



AUTOMOBILE ASSOCIATION  
OF SINGAPORE

# Vehicle Safety Technologies

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*More Than A Motoring Partner*

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- Advanced vehicle safety technologies
- Conclusion



# Introduction

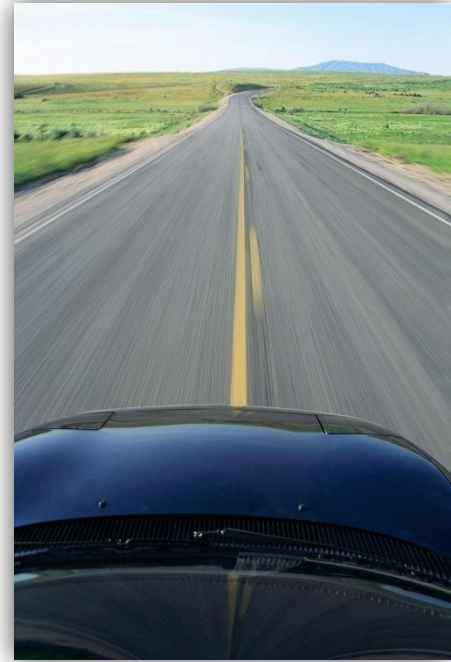
- 1.3 million people are killed on the world's roads each year
- 50 million people are injured, many disabled as a result
- In Singapore, although the number of road fatalities has reduced in 2009, we should continue to work on improving road safety  
High risk of traffic accidents: Increase in vehicle population, higher road traffic density and new car technologies leading to faster speeds

# Introduction

- Tap on technologies to enhance road safety
- These vehicle safety features/ technologies are designed to make cars safer and protect the passengers in an accident (some even prevent an accident from happening in the first place)

# Introduction

- There are numerous vehicle safety technologies on the market, and those that we are highlighting in this presentation are believed to offer significant potential benefits and are already at the advanced stage of development
- Ultimately, we hope to achieve a safer and more pleasant driving experience



# Common Vehicle Safety Features

- **Anti-lock brake system (ABS)**  
ABS helps a driver maintain steering control during emergency hard braking.
- **Air bags**  
Sensors connected to an onboard computer detect a frontal collision and trigger the air bags to cushion passengers from the crash impact.

# Common Vehicle Safety Features

- **Head restraints**

Head restraints are vital for guarding against whiplash neck injuries that often accompany a rear-end collision.

- **Safety belt**

Three-point lap-and-shoulder belts offer the most protection in a crash.





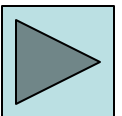
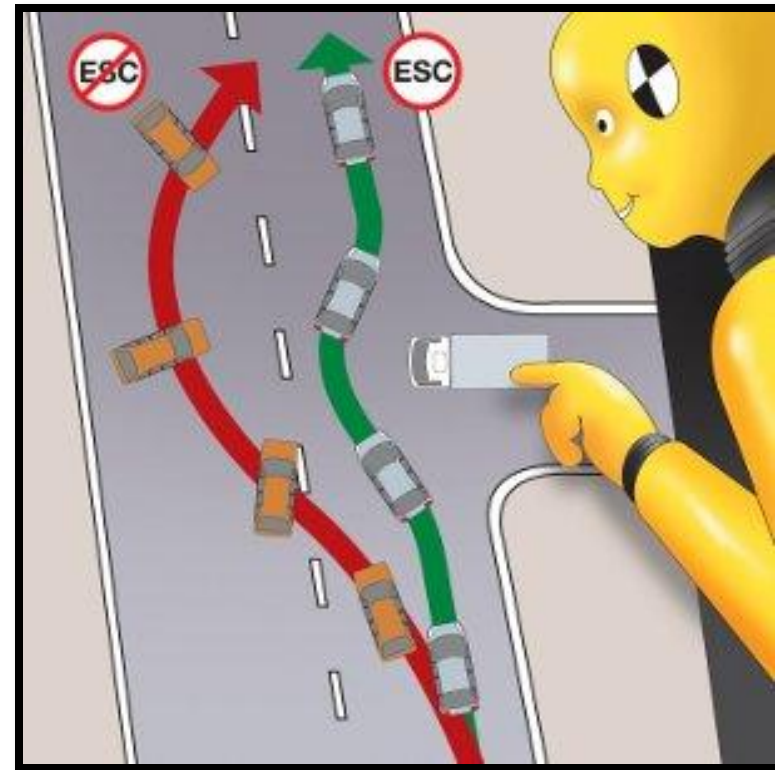
# Advanced Vehicle Safety Technologies

