euro NCAP Test Procedures

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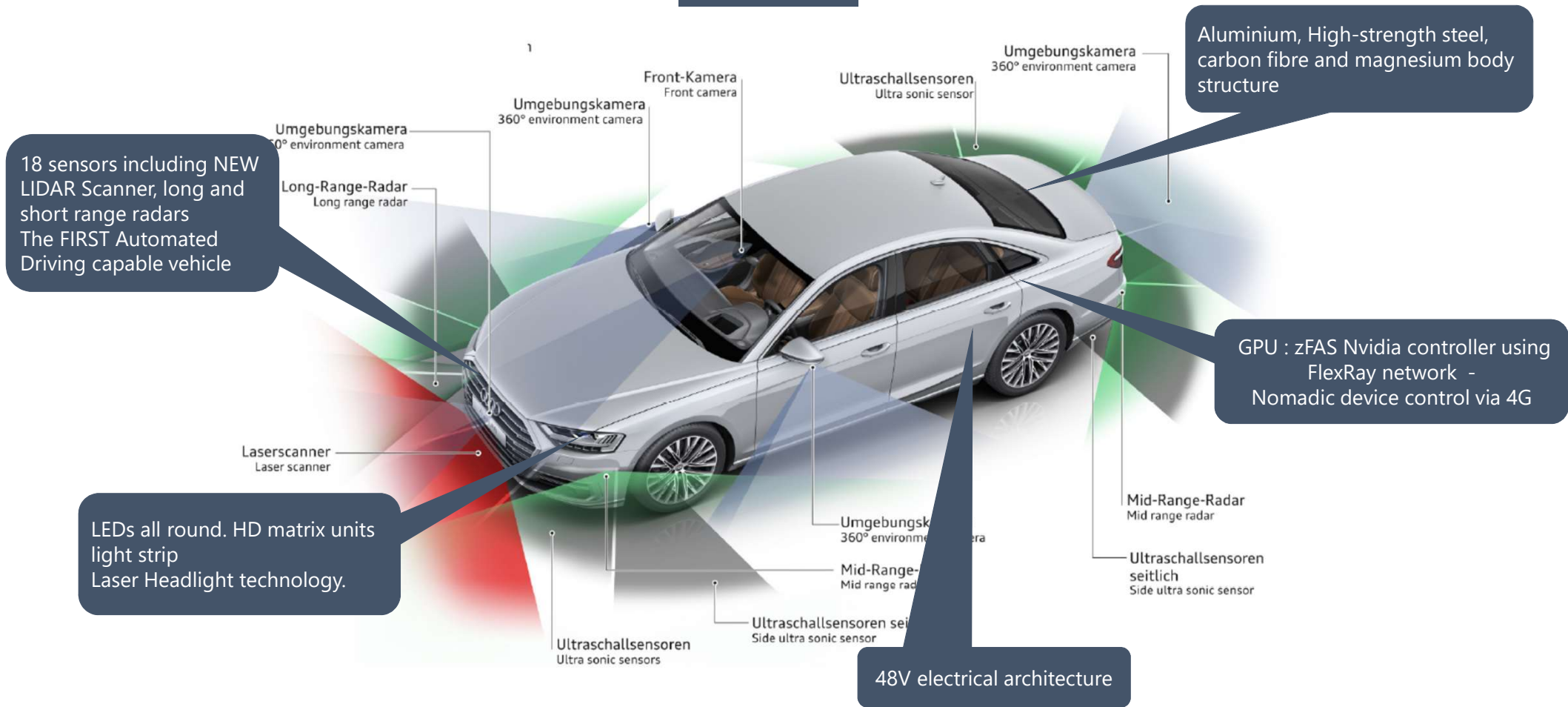
Turn Across Path - 2020



