

Evaluating the Impact of Autonomous Driving Technologies on Claims Frequency, Claims Severity and Claims Management

Presentation from Thatcham UK



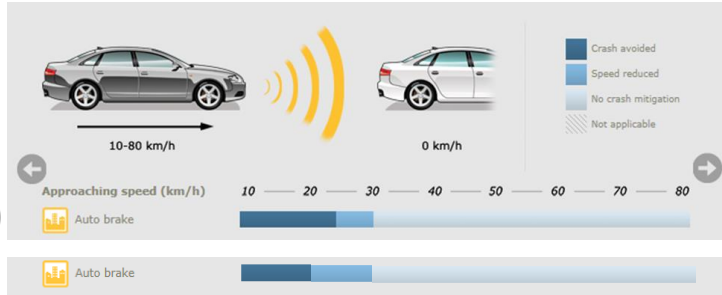
AEB: Should It Be Mandatory...?

- Euro NCAP see a **38% overall reduction in real-world, rear-end crashes** for vehicles fitted with low speed AEB compared to a sample of equivalent vehicles with no AEB
- Thatcham Research – now a world leading reference in AEB and ADAS system functionality and effectiveness

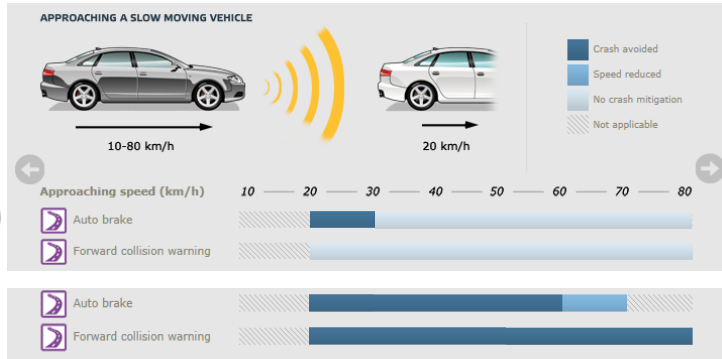
AEB Testing & Insurer Effect

Testing

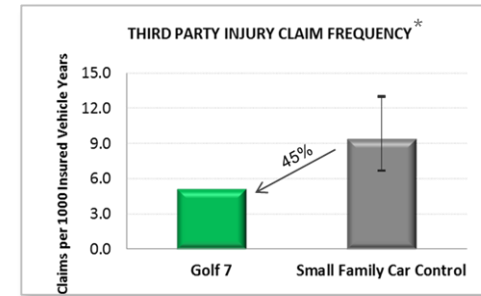
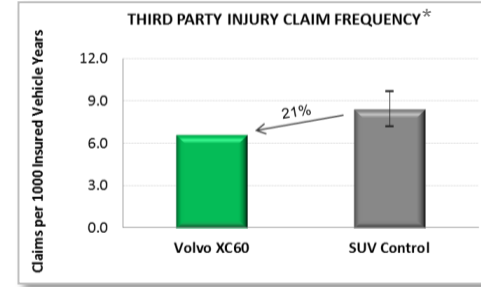
Low Speed



High Speed



Claims Data



*All Crashes

Euro NCAP

Rating requires active safety

Nissan Qashqai
1.5dCi Acenta, LHD



	Adult	Child	Pedestrian	Safety Assist	Overall
Total Score	88%	83%	69%	79%	82%
★★★★★	80%	75%	60%	65%	75%
★★★★☆	70%	60%	50%	55%	65%
★★★☆☆	50%	30%	40%	30%	50%
★★☆☆☆	30%	25%	20%	20%	40%
★☆☆☆☆	20%	15%	10%	10%	30%
☆☆☆☆☆	0%	0%	0%	0%	0%

Renault Megane
1.5dCi 'Life', LHD



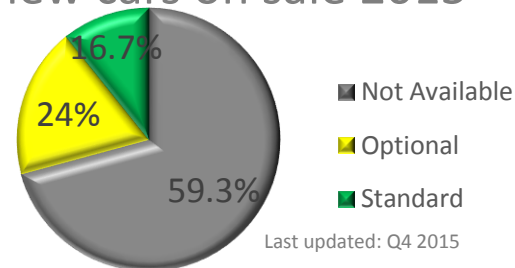
	Adult	Child	Pedestrian	Safety Assist	Overall
Total Score	83%	78%	60%	48%	73%
★★★★★	80%	75%	60%	65%	75%
★★★★☆	70%	60%	50%	55%	65%
★★★☆☆	50%	30%	40%	30%	50%
★★☆☆☆	30%	25%	20%	20%	40%
★☆☆☆☆	20%	15%	10%	10%	30%
☆☆☆☆☆	0%	0%	0%	0%	0%