# Advanced Vehicle Safety Technologies

- Electronic Stability Control (ESC)
- Warning and Emergency Braking Systems
- Blind Spot Monitoring
- Lane Support Systems
- Speed Alert
- Adaptive Headlights

# Electronic Stability Control (ESC)

- Helps to avoid a crash by significantly reducing the risk of your car going into a skid during a sudden emergency manoeuvre like avoiding an obstacle in front of you
- ESC identifies this risk early and stabilises the car by braking individual wheels



# Electronic Stability Control (ESC)

- Other names:
  - ESP (Electronic Stability Programme)
  - DSC (Dynamic Stability Control)
  - VSA (Vehicle Stability Assist)
  - VSC (Vehicle Stability Control)
- Available in these car makes/models as standard or optional feature: BMW, Mercedes, Audi, Volvo, and Luxury Japanese make cars such Lexus, Toyota Camry, Honda Civic 2.0, Mazda 6, Nissan Murano

# Electronic Stability Control (ESC)

- ESC is estimated to **reduce single-vehicle crashes of passenger cars by 34% and single vehicle crashes of sport utility vehicles (SUVs) by 59%**.
- ESC is estimated to **save 5,300 to 9,600 lives and prevent 156,000 to 238,000 injuries** in all types of crashes annually once all light vehicles on the road are equipped with ESC.

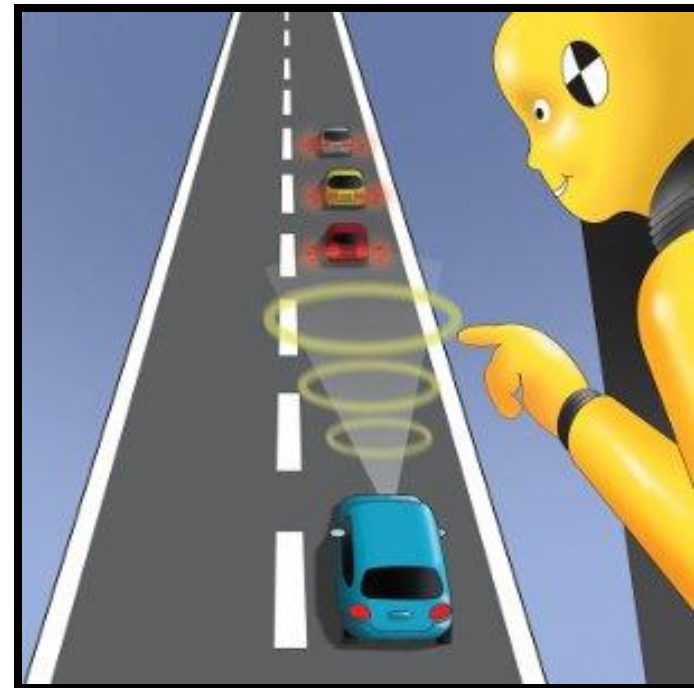
# Warning & Emergency Braking Systems

- Detect at an early stage the danger of a crash with the vehicle in front of you
- In the case of a potential collision, they warn you about the danger and when there is no reaction to the warning, the technologies activate the brakes together with systems such as seatbelt pretension to avoid or mitigate a crash



# Warning & Emergency Braking Systems

- Available in these car makes/models as standard or optional feature: Mercedes E & S Series, Volvo S80, Volvo V70, Lexus LS460
- Based on a study by the German Insurance Association in 2009, there was **28% less rear-end collisions with personal injury\***