Junction Assistant - 2020

# The Future Blueprint and Challenge

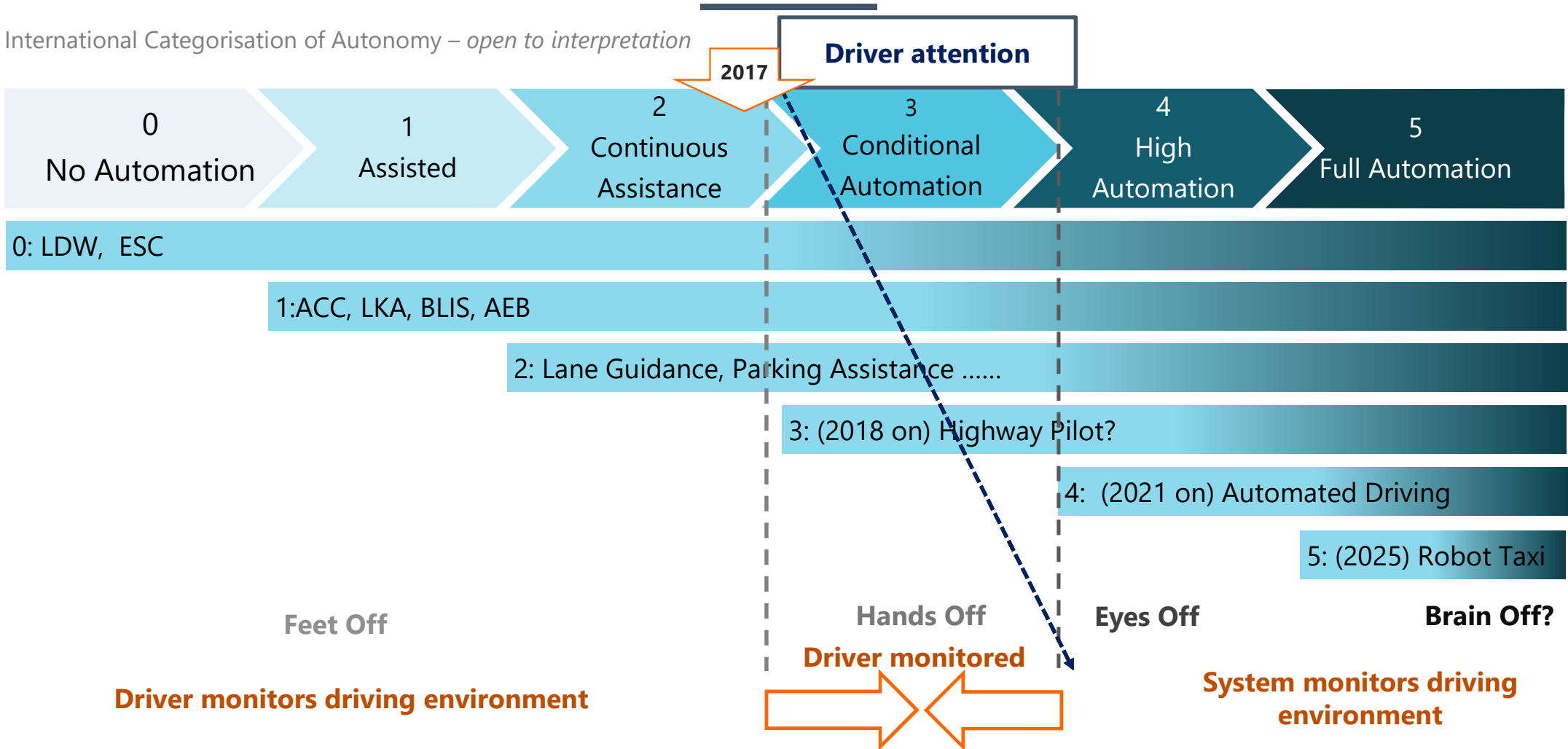
Level 3 Automated Driving in 2018























# The Autonomous Car

SAE Definitions and Timeline

International Categorisation of Autonomy – open to interpretation





The dividing line between Assisted and Automated				
Automation for Insurers	ASSISTED		AUTOMATED	
Responsibility	Partial Automation 	Conditional Automation 	High Automation 	Full Automation 
SAE Level	2 <small>A vehicle will only be categorised as Automated if it meets the rules for Automation</small>		3	4
Design Domains	<small>Assisted and Automated Vehicles may operate in one or more of four design domains</small>			
	   	   	   	   
	   	   	   	   



