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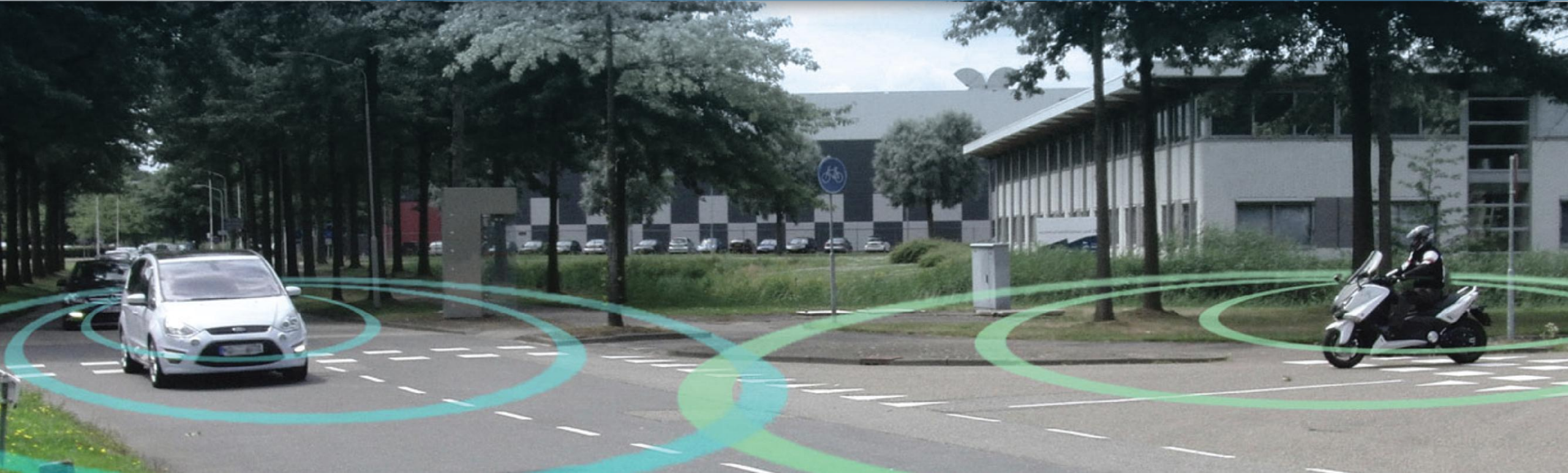
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# Connectivity Will Make Motorcycling Safer



- **Hennes Fischer**, YAMAHA MOTOR EUROPE, The Netherlands
- **Tomohiro Matsuda**, KAWASAKI MOTORS EUROPE, The Netherlands

- **MCs have a great potential**
  - Ideal urban mobility
  - Minimal space requirements
  - Smart combination of leisure and commuting
  - Favourable ecological footprint



