

Advancing the Next Generation of Occupant Protection

Brian Latouf

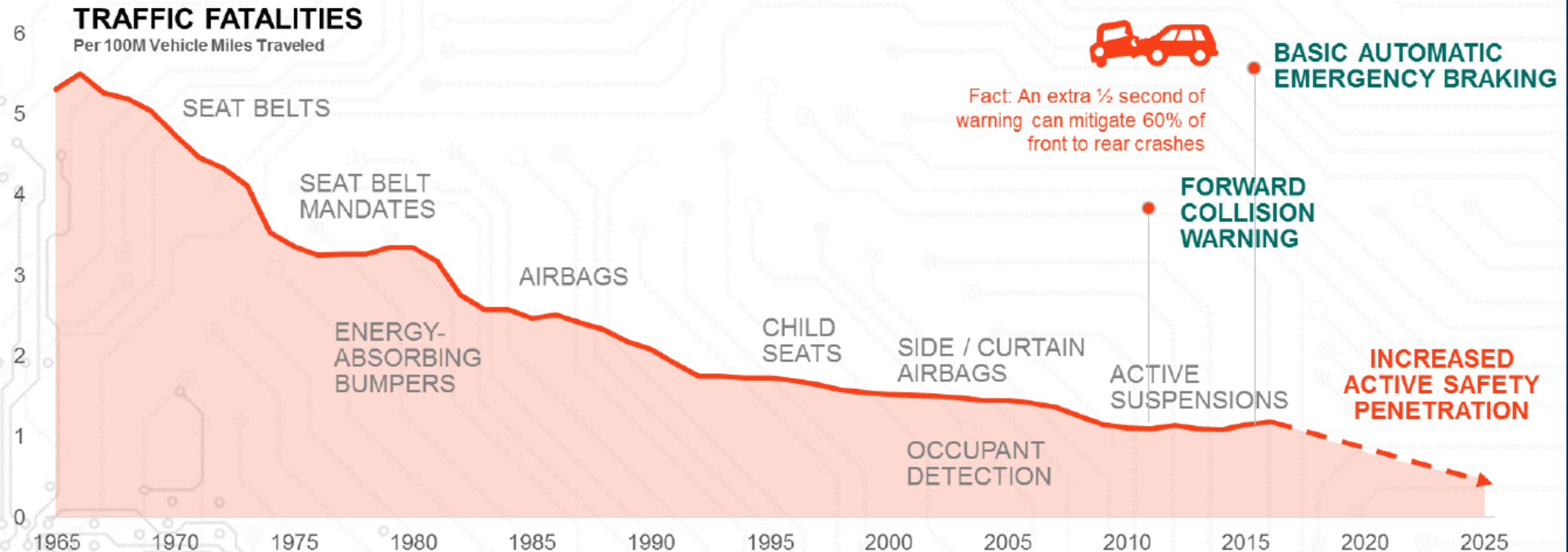
Chief Safety Officer

Hyundai Motor North America

VEHICLE FATALITIES

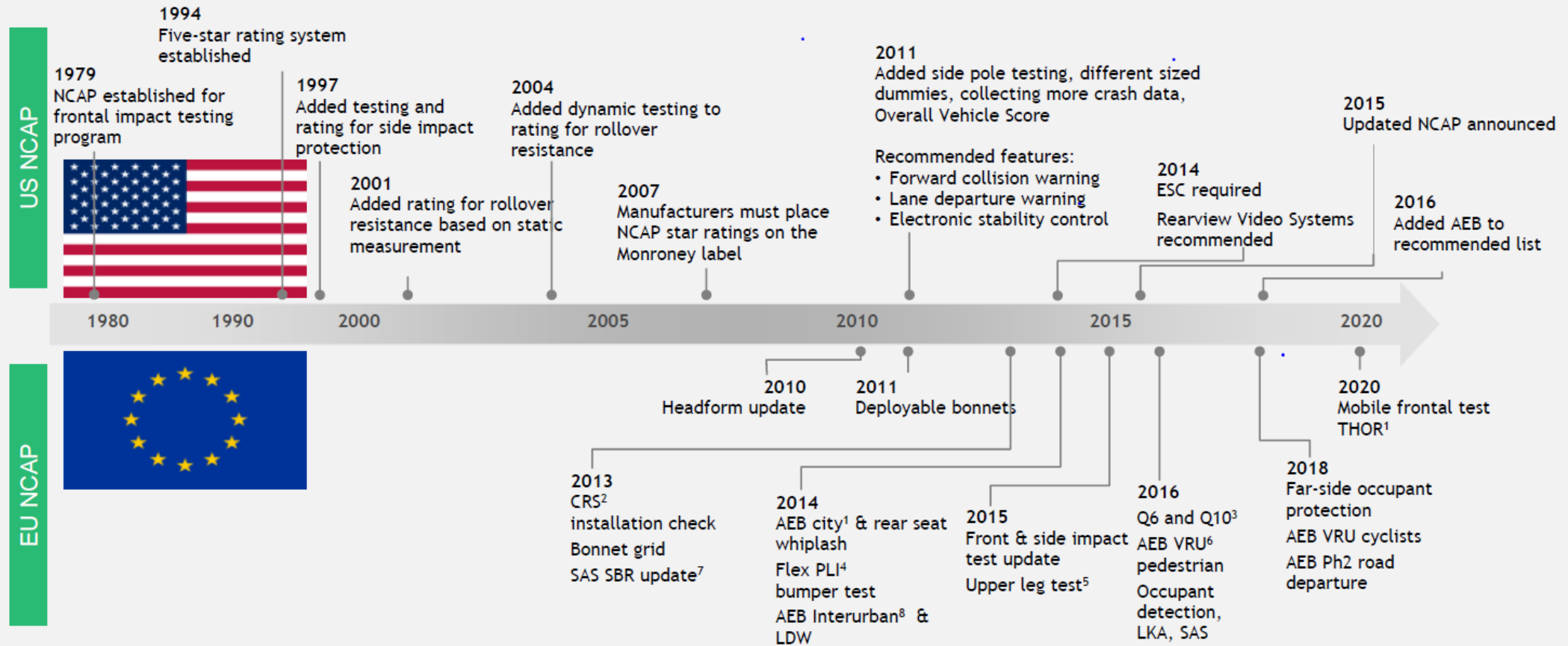
Passive Safety Reaching Its Limits

AUTOMOTIVE INDUSTRY SUCCESSFUL IN CONSTANTLY REDUCING VEHICLE FATALITIES, BUT PASSIVE SAFETY BENEFITS REACHING ITS LIMIT; ACTIVE SAFETY A CRITICAL NEXT STEP IN REDUCING VEHICLE FATALITIES



INFLUENCE OF CONSUMER METRICS

US and EU regulators pushing NCAP at rapid pace



1. Automated Emergency Braking at low speeds. 2. Child restraint systems. 3. Child dummies with advanced biomechanical and anthropometric characteristics. 4. Pedestrian Legform Impactor. 5. Pedestrian test to assess impact on upper leg and pelvis at 40km/h. 6. Vulnerable Road User or pedestrians with disabilities or reduced mobility and orientation. 7. SAS = Speed Assistance Systems (i.e. Intelligent Speed Assist), SBR = Seat Belt Reminder. 8. Automated Emergency Braking at mid/high speeds.
Source: Expert interviews, Euro NCAP website, public search

HYUNDAI/GENESIS SAFETY ACCOLADES

- Hyundai is among leaders in the industry with 10 TSP/TSP+ accolades and growing as new products are currently under evaluation with IIHS

2021 GENESIS GV80 EARNs TOP SAFETY PICK+ AWARD (March, 2021)