**Assisted driving**  
(driver remains responsible)



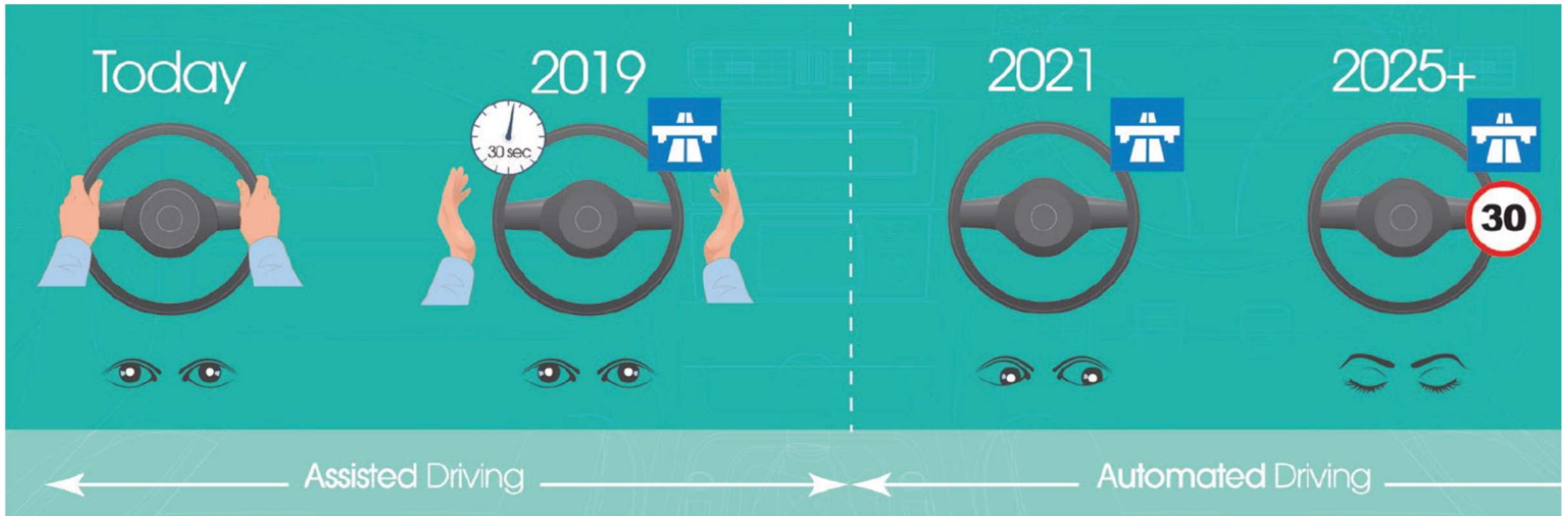
**Automated driving**  
car takes control  
(with steering wheel and pedals)



