



# The Eyes have it

# Driver Monitoring Systems (DMS)



Indirect – inferred drowsiness

Time

Steering and lane position



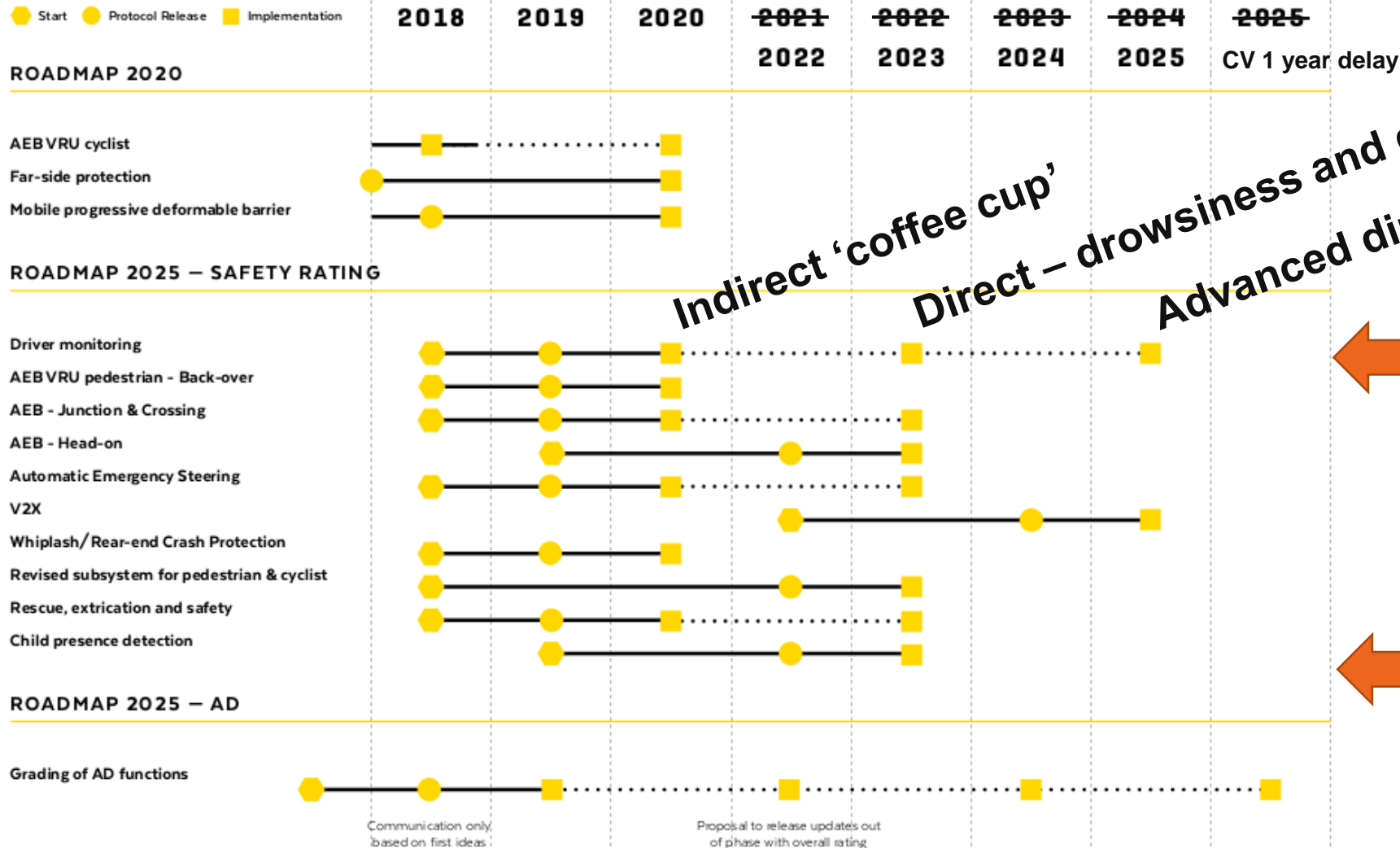
Direct – real-time drowsiness and attentiveness

