



**CLEPA**  
European Association of  
Automotive Suppliers

## What is the potential of driver assistance technologies to reduce the number of road accidents?



Stakeholders meeting on vehicle technologies to enhance road safety  
Brussels, 8 of March 2013

Thomas Lich, Robert Bosch GmbH  
Dr. Peter E. Rieth, Continental AG

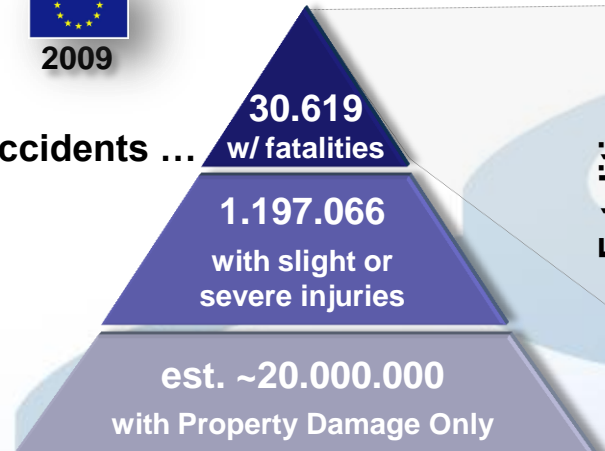


# Target – Reduction of Road Accidents and Fatalities

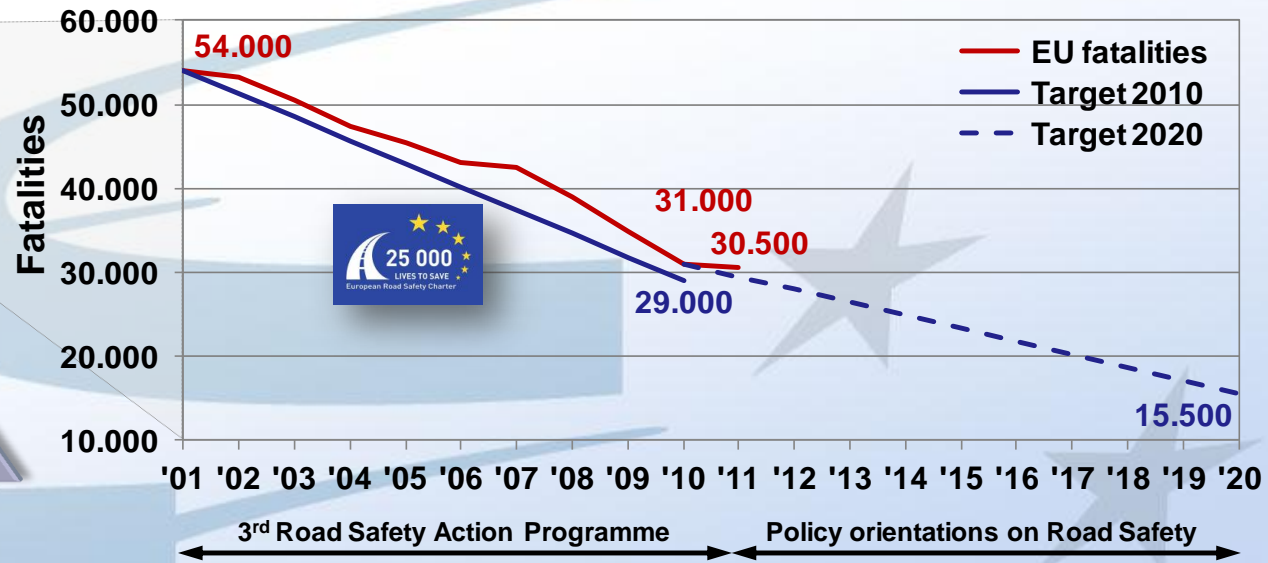


2009

Accidents ...