**Autonomous**  
no driver present  
(with no steering wheel or pedals)

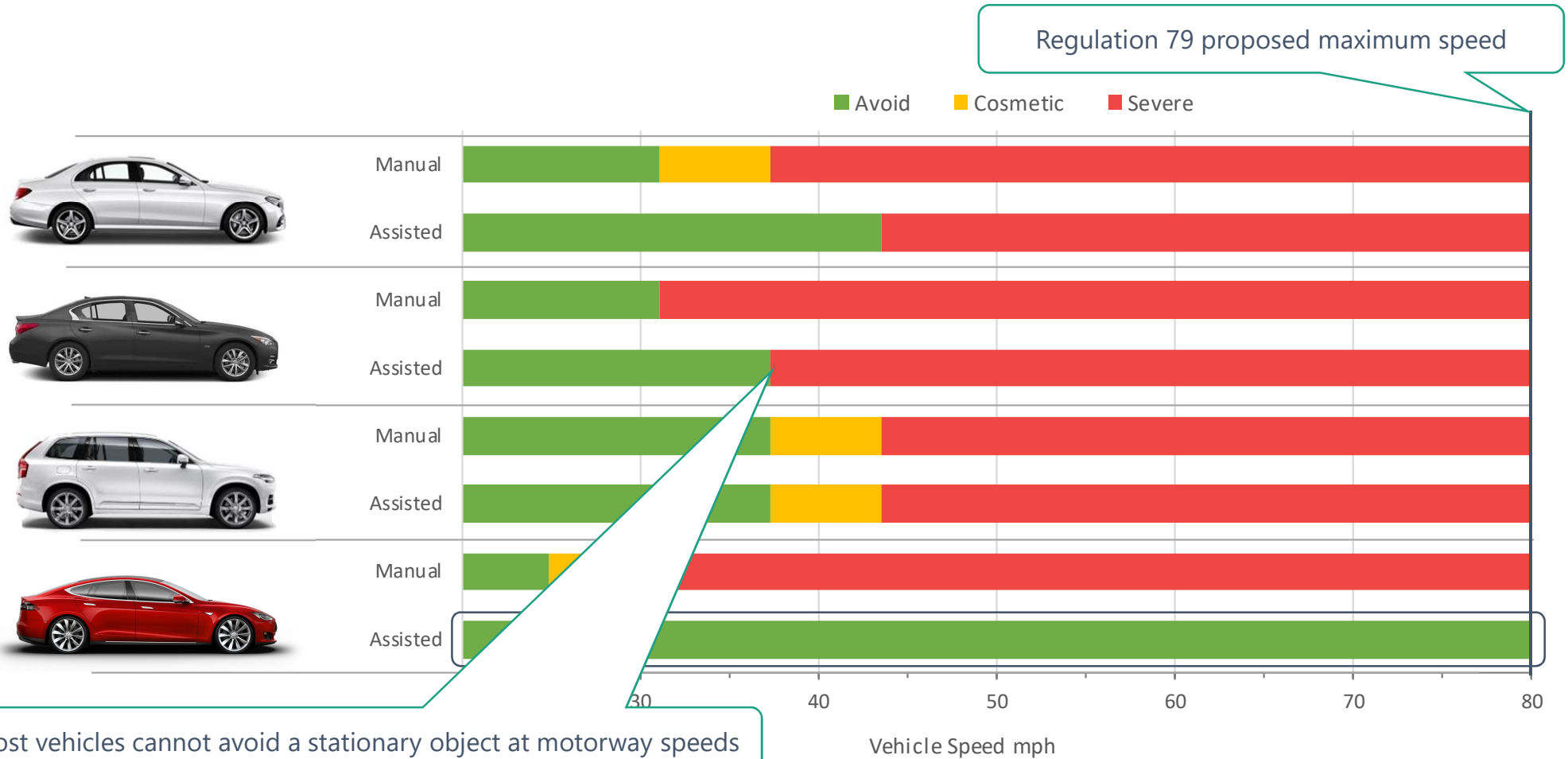
# Our journey to automation

The UK Insurer View on Automation – Keep it Simple



# Continuous Assistance

Current performance – Against a Stationary Target



# Continuous Assistance

Current System performance – Track Evaluations

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# Vulnerabilities

Tesla Model S – Partial Overlap Out of Lane

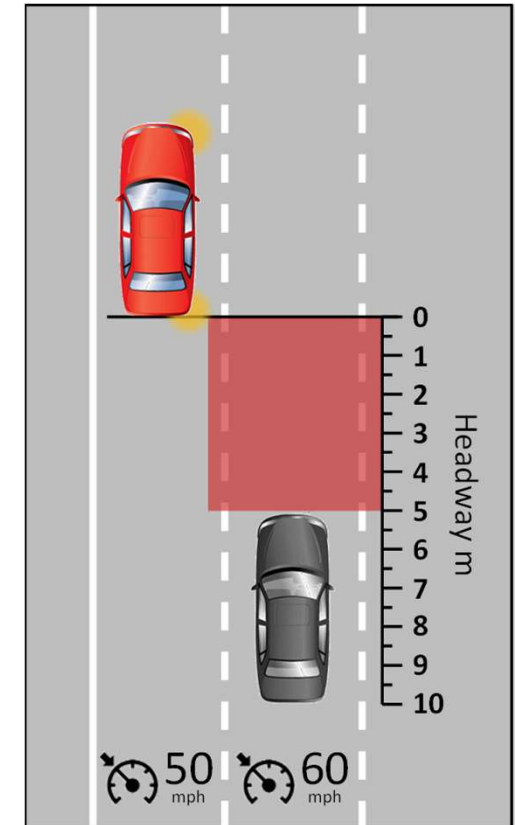


Tesla: 'Because of the damage caused by the collision, the car was physically incapable of transmitting log data to our servers.'

