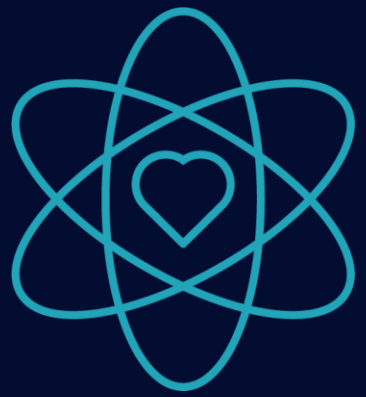

seeing machines
GUARDIAN
Raising the bar in driver monitoring
Michael Wallace
Head of Product - Aftermarket
20 November 2025

ABOUT SEEING MACHINES



OUR MISSION
ZERO TRANSPORT FATALITIES

OUR PURPOSE
TO GET EVERYONE HOME SAFELY

20+ YEARS EXPERIENCE
AND SCIENTIFIC RESEARCH

~4 MILLION
VEHICLES WORLDWIDE

20+ BILLION
KILOMETRES TRAVELLED

seeing machines | GUARDIAN

KEY BRANDS WE WORK WITH

seeing machines | GUARDIAN

WHAT IS GUARDIAN?

Guardian is proactive safety system that protects drivers in real time, boasting unparalleled drowsiness and distraction detection, coupled with superior fatigue intervention.

- Uses artificial intelligence (AI) to monitor a drivers' attentiveness
- Detects driver fatigue and distraction
- Provides real-time in-cabin alerts to warn the driver
- Notifies fleet managers within minutes

seeing machines | GUARDIAN

GUARDIAN IN-VEHICLE SYSTEM

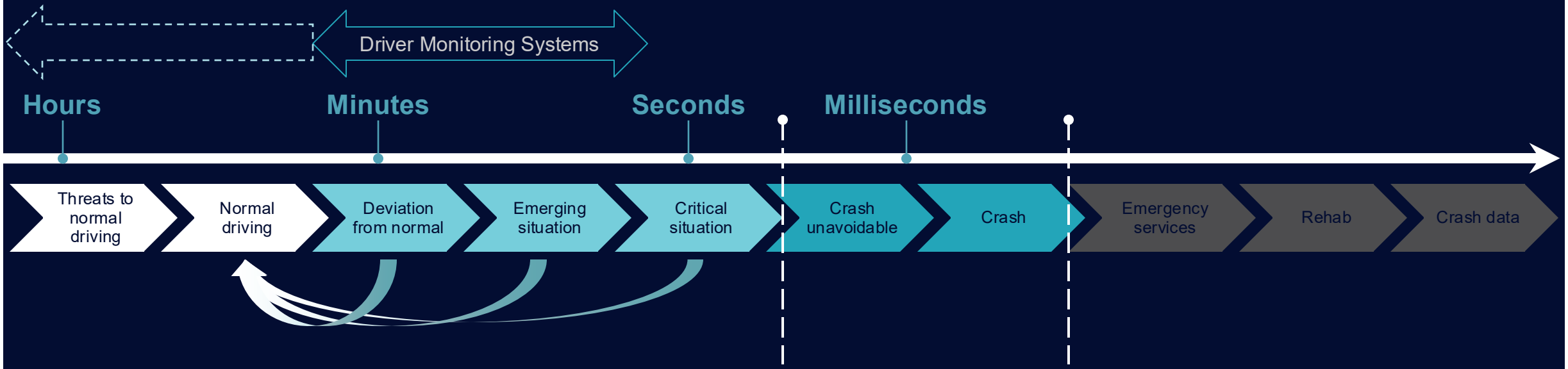
IN-CAB SENSOR

FORWARD FACING CAMERA

VIBRATION MOTOR

seeing machines | GUARDIAN

A SAFETY VISION THROUGH A SAFETY LENS



Promote return to normal driving

Advanced Driver Assistance

Impairment (fatigue and non-fatigue)
Driver engagement and take-over
Visual and cognitive distraction
Intelligent HMI implementation

Promote energy reduction

Advanced Safety

Supporting smart airbag and restraints

Promote post-crash care

Crash Response

Occupant status for emergency services

* Fitzharris, M., Corben, B., **Lenne, M. G.** et al. (2022). Understanding Contributing Factors for Serious Injury Crashes Using Crash Chain Analysis: ECIS Report 3 (MUARC Report 345). Available at: https://www.monash.edu/muarc/research/research-areas/transport-safety/enhanced-crash-investigation-study/ecis-reports

20 November 2025

seeing machines | GUARDIAN

HOW IT WORKS

EVENT DETECTED

ALERTS ACTIVATED

IN-VEHICLE SYSTEM
real-time alerts

EVENT ANALYSED

ACTION INITIATED

GUARDIAN CENTRE
24/7 monitoring and analysis

REPORTING AND EDUCATION

GUARDIAN LIVE
secure online portal

seeing machines | GUARDIAN

THE EFFECTIVENESS OF HUMAN INTERVENTION

Event detected

Alerts activated

66%

When drivers received in-cab alerts, it reduced fatigue events by 66% relative to when the monitoring device silently recorded events but didn't alert the driver.