The Safety Assist score limits the overall rating

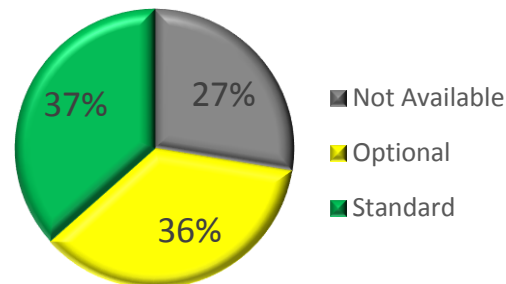
Fitment

Influencing standard fitment

All new cars on sale 2015

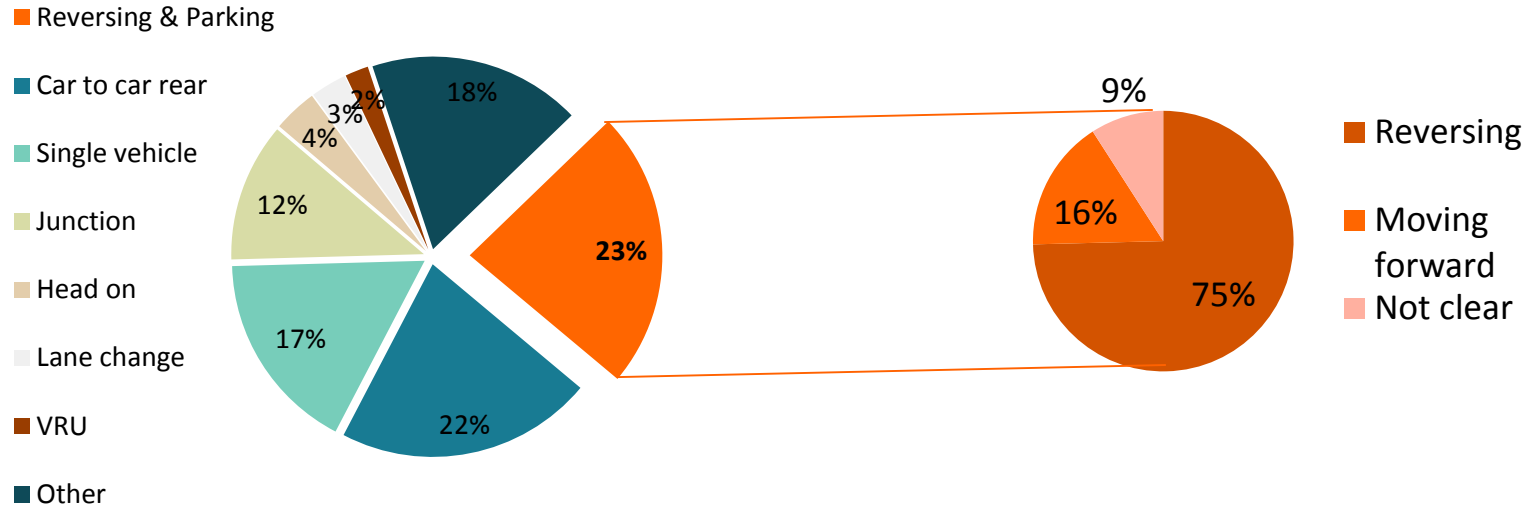


Cars launched in 2015



Vehicle Evolution – Parking Collisions

- In the UK, 23% (725 out of 3,107 cases) of claims related to parking collisions
- 71% of parking collisions (516 out of 725 cases) occurred during reversing



Vehicle Evolution – Automated Steering

- LDW/LKA systems widespread in the market
- 20% of KSI relate to single vehicle crashes
- Sophisticated Lane Guidance Systems now available
- Run off road and across lane capabilities