The need for adequate data to identify who was driving at the time of the crash

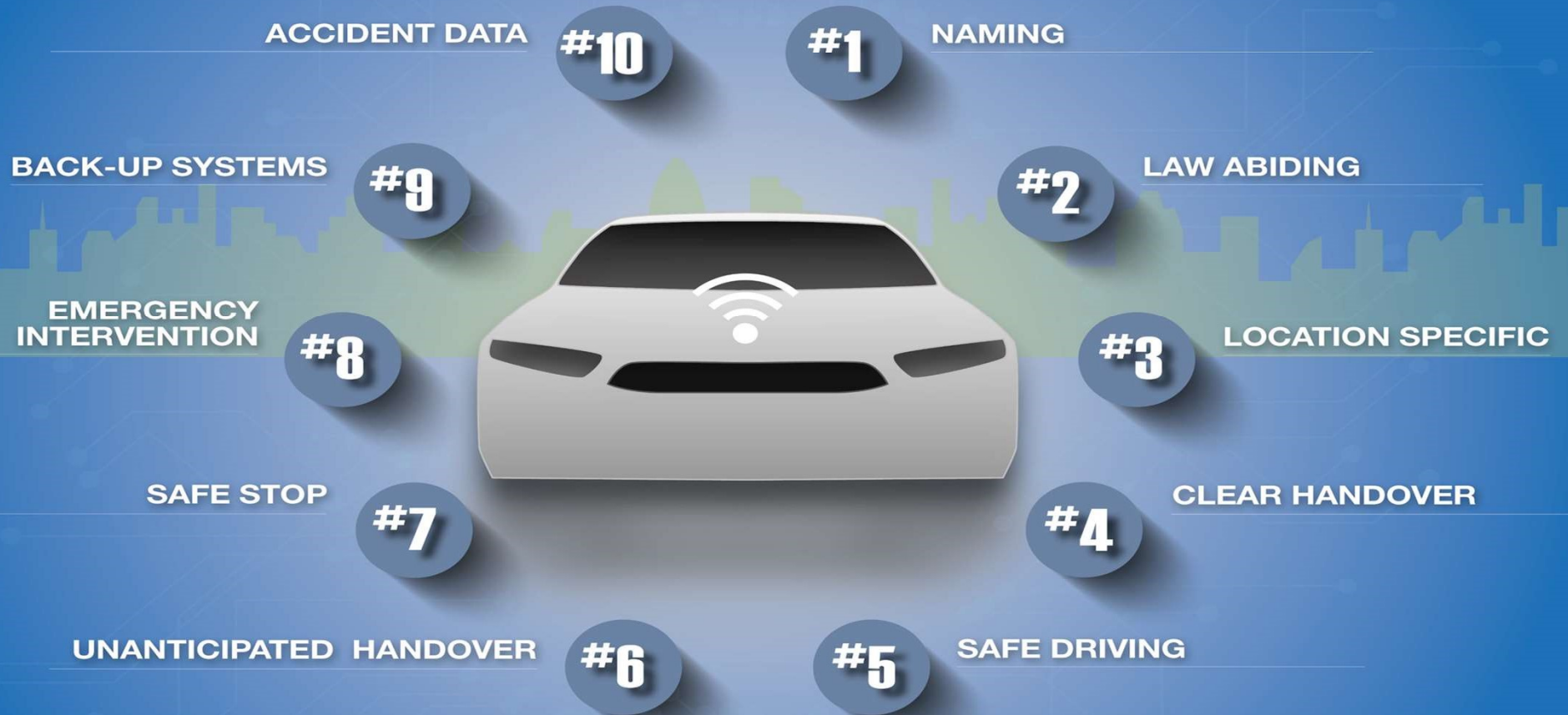
# Tesla Model S

Auto lane change



# What defines an automated vehicle?

Features and performance criteria



# Liability changes

Automated Driving – Insurance Challenges

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Automation offers **two** significant challenges to insurers:

- Additional liability for accidents involving a vehicle operating in an Automated mode
- May also include claims for injuries to the driver, potentially introducing an additional claimant in each case