Event detected

Alerts activated

Action initiated

94%

When in-cab alerts were combined with contacting the shift manager, fatigue events reduced by 94%.

Fitzharris, M., Liu, S., Stephens, A. N. & Lenné, M. G. (2017). The relative importance of real-time in-cab and external feedback in managing fatigue in real-world commercial transport operations. *Traffic Injury Prevention*, 81(S1), S71-78.

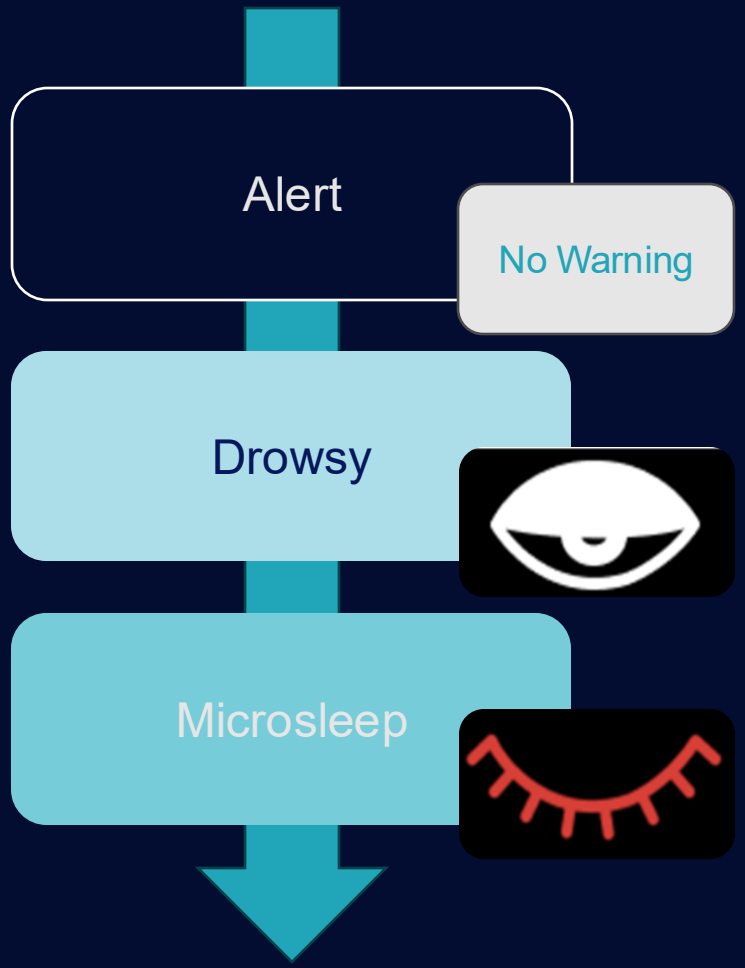
seeing machines | GUARDIAN

FATIGUE DETECTION

- Based on the Karolinska Sleepiness Scale (KSS)
- Continuously monitors driver’s drowsiness level
- Intervenes in real time when at a dangerous level of fatigue risk
- Microsleep detection and alerts (visual, audio, haptic)

seeing machines | GUARDIAN

GUARDIAN GEN 3 DROWSY ALGORITHM



Drowsy detection

- Visual alert & audible tone for the driver
- Designed to detect & inform the driver before they start to microsleep
- Vehicle risk tile updates within Guardian Live
- Meets European Union General Safety Regulations(DDAW) https://ec.europa.eu/docsroom/documents/50774