■ Reversing & Parking

■ Car to car rear

■ Single vehicle

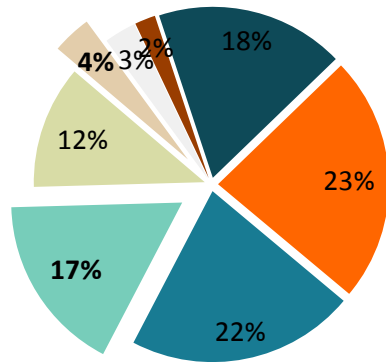
■ Junction

■ Head on

■ Lane change

■ VRU

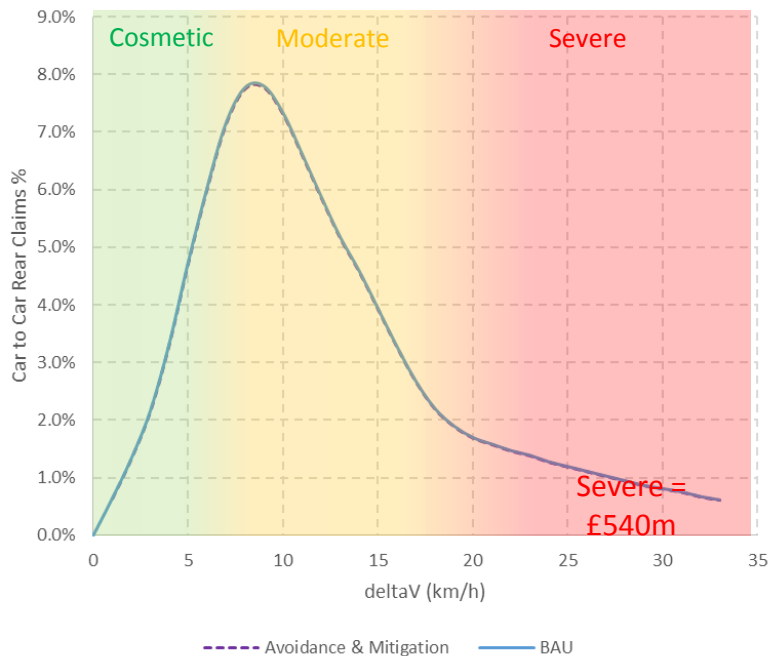
■ Other



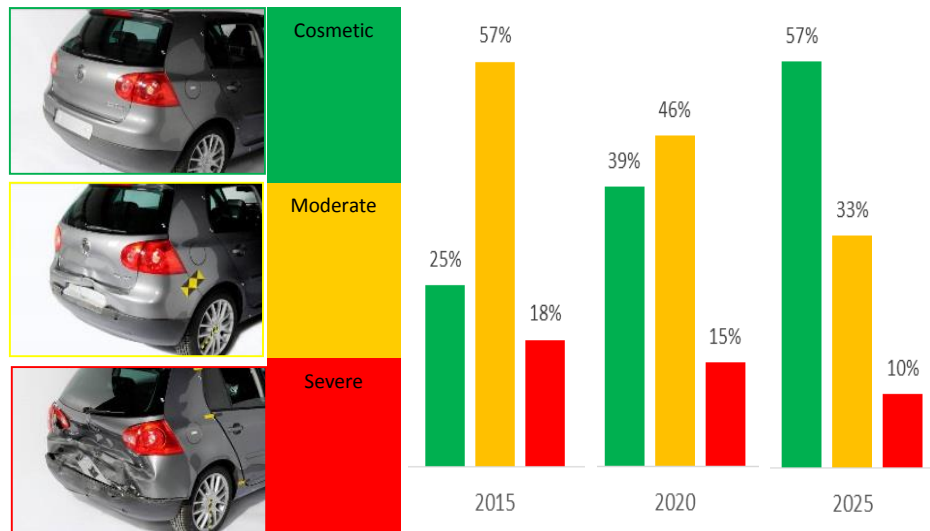
Insurance claims

Ten Year Prediction of Crash Severity

Speed Reduction in Rear-End Crashes



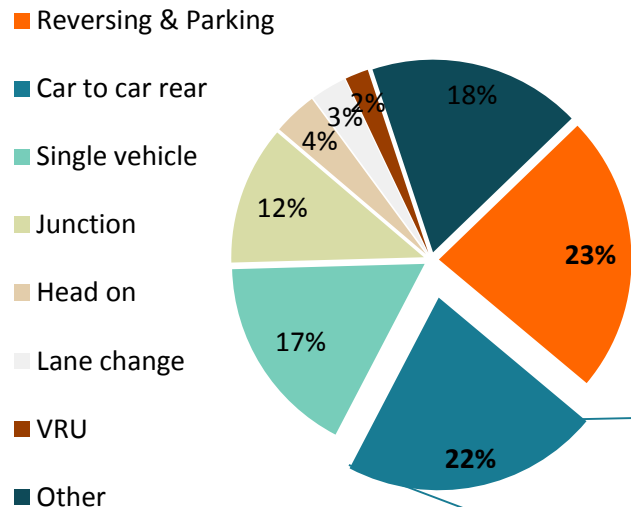
Accident Damage Distribution



Source: Kullgren A, Dose-response models and EDR data for assessment of injury risk and effectiveness studies, *Proceedings of IRCOBI conference*, Bern, Switzerland, 2008. Strandroth J, et al. Head-on