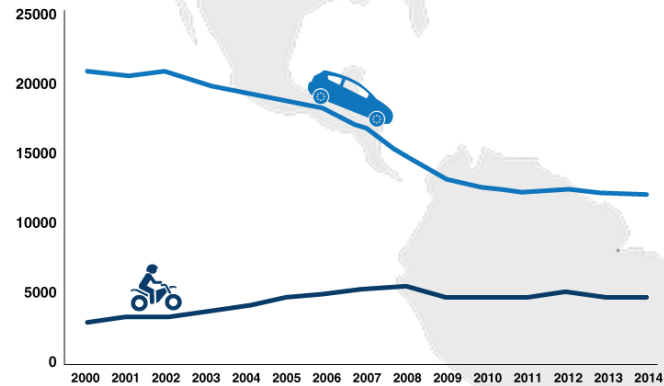
# Accident data

Motorcycle Riders are Vulnerable Road Users

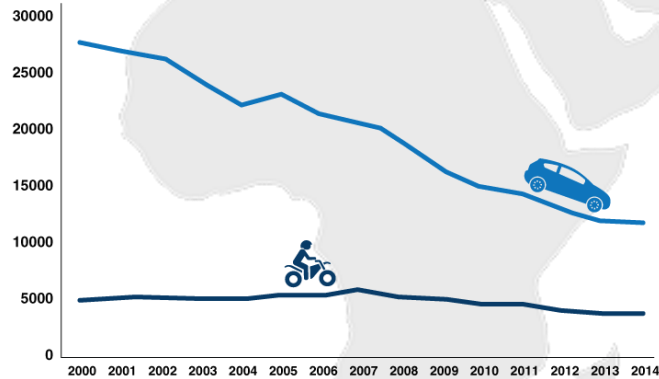
# Challenge: Motorcycle Safety

## Development of car and motorcycle fatalities

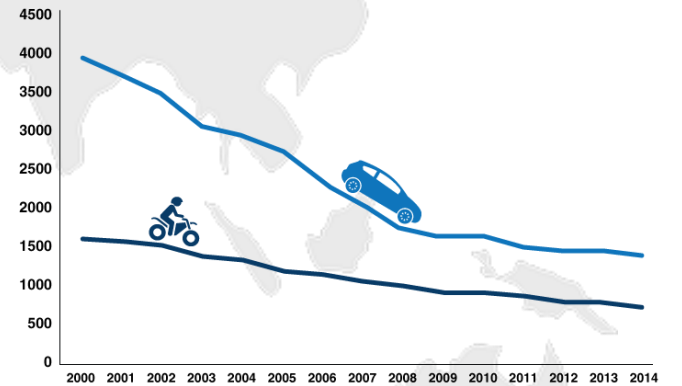
USA



Europe



Japan



Source: IfZ

# Reasons: Perception Failures

Majority of accidents:  
Caused by other vehicle  
driver



**50 - 70 %**

OV driver causes accident

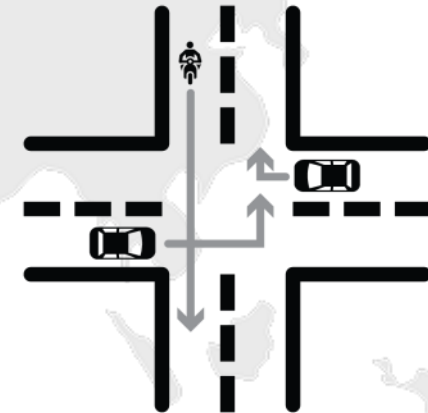
Majority of collision partner:  
Car



**60 - 90 %**

Collision partner is a car

Majority of collision type:  
Crossing and turning



**15 - 30 %**

Collisions at intersections

Source Data based on country specific studies (USA, Europe, Japan)

## Human Error



**70 - 90%**  
perception failure by car driver

## Digital conspicuity



MAI (Motorcycle Approach Indicator)  
MAW (Motorcycle Approach Warning)