Source: Annual Statistical Report 2011 – European Road Safety Observatory based on CARE/EC database D 3.5



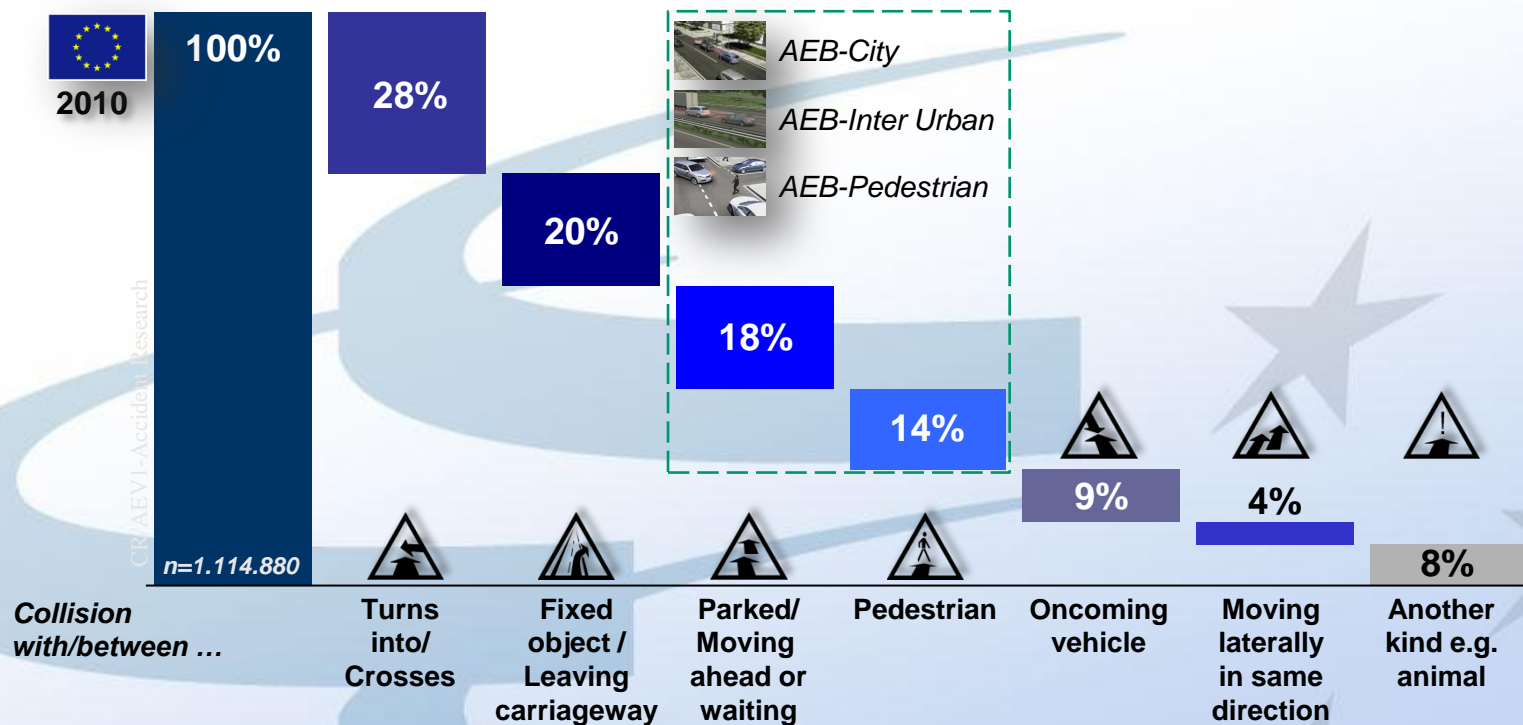
3<sup>rd</sup> Road Safety Action Programme      Policy orientations on Road Safety



EU target:  
Reduction of fatalities on roads between 2010 and 2020 by 50%.