Microsleep detection

- Visual, haptic and audible tone for the driver
- Designed to be more aggressive to wake the driver up
- Initiates the fatigue intervention plan from the guardian centre
- Works in conjunction with drowsy detection to reduce false alerts

seeing machines | GUARDIAN

DROWSINESS DETECTION

seeing machines | GUARDIAN

GUARDIAN GEN 3 DISTRACTION ALGORITHM

Distraction based on gaze direction

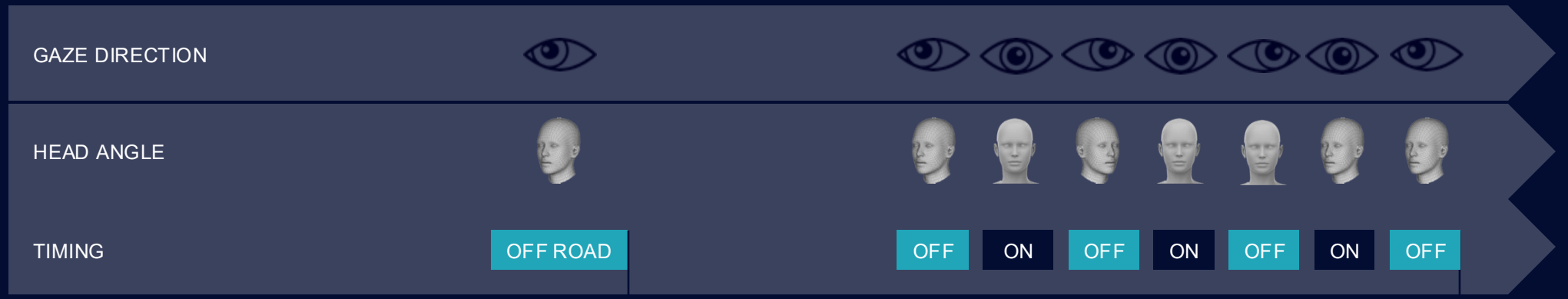
- Gen 3 watches and tracks the drivers eye gaze, detecting distraction by how much time they have been looking off road.
- Compared to how we detected distraction in Gen 2, along with the improved optics and processing, this yields significant improvements to performance.
- Guardian is the first aftermarket driver monitoring system to offer VATS (Attention Sharing) detection
- The Guardian Gen 3 passes the EU GSR ADDW
- EUR-Lex - C(2023)4523 - EN - EUR-Lex
- VATS is Euro NCAP compliant
- Euro NCAP Assessment Protocol - SA Safe Driving - v10.4

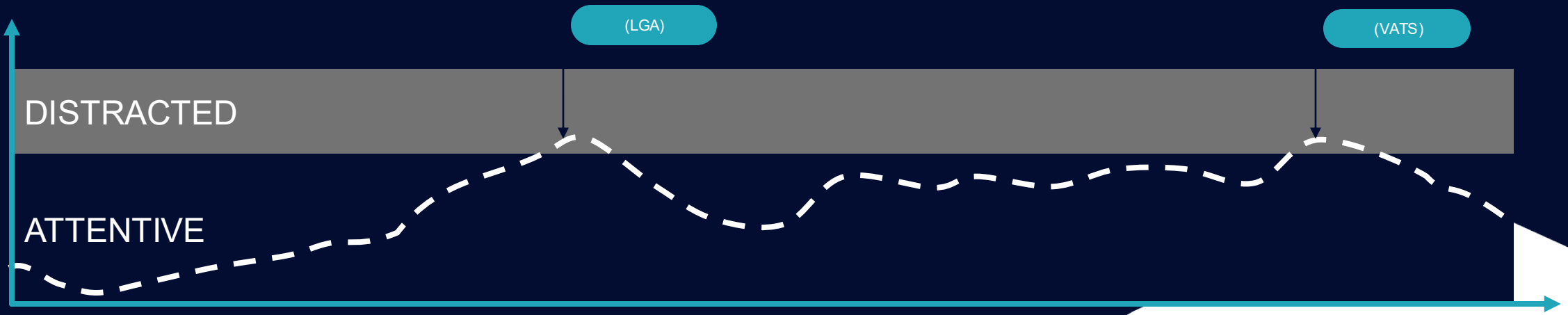
Distraction

Long Glance Away	Attention Sharing
Driver looking off road for longer than 4 seconds	10 seconds out of 30 have been off-road