1. Hyundai Palisade – TSP+
2. Hyundai Nexo – TSP+
3. Hyundai Veloster with optional front crash prevention and specific headlights – TSP
4. Hyundai Sonata with specific headlights – TSP
5. Hyundai Kona with optional front crash prevention and specific headlights – TSP
6. Hyundai Tucson with optional front crash prevention and specific headlights – TSP
7. Hyundai Venue with specific headlights – TSP
8. Genesis GV80 - TSP+
9. Genesis G70 – TSP+
10. Genesis G90 – TSP+

ADVANCED SAFETY TECHNOLOGIES

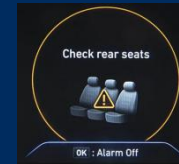
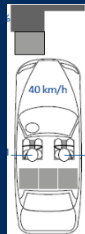
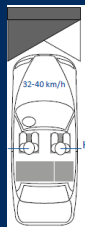
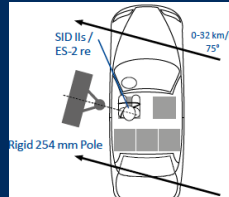
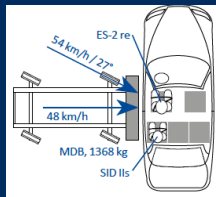
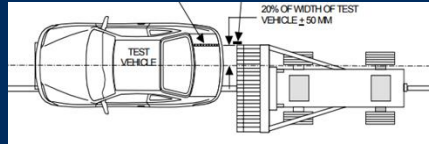
Hyundai SmartSense:

- Forward Collision-Avoidance Assist w/ Pedestrian & Bicyclist Detection
- Blind-Spot Collision-Avoidance Assist
- Rear Cross-Traffic Collision-Avoidance Assist
- Lane Keeping Assist & Lane Following Assist
- Safe Exit Warning & Rear Occupant Alert
- Driver Attention Warning
- Highway Driving Assist
- Smart Cruise Control with Stop & Go
- Parking Distance Warning – Forward & Reverse
- Parking Collision-Avoidance Assist- Reverse
- Blind View Monitor and Surround View Monitor



Refer to vehicle Owner's Manual for full descriptions.

WAY-FORWARD TECHNOLOGIES



Beyond...