# Accident situation in the EU<sup>1)</sup> – Accidents with injuries and fatalities by kind of accident



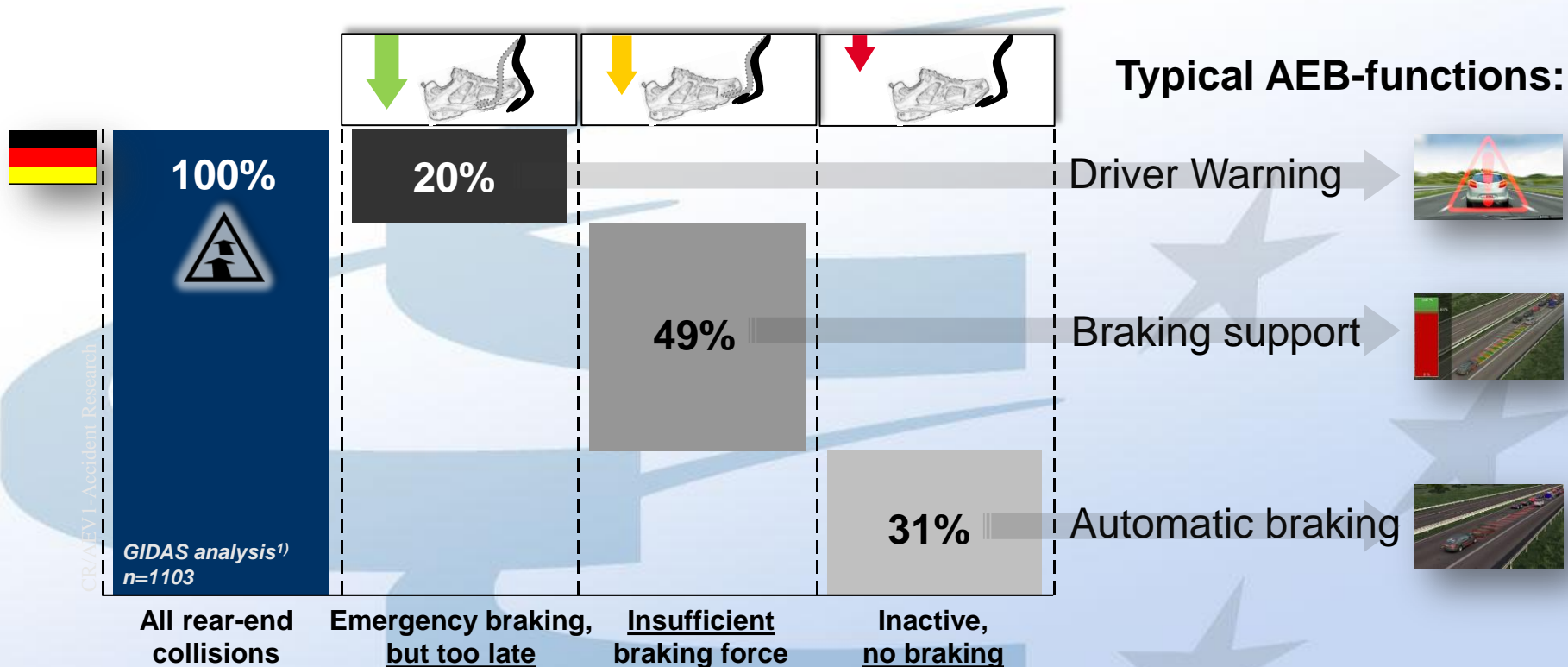
- **350.000 accidents w/ injuries and fatalities** will be addressed by one of the AEB system
- Considering **accidents with property damage only** e.g. additional **1.100.000 accidents<sup>2)</sup>** are addressed in Germany.

1) Source: IRTAD 2003, Interpolation to 2010 using national statistics

2) 22% out of ~5 Mio. accidents w/ damage only; Bosch Accident Research Analysis 2009, AZT/Bosch database 2004-'07