seeing machines | GUARDIAN

DISTRACTION DETECTION



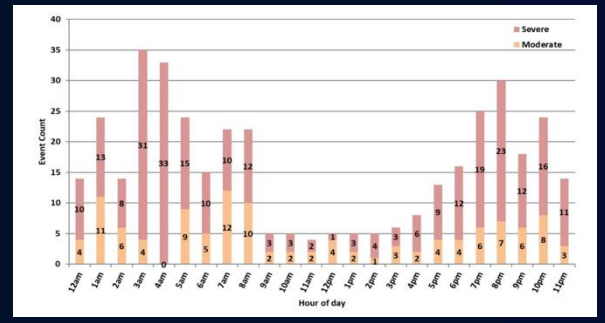


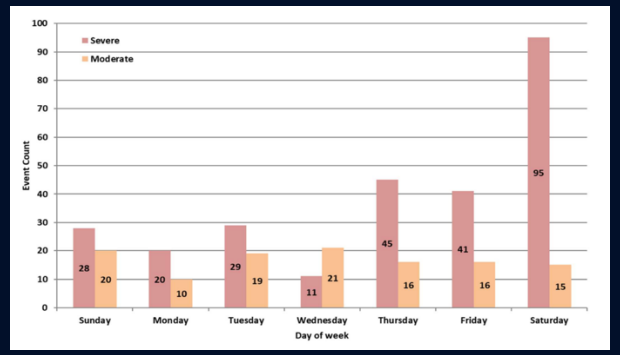
seeing machines | GUARDIAN

GUARDIAN

GUARDIAN LIVE DATA

- Location and fatigue risk for every vehicle
- Time, location and duration of events
- Video of detected events
- Vehicle information, including last contact and known location
- Daily digest and monthly insight reports



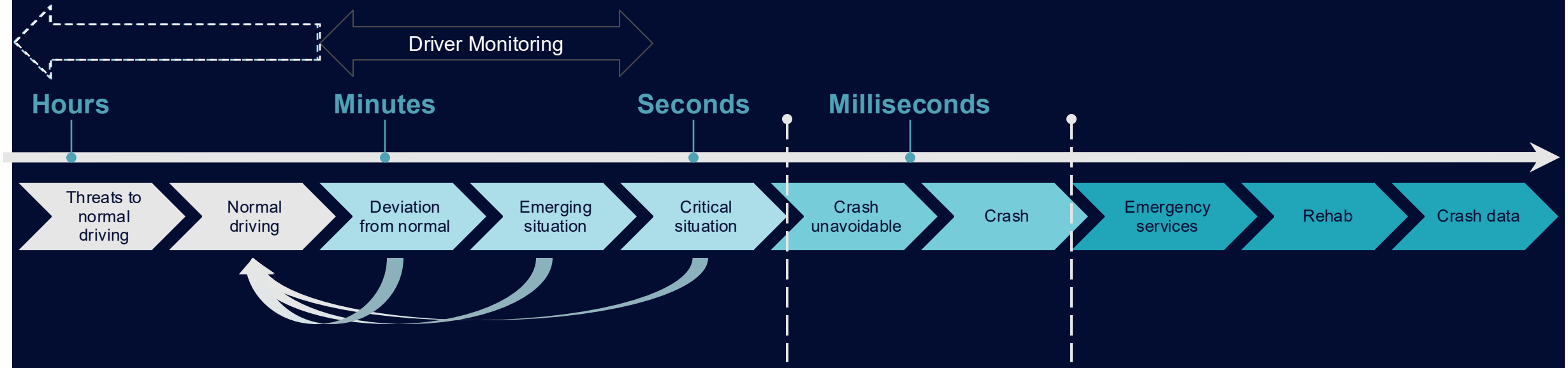


DIAN

WHAT IS THE FUTURE?

- Alcohol Impairment detection
- Overall impairment detection
- Health monitoring and alerting
  - Respiratory rate
  - Heart rate
  - Body temperature
  - Comparison over time (predict you might be getting unwell)
- Mood detection
  - Happy, sad, angry etc
- Driver scoring
  - Combining impairment data with driving behavior information
- Smarter alerting
  - Understanding driving environment to adjust alerts

A SAFETY VISION THROUGH A SAFETY LENS



Promote return to normal driving

Advanced Driver Assistance

Impairment (fatigue and non-fatigue)
Driver engagement and take-over
Visual and cognitive distraction
Intelligent HMI implementation

Promote energy reduction

Advanced Safety

Supporting smart airbag and restraints

Promote post-crash care

Crash Response

Occupant status for emergency services

* Fitzharris, M., Corben, B., **Lenne, M. G.** et al. (2022). Understanding Contributing Factors for Serious Injury Crashes Using Crash Chain Analysis: ECIS Report 3 (MUARC Report 345). Available at: https://www.monash.edu/muarc/research/research-areas/transport-safety/enhanced-crash-investigation-study/ecis-reports

20 November 2025

seeing machines | GUARDIAN

Thank you

20 November 2025