***Every driver becomes a passenger***





# Limited data to determine liability

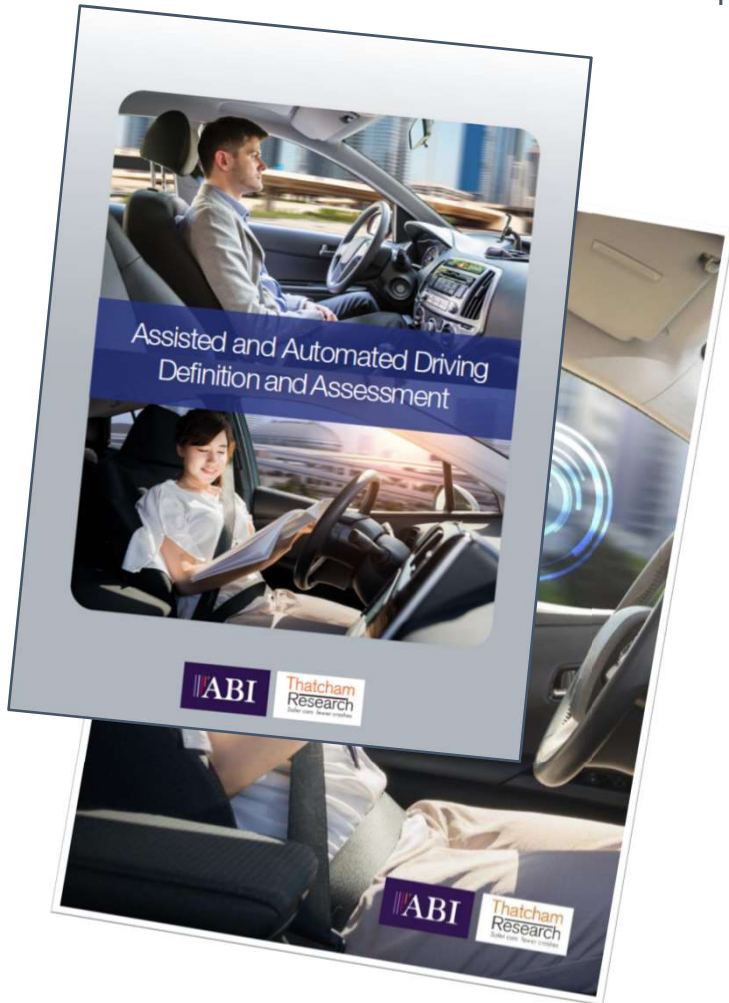
Needs to be built in to Regulations

- GPS-event time stamp
- GPS-event location
- Automated Status – on or off
- Automated Mode - Parking or Driving
- Automated Transition time stamp
- Record of Driver Intervention of steering or braking, throttle or indicator
- Time since last driver interaction
- Driver Seat Occupancy
- Driver Belt Latch



# Stakeholder Engagement

Four Phased Information and Test Approach



## Phase One - 2017

- Strategy Document (R79) – laying out issues – feed into the UK Automated and Electric Vehicle Bill (AEVB) to ensure Insurance needs addressed.

## Phase Two – May 2018

- Publication of Assisted and Automated Definition – Framework doc defining Insurance Issues and “ten commandments”
- Definition of test procedure for Insurers and Euro NCAP
- Wider adoption by International Insurers – GDV FFA IBC

## Phase Three – Oct 2018

- Authorship of testing and evaluation procedure based on the “ten commandments” position
- Publication of Euro NCAP Assisted Driving Ratings
- Aligned position with IIHS & Euro NCAP

## Phase Four – 2019+

- Definition and authorship of Automated Driving Assessment following Automated “ten commandments”

# Thatcham AD Assessment Process

Rating AD car tech

## Desk-based

Review handbook to determine functionality, performance, limitations, driver responsibility etc. for:

- Naming
- Law Abiding
- Design Domain
- Status
- Capabilities
- Driver Engagement
- Driver Monitoring
- Crash Intervention
- Back-Up Systems
- Accident Data

## Understand system

## On the public road

Evaluation in accordance with Highway Code maintaining road safety

- Verifying performance interacting with:
- Road environment
  - Other vehicles and road users
  - Driver

## At the test track

Safe, controlled test environment for attempting and verifying performance in:

- Illegal driving manoeuvres
- Unsafe/near miss/emergency situations
- Driver disengagement