Camera/radar



Direct advanced – driver cognisance

# Euro NCAP roadmap





# Impairment and distraction

UK STATS19 (2018), all RTCs

> Contributory factor in 26% of UK fatal accidents

> Increase in distraction crashes 2014-18

> Half are alcohol/drug related

> Remainder split between sudden illness, fatigue and distraction

Contributory factor reported in accident	Fatal accidents		Serious accidents		Slight accidents		All accidents	
	Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent
<b>Impairment or distraction</b>	<b>390</b>	<b>26.8</b>	<b>3,089</b>	<b>16.6</b>	<b>9,137</b>	<b>14.1</b>	<b>12,616</b>	<b>14.8</b>
Driver/Rider impaired by alcohol	117	8.0	1,186	6.4	3,048	4.7	4,351	5.1
Driver/Rider impaired by drugs (illicit or medicinal)	80	5.5	404	2.2	837	1.3	1,321	1.6
Fatigue	62	4.3	339	1.8	1,127	1.7	1,528	1.8
Uncorrected, defective eyesight	3	0.2	53	0.3	140	0.2	196	0.2
Driver/Rider illness or disability, mental or physical	110	8.0	584	3.1	1,395	2.2	2,089	2.5
Not displaying lights at night or in poor visibility	4	0.3	87	0.5	201	0.3	292	0.3
Rider wearing dark clothing	6	0.4	88	0.5	314	0.5	408	0.5
Driver using mobile phone	25	1.7	92	0.5	306	0.5	423	0.5
Distraction in vehicle	68	4.7	540	2.9	2,039	3.1	2,647	3.1
Distraction outside vehicle	17	1.2	236	1.3	984	1.5	1,237	1.5

> 29% of HGV drivers admitted falling asleep at the wheel (Unite)

# Availability

- › BMW ACC with Driver Attention Camera
- › DS Driver Attention Monitoring
- › Mazda Driver Monitoring Camera
- › Subaru Driver Monitoring System



# Occupant Status Monitoring Group

- Develop rating procedures for OSM including DMS
- Challenges – age, sex, complexion, eye aperture, make-up, eyewear, face coverings, seating position, lighting and shadowing, secondary activities (chewing, singing, laughing)...
- Vehicle manufacturer self-declared dossier – features, functionality and performance
- Pin-prick confirmation tests for inattention
- Evaluations under development
- Integral part of ALL 5 star ratings
- May include Commercial Vehicles



# Driver Monitoring Tech and Testing



Inattention



Drowsiness



# Commercial vehicles

- Encourage adoption on vans and trucks
- Long haul – fatigue
- Multi-drop – inattention
- Euro NCAP Commercial Vehicle Working Group
- Road Map to encourage adoption via the City Safe Certificate concept