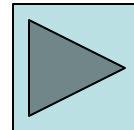
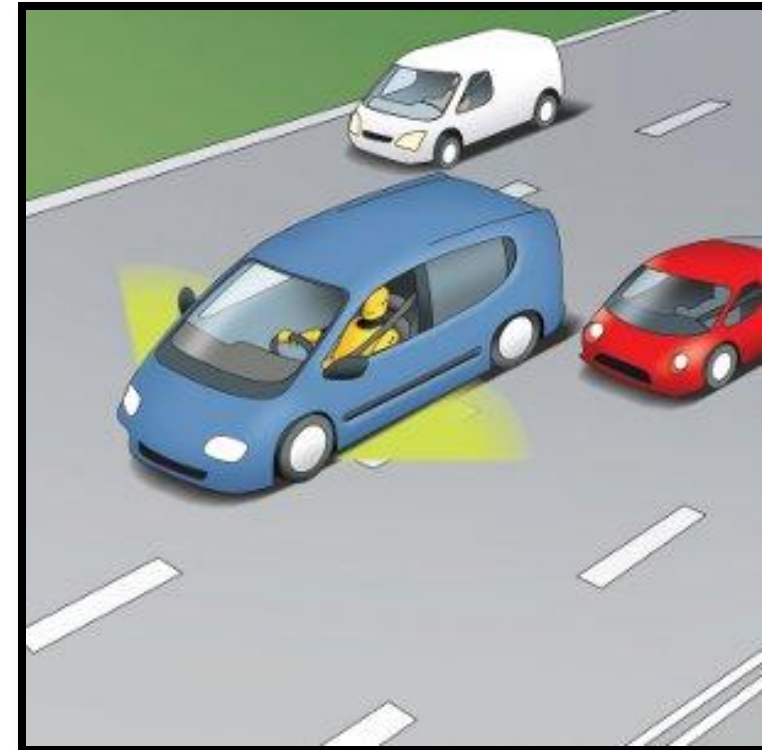
\*Source: Study by German Insurance Association, Demonstration von Notbrems und Auffahrwarnsystemen am PKW, 2009

# Warning & Emergency Braking Systems

- Studies on active braking have estimated substantial road safety benefits as a result of decreased stopping distances:
  - **Active Braking Systems can reduce stopping distances by 45%**
  - **In simulator trials**
    - **Preliminary systems were shown to reduce crash rates by 75%**
    - **Partial automatic braking prevented a collision in 70% of cases**

# Blind Spot Monitoring

- Helps you avoid a crash with a vehicle in the lane next to you by continuously screening the blind spots to the side of your vehicle



# Blind Spot Monitoring

- Available in these car makes/models as standard or optional feature: BMW 7 Series, Mercedes E & S Series, Volvo S80
- **8% less accidents when changing lanes on motorways\***

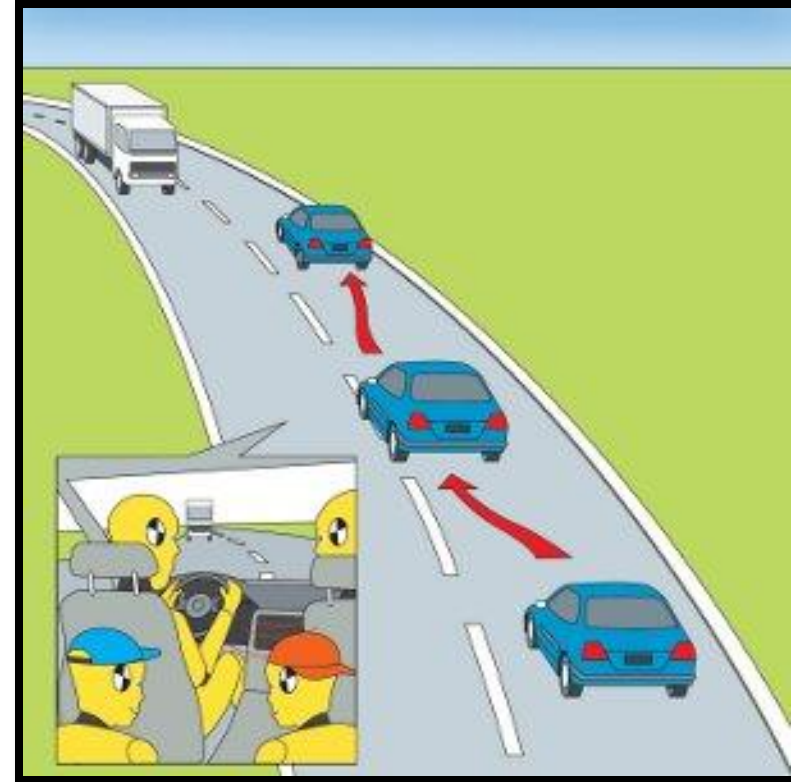
\*Source: Insurance Institute for Highway Safety, US, Crash Avoidance Potential of Five Vehicle Technologies, 2008