ADAS & Automated Vehicles

Consumer Information



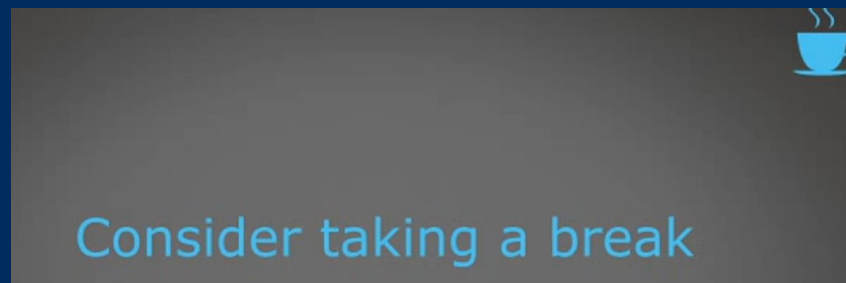
Regulation

Is there an opportunity to use learnings from current AV technologies to prevent future crashes and fatalities; automated intervention?

VALUE OF SENSING TECHNOLOGIES

Imagine a driver that becomes disengaged during a driving task – how can a vehicle help? Or a driver under the influence of drugs or alcohol?

Eyes on the road.



Automated Driver Systems...Keeping the driver safe

GENESIS ACTIVE SAFETY CONTROL

Driver Attention Warning (DAW)

To prevent traffic accidents, DAW detects careless driving pattern caused by driver's fatigue/inattentive driving and calls the driver's attention with cluster indication, alarm sound and vibration.

Sensing / Analyzing



Analysis of driver's state with chassis sensors (lane departure and lane crossing)

Pop-up warning / Audible alert



Induce drivers to rest



Leading vehicle departure notification



GV80 G80

Forward Attention Warning (FAW)

If it is determined that the driver is not looking ahead, the cluster will display a warning and sound an alert.

Sensing / Analyzing



Monitoring of driver's eye direction with interior view camera

Pop-up warning / Audible alert



Display warning messages on the cluster and output an alert sound

Available with 3D Cluster Display



GV80

Keep eyes on the road and drive carefully

전방 주시 경고 (FAW)

Hyundai Digital Key and BlueLink

Hyundai Digital Key

- Customers will be able to use their Android smartphone or a Near Field Communication (NFC) card to unlock and operate the vehicle
- Digital Key is tied to User Cloud Profiles to sync vehicle settings to the vehicles' individual drivers
- Digital keys can easily and securely be shared to other drivers to give access to their vehicle



Door lock/unlock using Android smartphone or NFC card

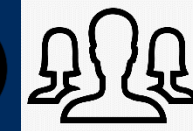
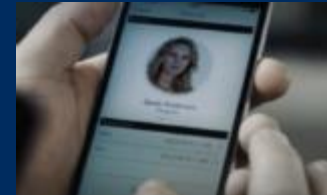


Start engine by placing smartphone or NFC card in wireless charger



SOS & Auto Collision Notification

Digital Key App can remote activate lock, unlock, and panic alarm functions






Digital Key App allows real-time sharing with up to 3 people

Set personal vehicle settings such as seat position, O/S mirror adjustment, radio, and navigation preferences

Hyundai BlueLink Enhancements



Remote Vehicle Status	Remote Start	Remote Driver Profile Management
		
<ul style="list-style-type: none">• Fuel Level• Battery Health• Window / Sunroof Open• Vehicle Health check• Unlocked Door / Open Window reminder notifications• Remote Trunk unlock / open	<ul style="list-style-type: none">• Remote Heated & Ventilated Seats• Automatic profile selection & loading• Integrated Memory System activation w/ profiles	<p>User settings are saved to Blue Link cloud and can be remotely updated and pushed to the vehicle</p> <ul style="list-style-type: none">• Navigation Setting (locations, searches)• Multimedia Settings (radio / presets)• USM Setting (cluster menu settings)• Profile name/picture <p>→ Future ability to carry over settings from one vehicle to your next new Hyundai model</p>

VALUE OF SENSING TECHNOLOGIES

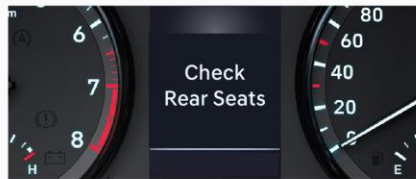
Lifesaving technology - Rear Occupant Alert & Safe Exit Assist



Rear Occupant Alert

The system monitors the rear seats using sensor that detects the movements of children and makes visual and auditory warnings to reduce child heat hazards.

- 01** It reminds drivers to check the rear seat with a message on the center cluster when deactivating and exiting the vehicle.



- 02** Ultrasonic sensor detects movement in the rear seats after the vehicle is parked and locked.



- 03** If the sensor detects the movement, it will honk the horn, flash the lights. It also sends a text message to driver's smart-phone using Blue Link telematics.



Refer to vehicle Owner's Manual for full descriptions.

SAFETY REMINDER: BUCKLE UP!



Please buckle-up!

Seat belts save lives every day. Always wear seat belts and use appropriate restraints for all child passengers.