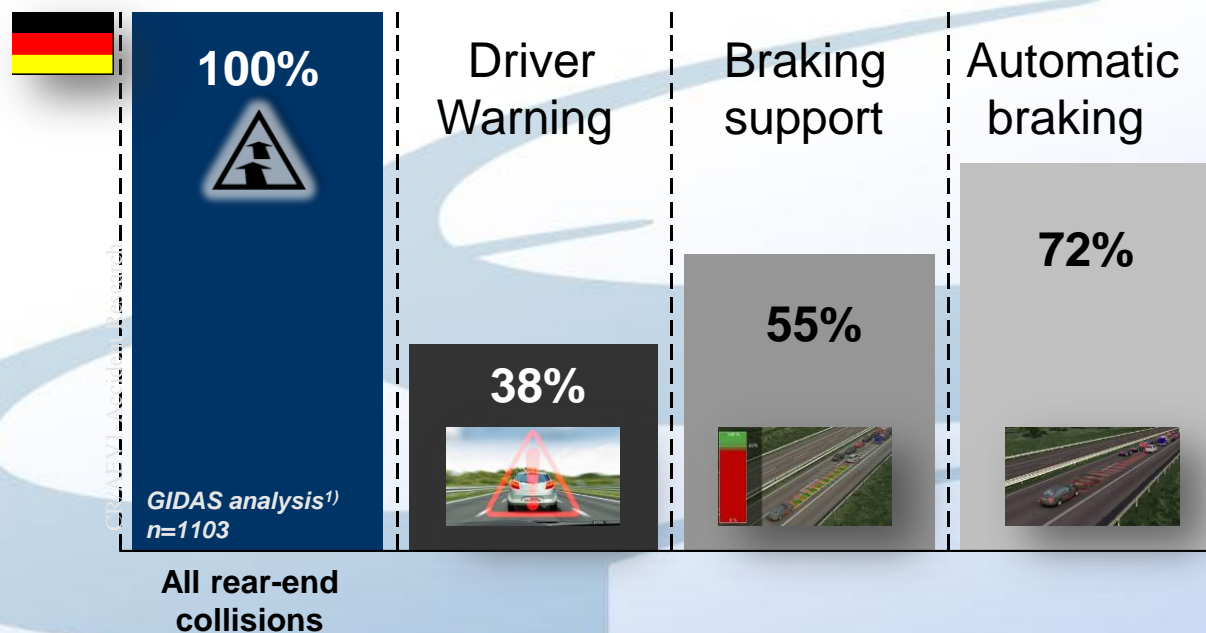
# Distribution of the driver behaviour prior to rear-end crashes based on German data using GIDAS<sup>1)</sup>



1) Bosch Accident Research Analysis of GIDAS database, ESV 2009, Paper No. 09-0281



## Benefit of AEB (avoidance potential) with example on AEB Inter Urban based on German data using GIDAS<sup>1)</sup>






AEB systems have a high potential to reduce **rear-end collision accidents.**

1) Bosch Accident Research Analysis of GIDAS database, ESV 2009, Paper No. 09-0281  
Results shown assuming realistic driver model



# Synergies and Additional Benefit using AEB technology

## AEB

City 	Inter Urban 	Pedestrian 
--	--	---

Functions based on lidar/radar/video technology



## Benefits for the society

**Reduction of:**

- (1) Rear-end collisions
- (2) Accidents involving vulnerable road users




→ Reducing number of fatalities and injuries and property damage cost

---

**Additional reduction of:**

- (3) CO<sub>2</sub> Emission
- (4) Traffic Jams
- (5) Risk of rear-end collision
- (6) Accidents caused by speeding
- (7) Accidents leaving carriageway and collisions with vehicle moving laterally in same direction