collisions between passenger cars and heavy goods vehicles: Injury risk functions and benefits of Autonomous Emergency Braking, *Proceedings of IRCOBI conference*, 2012.

Delta V = change of energy in a crash (not approach speed). Simple e.g. car travelling at 30km/h hits a stationary car; delta V is approx. 15km/h; complex calculation allows for many factors including vehicle stiffness, rebound etc.

Addressing Crash Types: What Next?



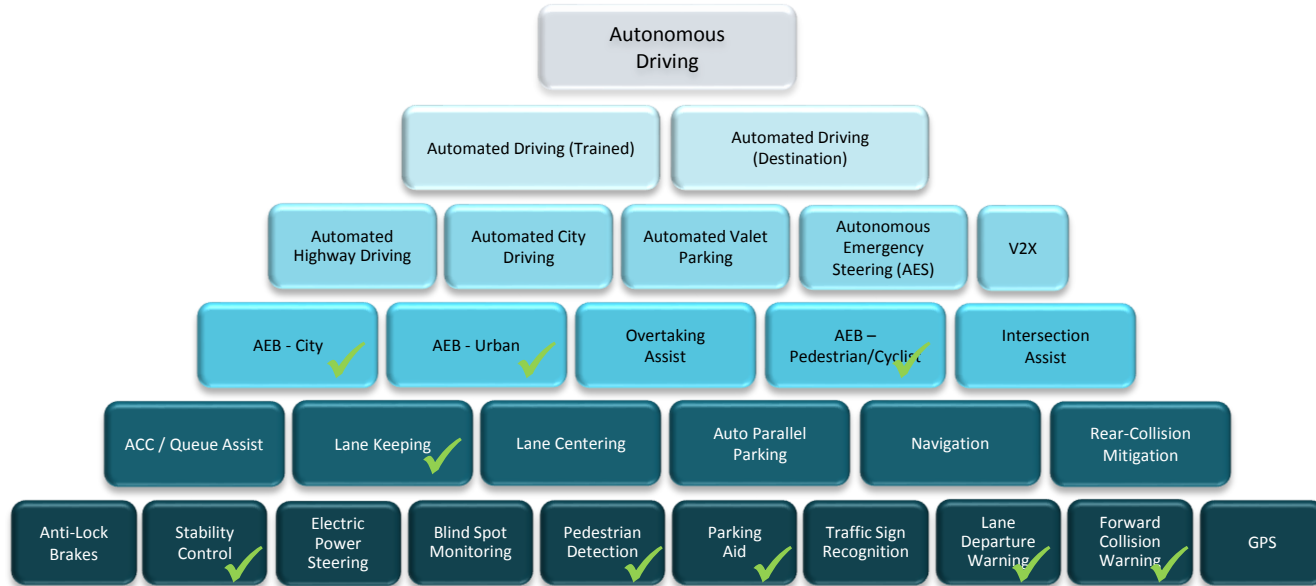
- But what about other crash types?
- ADAS systems will address other crashes too...
- What about Automated Driving – here by 2020?