# Lane Support Systems

- Can assist and warn you when you unintentionally leave the road lane or when you change lane without indication
- The systems monitor the position of the vehicle in the road lane –
  - Lane Departure Warning warns you if the car unintentionally wanders from the path
  - Lane Keeping Support helps you correct the course of your car

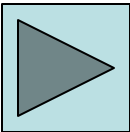
# Lane Support Systems

- Available in these car makes/models as standard or optional feature: BMW 7 Series, Mercedes S Series, Volvo S80, Audi A6, etc
- **15% less deaths on European roads\***



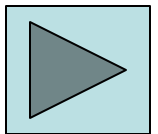
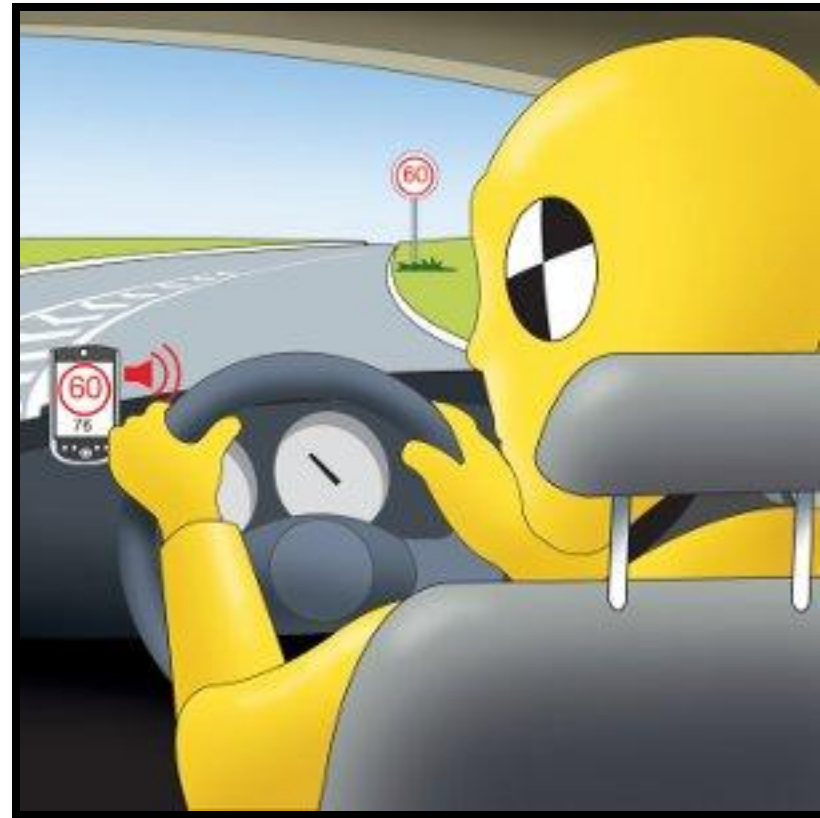
\*Source: eIMPACT, Impact Assessment of Intelligent Vehicle Safety Systems, 2008

eIMPACT is part of the EU's Sixth Framework Programme for Information Society Technologies and Media and ran for two and a half years until July 2008.