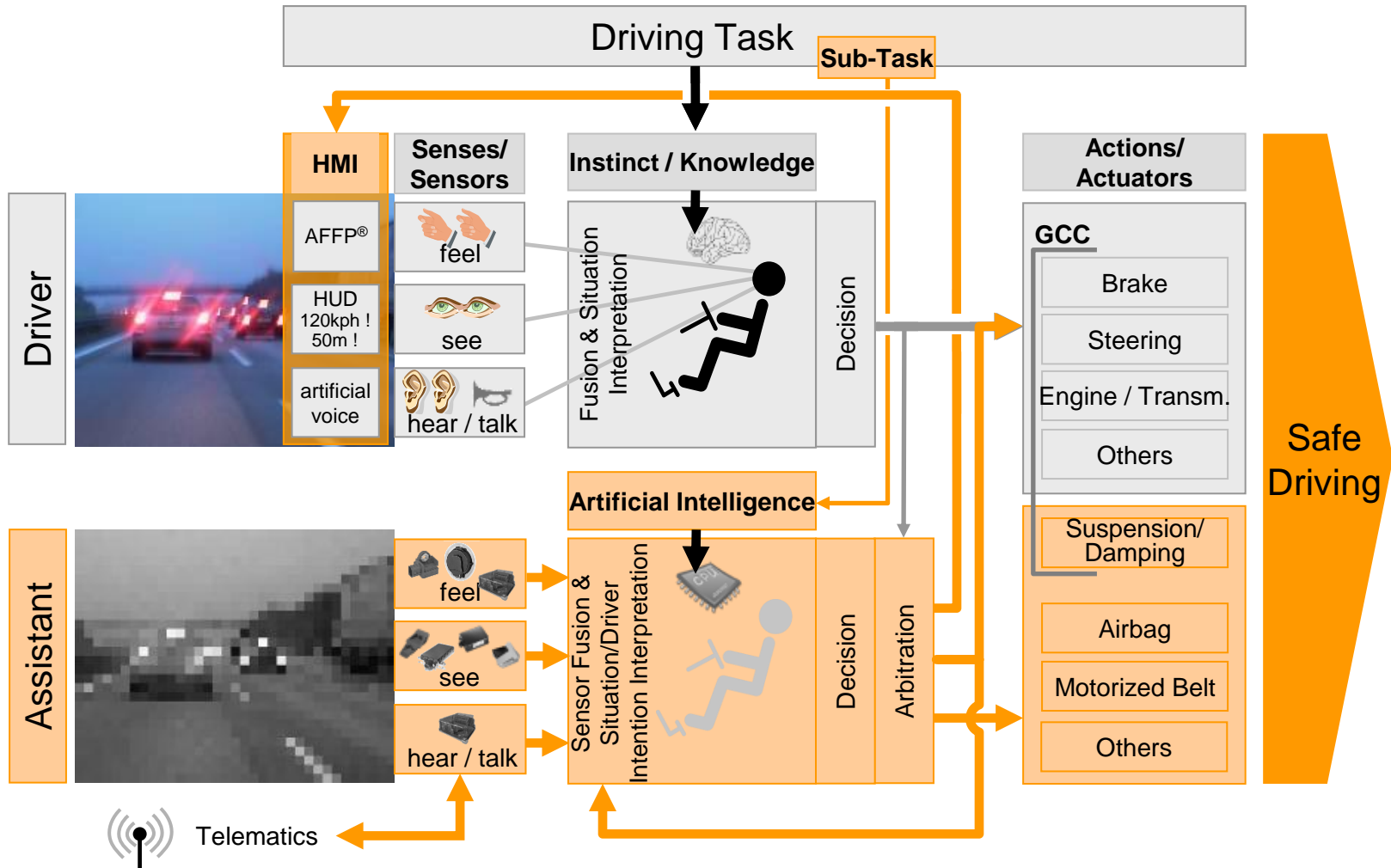
## AEB Hardware enables additional Systems

Adaptive Cruise Control (radar and/or video based)	
Speed Assist System (video based)	
Lane Departure Warning and Keeping System (video based)	






# Advanced Driver Assistance – Function Logics






## New Euro NCAP rating scheme – Key Components >2014




<b>AOP</b>	<b>Adult Occupant Protection</b>	<b>AEB City (starts 2014)</b>	 Short Range Lidar Sensor    SRL-Cam
------------	----------------------------------	-------------------------------	--



<b>PP</b>	<b>Pedestrian Protection</b>	<b>AEB Pedestrian (starts 2016)</b>	 Multi Function Stereo Camera
-----------	------------------------------	-------------------------------------	---