AEB effect on
Car-to-Car Rear

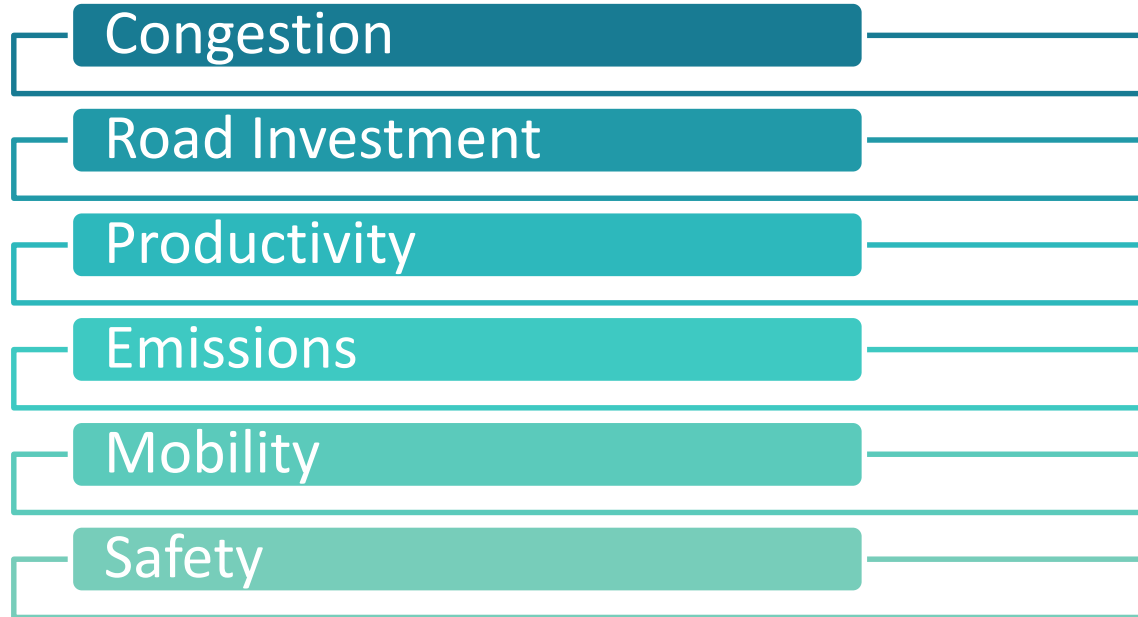
ADAS Building Blocks

Thatcham Influence on Testing Procedures – *towards Automated Driving*



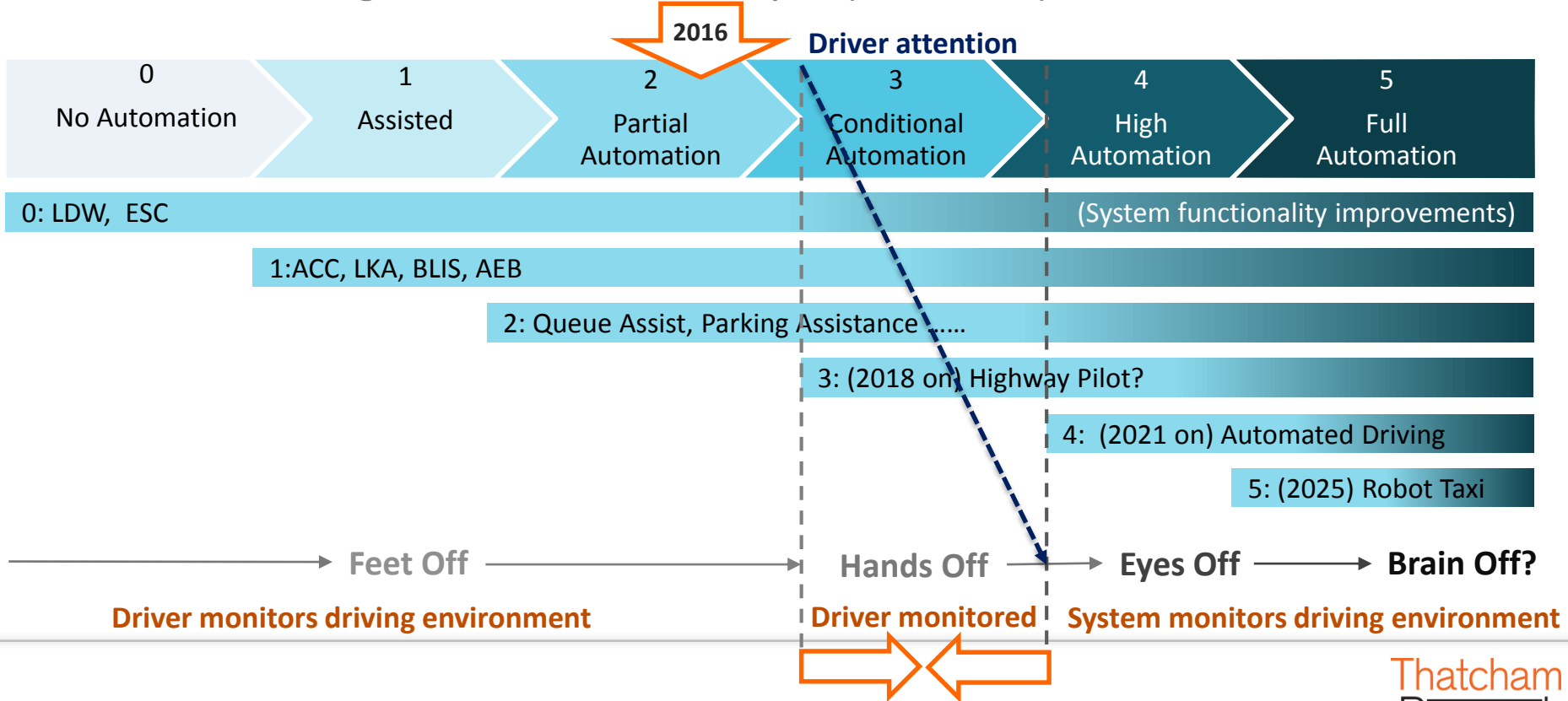
Why Automated Driving

Societal Advantages of Automated Driving





The Autonomous Car Timeline

International Categorisation of Autonomy – *open to interpretation*



Regulatory Procedures – Steering (R79) -Today

Advanced Driver Assistance Steering System (ADASS)		Autonomous Steering
Corrective Steering (CSF)	Automatically Commanded Steering (ACSF) 	
<ul style="list-style-type: none"> Driver in primary control 	<ul style="list-style-type: none"> Driver in primary control 	<ul style="list-style-type: none"> Driver not necessarily in primary control
<ul style="list-style-type: none"> Discontinuous control, for a limited duration 	<ul style="list-style-type: none"> Continuous control 	
<ul style="list-style-type: none"> Changes to the steering angle To maintain the desired path of the vehicle or to influence the vehicle's dynamic behaviour. 	<ul style="list-style-type: none"> Actuation of the steering system To assist the driver in following a particular path, in low speed manoeuvring or parking operations 	<ul style="list-style-type: none"> Control system that causes the vehicle to follow a defined path or to alter its path
<ul style="list-style-type: none"> Signals initiated on-board the vehicle  	<ul style="list-style-type: none"> Signals initiated on-board the vehicle 	<ul style="list-style-type: none"> Signals initiated and transmitted from off-board the vehicle



Annex 6

Regulatory Procedures – R79 (the 2018 Challenge)

ACSF Category (replacing SAE 0-6)



A **Low speed maneuvering** [Parkassist / Remote Controlled Parking]