# Speed Alert

- Helps you keep the correct speed and avoid speed related traffic crashes and speeding
- Informs you about the speed limits and tells you when you are about to exceed them



# Speed Alert

- Available in these car makes/models as standard or optional feature: BMW 7 Series
- **20% fewer injuries in urban areas\***

\*Source: Swedish Road Administration, Intelligent speed adaptation – Results of large-scale trials, 2002

# Adaptive Headlights Systems

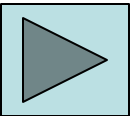
- Equipped with advanced light sources like Xenon or LED, offer an optimised illumination of the road during night time drives
- The system continuously adjusts the beam pattern so that the entire scene is lit according to the driving situation (city light, motorway light, adverse weather light, bending light) to maximise drivers' visibility and enable earlier dangers detection

# Adaptive Headlights Systems

- Available in these car makes/models as standard or optional feature: BMW 3, 5, 6 & 7 Series, Mercedes E & S Series, Volvo S80, Lexus LS460
- **4% decrease in front-to-rear, single-driver, and run-off road accidents\***



\*Source: Insurance Institute for Highway Safety, US, Crash Avoidance Potential of Five Vehicle Technologies, 2008



# Are these features available here?

- Some of these vehicle safety technologies are already available in some cars locally.
- Consumers are advised check with the respective car dealers and ask about the safety features when purchasing those cars

# **Mercedes E 300 Saloon**

## Standard package

- Adaptive brake system with hold function
- Attention Assist drowsiness detection system
- Parking aid with parking guidance
- Brake Assist system
- Air bags

## Optional

- Lane tracking including Lane Keeping Assist and Blind Spot Assist
- Active multi contour seat package
- Night View Assist Plus

# **BMW 5 Series**

## Standard package

- Dynamic stability control
- Anti-lock braking system (ABS)
- Braking assist
- Air bags

## Optional

- Head up display
- Active cruise control
- BMW night vision
- Camera systems

# **Toyota Camry 2.4**

## Standard package

- Electronic brake force distribution
- Vehicle stability control
- Brake assist
- Traction control
- High Intensity Discharge (HID) lights with auto levelling system
- Air bags
- Emergency locking retractor seatbelts

# Volvo S80

## Standard package

- Dynamic stability and traction control
- Park assist
- Adaptive brake light
- Air bags

## Optional

- Driver alert control
- Lane departure warning
- Active bending lights – T6 model only
- Blind spot information system
- Adaptive cruise control with distance alert – T6 model only
- Collision warning with auto brake – T6 model only
- Air bags

## **Honda Accord 2.4**

### Standard package

- Anti-lock brake system (ABS)
- Electronic brake force distribution (EBD) and Brake Assist
- Vehicle stability system
- Air bags
- HID headlight, auto-levelling

# **Mitsubishi Lancer EX 2.0 GTS**

## Standard package

- High Intensity Discharge (HID) xenon headlamps
- Active stability control
- Air bags
- Anti-lock Brake System (ABS)
- Electronic Brake force Distribution (EBD)

# What are the Safety Requirements for cars in Singapore?

- **Safety Belts**

Approved front and rear safety belts

- **High Intensity Discharge (HID) Headlamps**

Wef 1 January 2010, the LTA requires all newly registered vehicles fitted with High Intensity Discharge (HID) headlamps to be equipped with an auto-levelling feature.

- **Safety Glass**

All safety glass fitted onto your car must meet recognised international standards

# Conclusion

- These vehicle safety technologies are only useful and effective when used correctly
- Motorists still have to drive carefully and keep within the safe speed limits and the vehicle specifications
- An integrated approach to improving road safety takes into consideration the following components:
  - **Road user**
  - **Motor vehicle**
  - **Road infrastructure**

- Take up rate of these technologies is low:
  - Lack of consumer information
  - Lack of technology availability in a broad range of cars
- These technologies in new vehicles vary across car models, car brands and even location.
- Hence, it is important for consumers to be informed about these technologies and we should also continue to support them

*Special thanks to:*

**eSafetyAware**

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