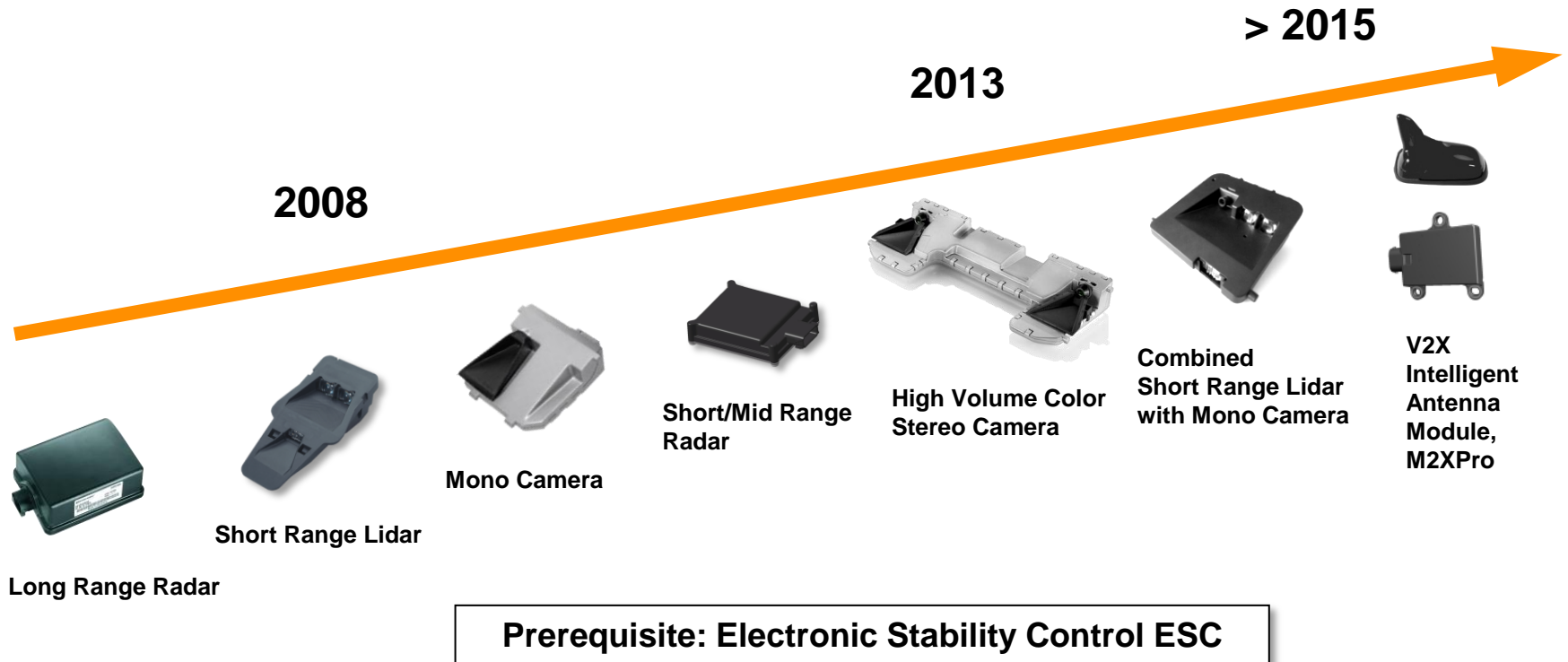


<b>SA</b>	<b>Safety Assist</b>	<b>SAS = Speed Assist System (starts 2013) AEB Inter-Urban (starts 2014) LDW / Lane Keeping (starts 2014)</b>	 Camera SRL-Cam Radar
-----------	----------------------	---	---





# Advanced Driver Assistance Technologies – Roadmap



**Potential to reduce severe crashes by more than 40%\***

\* UDV – Unfallforschung der Versicherer, Germany, 2011

## Summary:

AEB addresses high share of accidents (casualties as well property damage)

AEB technologies entered the market

LDW/LKD also have positive input on road safety, also entered the market

Components of AEB & LDW/LKD support synergies to other safety and comfort functions for additional benefits to the society (e.g. Adaptive Cruise Control, Speed Assist Systems, Traffic Sign Recognition, Intelligent Headlamp Control)