B **Lane keeping**

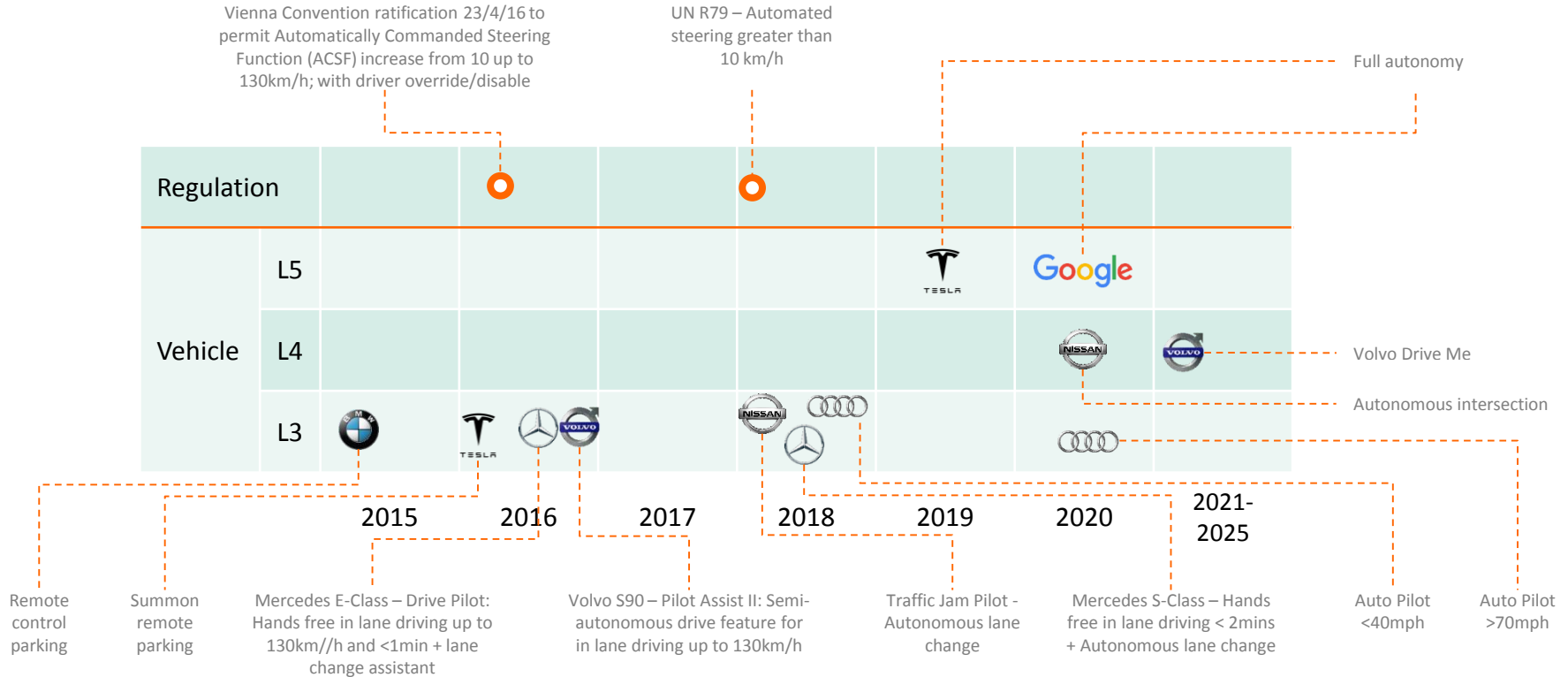
C **Lane change** [Lane change commanded by the driver]

D **Lane change** [System indicates possibility of a lane change, driver confirms]

E **Lane change** [Lane changes are performed automatically by the system]



Vehicle Timeline



Reg 79 Timeline

Process

- R79 will enable “official” Automated Driving up to 81 mph – Spring 2018
- Only divided highways – motorways
- R79 proposed as a level 2 “driver support system” only
- Liability remains with the driver
- Driver will be monitored (somehow)
- Driver will be required to periodically “sign in” – maybe only every 15 mins