# DMS - What Car? Safety Award

**WHATCAR?** Reviews ▾ Buy a car ▾ Sell a car ▾ Finance & own a car ▾ Best cars & news ▾ Electric & hybrid Vans Tools ▾

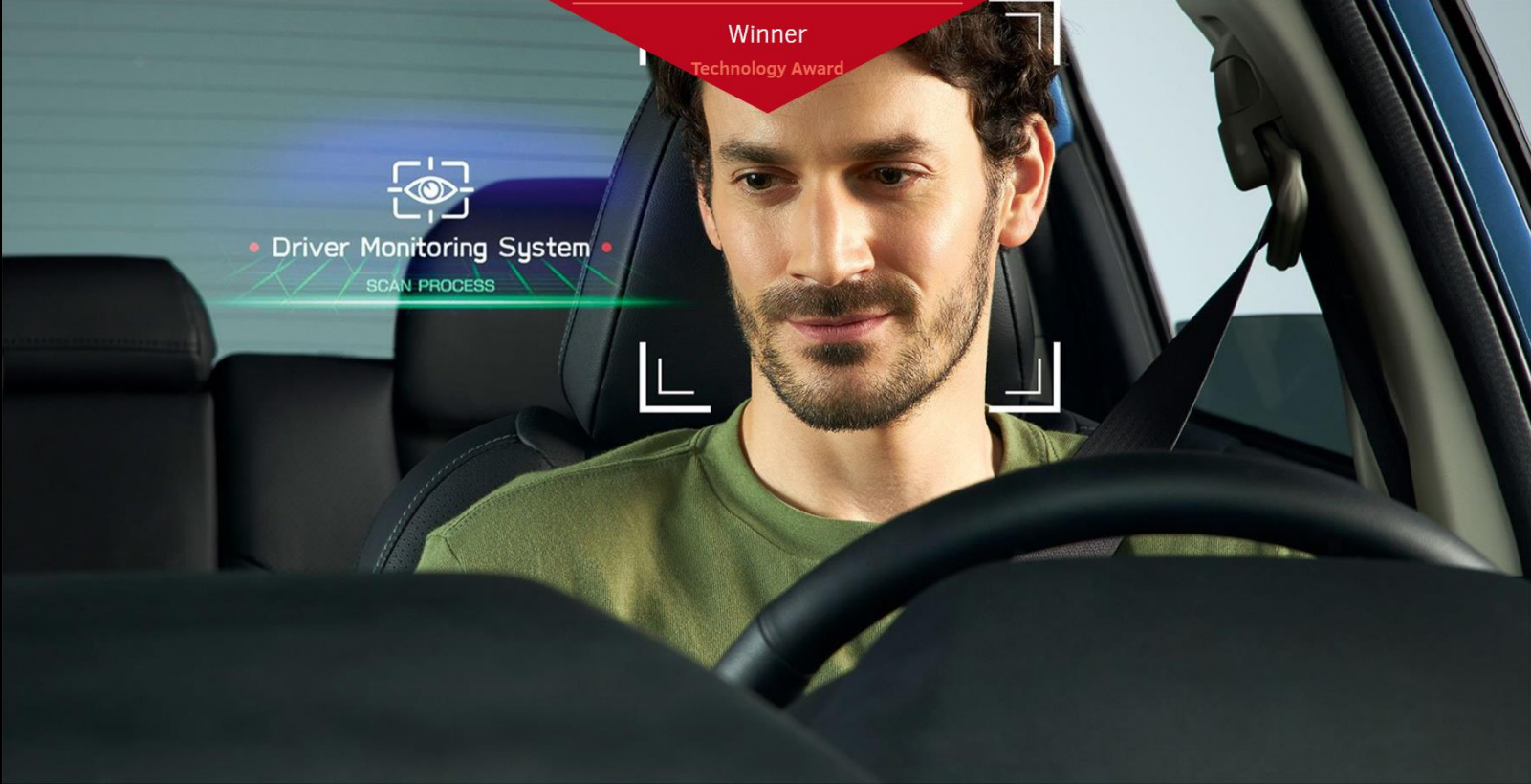
My offers Account

Car Of The Year 2020  
Best Technology Award

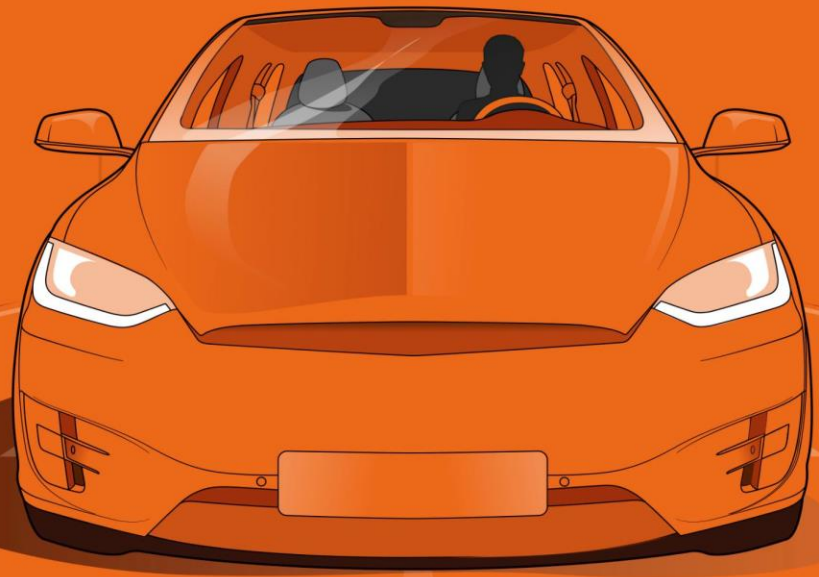
**Subaru Driver Monitoring System**

Sponsored By **Thatcham Research**  
SAFER CARS. FEWER CRASHES

Winner  
Technology Award



*Best Technology Award* Winner



Sustainability



User Support



Collision Data



Location Specific



Cyber Resilience



Safe Driving



Collision Protection



User Monitoring



Ending Automation



Secondary Tasks



# SAFE Automation

Using Automation



Starting Automation



# Summary

- Indirect and direct Driver Monitoring Systems (DMS)
- Sensitive to driver inattention and drowsiness
- Contributory factor in 26% of UK fatal RTCs
- Euro NCAP assessing direct systems from 2023
- DMS critical to safe adoption of Assisted/Automated
- Evaluation tests being developed – self assessment with independent validation
- Encourage adoption on vans and truck – Euro NCAP CV WG







Thank you

Thatcham  
Research