# Thatcham AD Assessment Process

Measure of assistance

## Law Abiding

### Highway code musts:

- Not exceed speed limit
- Wear seat belt
- Exercise proper control
- Not pass red X on motorway
- Cross/straddle solid white line
- Not drive on hard shoulder unless emergency or smart running lane
- Not stop on motorway unless emergency
- Obey traffic signs and signals
- Not drive dangerously, without due care and attention or without reasonable consideration for other road users

## Competence

### Assistance control → Road

Speed – limit changes, adjustment for upcoming road features

Steering – steer curves, lane position consistency, smoothness, driver inputs



### Assistance control → Other traffic

Speed and steering relative to other road users

## Design Domain



Parking



City



Inter-Urban



Highway

# Thatcham AD Assessment Process

Measure of driver information

## Status

## Driver Monitoring

### Transitions of control – efficiently communicated and easily differentiated

- Who initiates transition – driver or car?
- Who is in control after transition – driver or car?
- Is transition optional or mandatory?
- Is transition up or down – adding or removing assistance?

### Steady state – operational modes correctly identified

- Clear indication of operating state
- Reliable functionality or degraded e.g. sensor blocked?



### Driver monitoring

- Direct e.g. hands on wheel
- Indirect e.g. facial/eye monitoring
- Time before takeover request
- Detection effectiveness
- Misuse

# Thatcham AD Assessment Process

Measure of emergency support

## Safe Stop

### If driver fails to re-engage following escalating warnings

- Domain dependent safe stop?
- In lane or other e.g. pull over?
- Affected by traffic conditions?
- Warning to other road users?
- eCall triggered?

## Crash Intervention

### Enhanced Euro NCAP active safety tests

#### Auto-brake

- Vehicles
- VRUs e.g. pedestrian, cyclist
- Stationary
- Moving/braking
- Cutting in/out

#### Lane support systems

- Run-off road protection
- Emergency steering intervention

## Back-Up Systems

### Driver is back-up for assistance systems

- Warning in case of system failure?
- Withdrawal – immediate or controlled hand back to driver?
- Redundant sensing?



# Thatcham AD Assessment Program

Rating AD car technology



Audi A6



Nissan Leaf



BMW 5 Series



Tesla Model S



Mercedes S-Class



Volvo V60

# Automated Driving

Consider the Consumer

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- UK Gov wants to encourage the adoption of AV's – AEVB. Potential to further reduce road casualties
- Potential that consumers misunderstand or abuse the systems leading to increased road crashes
- Lack of trust in automation may lead to consumers rejecting these systems

***Could AV's become the next GM?***





# Communicating our position

- **250 pieces of coverage in week since launch with a reach of more than 550 million**
- Pre-launch interviews/demos with BBC News, WIRED, Guardian, Insurance Times and Press Association
- Key broadcast coverage incl BBC Breakfast, Radio 4 Today programme, BBC National and regional news updates, plus BBC Online
- Covered in more than **20 countries** around the world, across national and technology media, especially within US
- Over **320K video views** on YouTube and social channel plus tens of thousands of social posts/commentary
- Overarching sentiment across all media is that terminology needs to change

## Car insurers warn on 'autonomous' vehicles

**BBC NEWS**

Most watched

- ▶ This car is on Autopilot. What happens next?
- ▶ SNP MPs walk out of Prime Minister's Questions

**Car insurers warn on 'autonomous' vehicles**

BBC RADIO 2 BBC RADIO 3 BBC RADIO 4 BBC RADIO 5 live



## WIRED The Telegraph

ROBOCARS

Somebody's Finally Grading Autopilot Systems the Right Way

JACK STEWART

'Automated' cars put drivers in danger by encouraging them to take their eyes off the road, insurers warn

The Guardian Motorists 'are being misled by autonomous driving aids' - report

## MailOnline

Car makers told to stop claiming vehicles are 'self-driving': Drivers crashing because they are too reliant on technology which is only partly automated

Manufacturers urged to stop claiming cars are 'autonomous'

i News

## THE Sun

DELUDING DRIVERS How 'autonomous' cars are misleading motorists and making British roads dangerous



## FINANCIAL TIMES

Selling an unintelligible dream at Tesla (an update)

## INDEPENDENT

Makers warned about risk of giving wrong impression with 'autonomous' car claims

# Assisted Driving

Is the driver required?



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