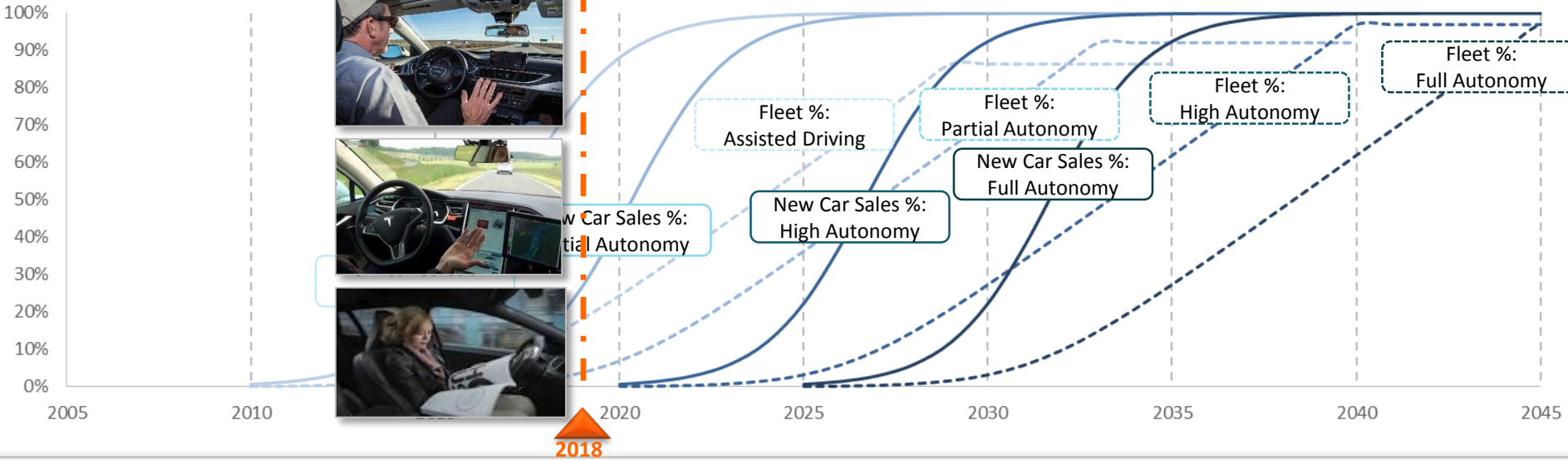
Reg 79 Timeline

Risks

- Drivers will be unclear what an “auto pilot” is – do I do anything?
- Are they in-the-loop or not?
- If the driver only has to monitor system functionality why buy the system
- Drivers today use their capacity in the driving process – the easier the driving task the more they will become distracted – mobile phones? – and the longer to return into the loop
- Drivers will explore the capacity of the system – to the limit
- Systems will still only have 3-5 seconds of vision – not enough to get back into the loop and react
- Additional crash risks may emerge as drivers adapt
- HOWEVER – overall systems will be beneficial – crash rates reduce - *super AEB*

The Autonomous Car

Levels of Autonomy – When will it happen?

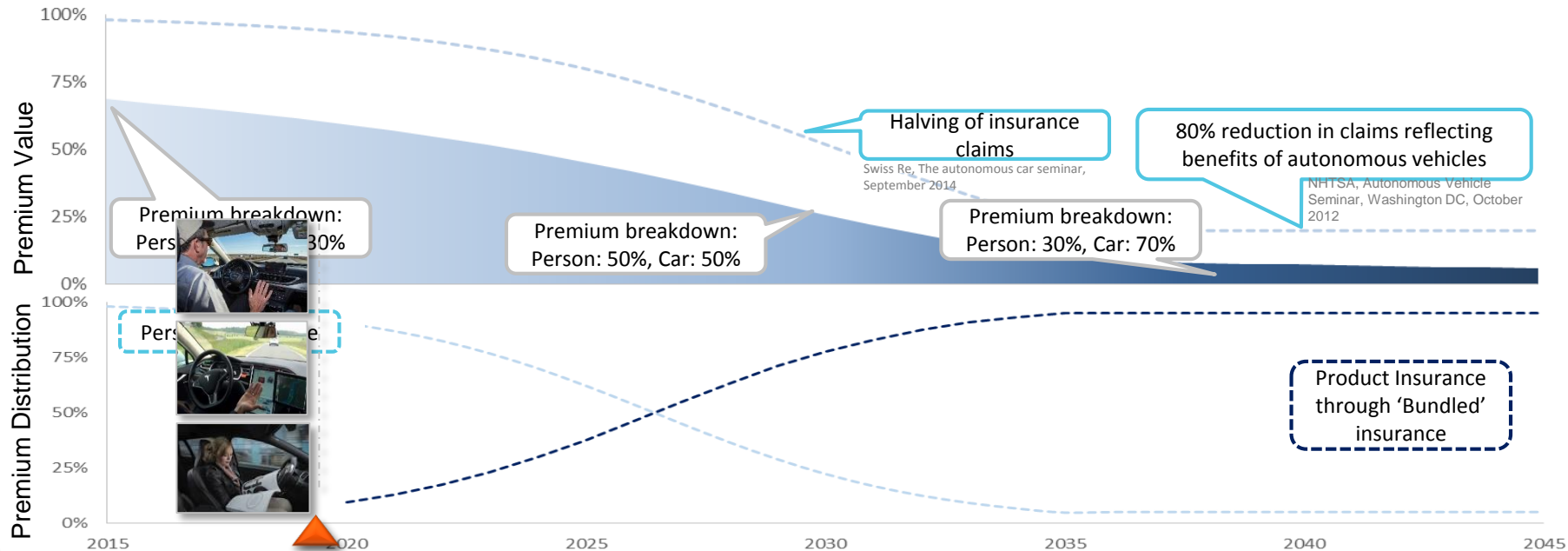


The Autonomous Car

Insurance Model Risks for the Autonomous Car:
Premium Value & Personal to Product Liability



Insurance Model for the Autonomous Car: Premium Value & Personal to Product Liability



Evaluating the Impact of Autonomous Driving Technologies on Claims Frequency, Claims Severity and Claims Management