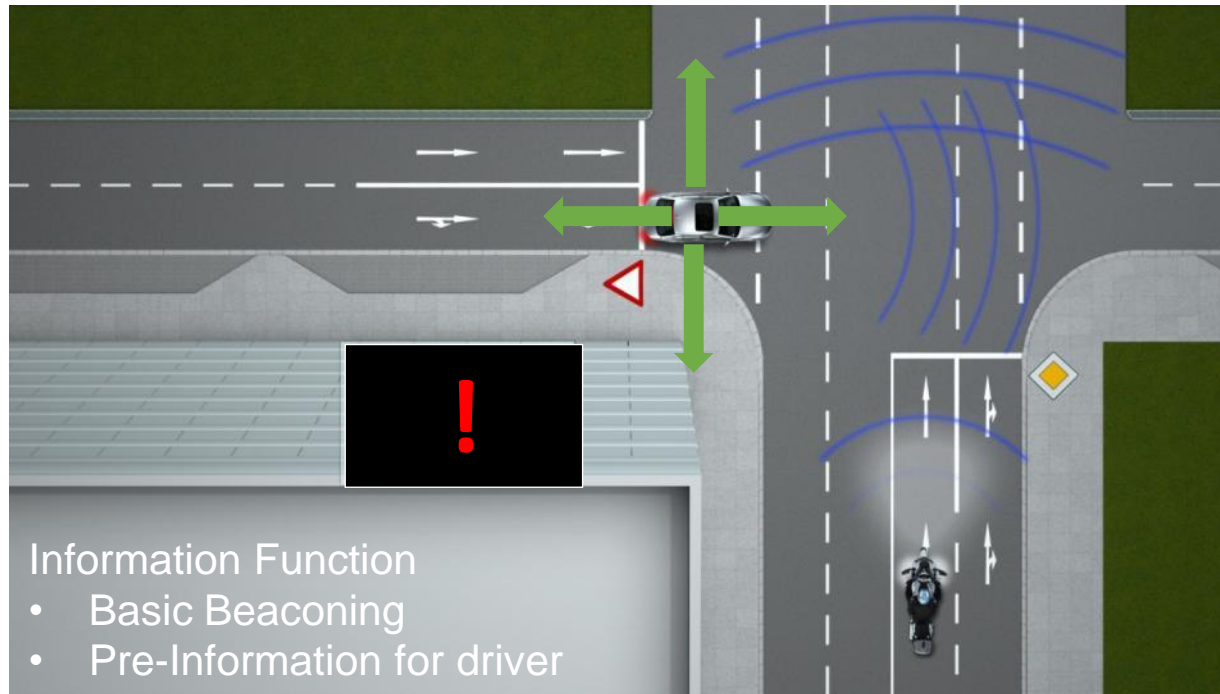
# Technical Solutions

Digital Conspicuity

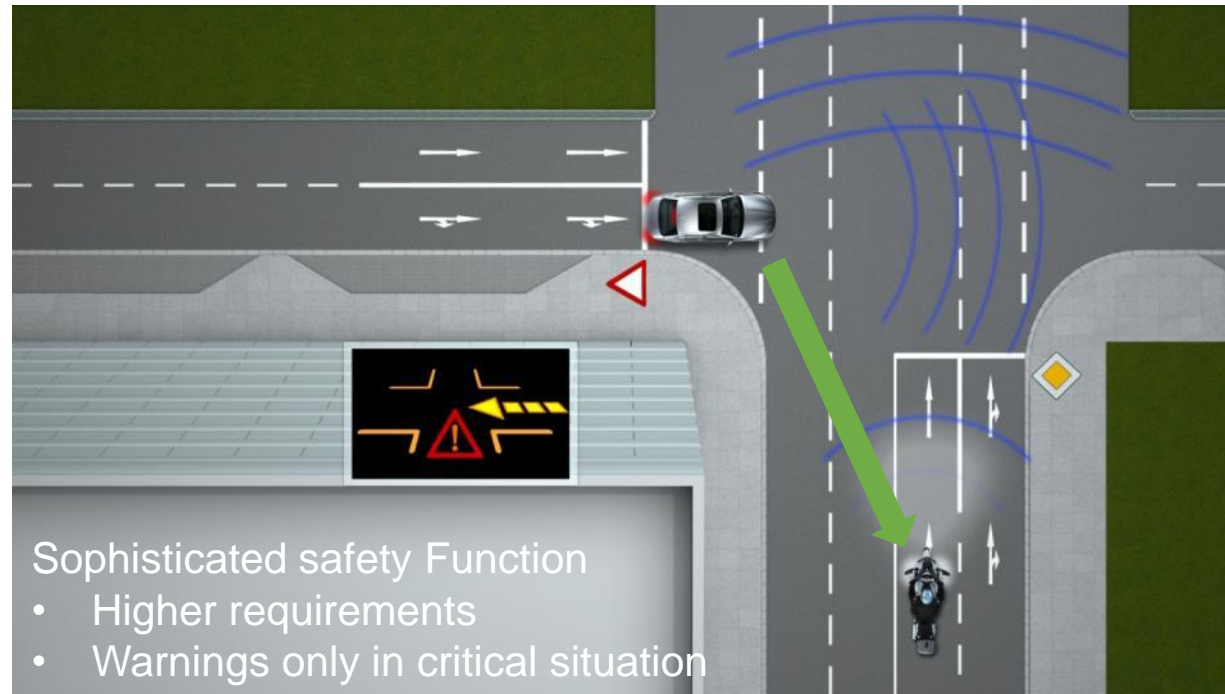
Triggering Conditions



## Day 1.5 – Information with Basic Function & Simple requirements

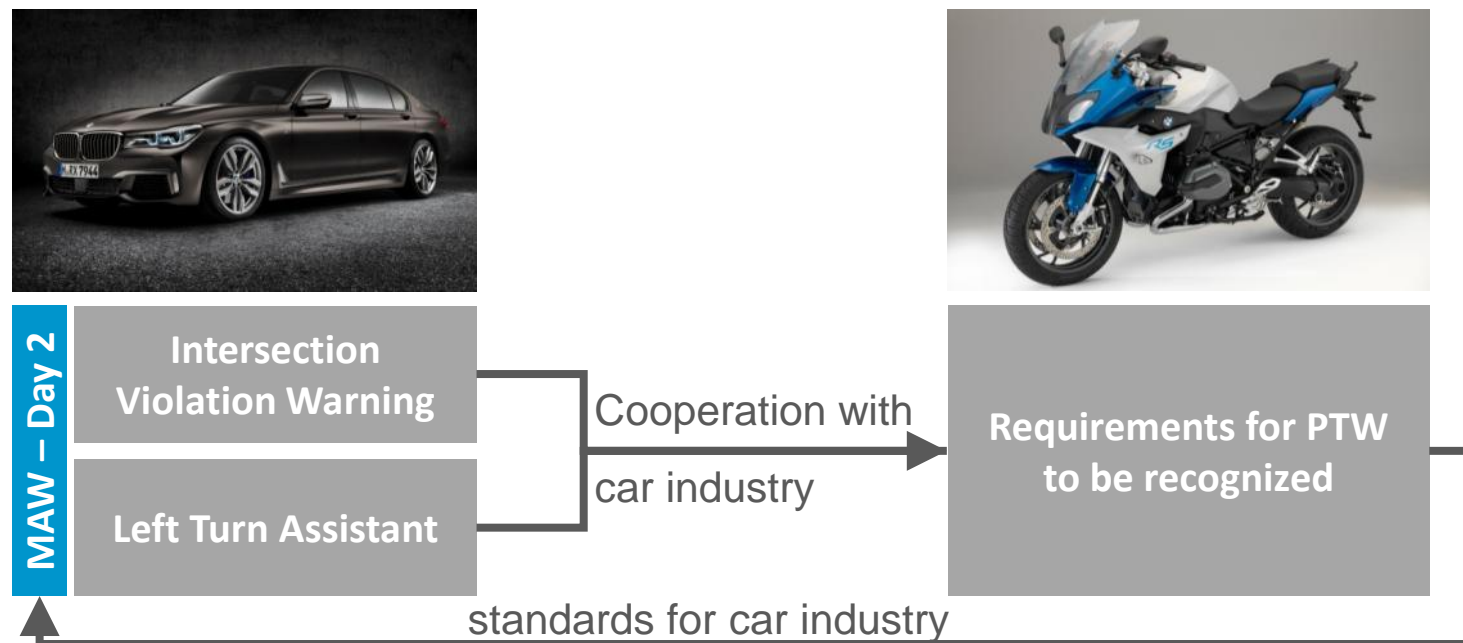


## Day 2 – Warning in critical situations & Higher requirements



# Real safety impact as Day 2 function

- MAW is a real safety function with only warning in critical situation
- MAW huge impact on motorcycle safety as a DAY 2 function



# Car Solutions will not work on Motorcycles

## Taylor made ITS technology needed

### Design

- Limited space
- High vibrations
- Limitation on sensing parameters

### No cabin

- Antenna positioning
- Exposed to elements (*rain, humidity, etc.*)

### Dynamics

- Leaning in corners
- Steering by inertia
- High influence of rider

### Localisation

- Width of PTW is under 1 meter
- Vehicle movement
- Higher positioning accuracy needed

## Use case: Stationary Vehicle Warning



Hazard light on	✓	(✓)
Parking break	✓	X
Door open	✓	X
Trunk open	✓	X
Drivers seat not occupied	✓	X
Proposal: side stand	X	✓

# Motorcycles behave different than cars

## Use case: Traffic Jam



Requirement:

...indicate a velocity less than or equal to 30 km/h of at least five other vehicles in at most 100 m distance and the same driving direction...

# Triggering Conditions based on cars BUT....

## Use case: Traffic Jam



PTW can ride through traffic jam  
Sends „wrong“ trigger conditions – cancel traffic jam

# Motorcycle Industry Initiative

Make Motorcycles Part of Connected World



# Mission: Integration of Motorcycles in Connected Environment



# Milestone: ACEM Memorandum of Understanding

Connectivity technology like C-ITS will become a major part of future mobility

## MoU Statement:

*“...The ACEM manufacturing members agree to initiate deployment of safety-relevant cooperative ITS on PTWs\* in Europe and agree to have at least one of their models available for sale with a cooperative ITS, either as standard equipment or as optional equipment, by 2020.”*

Signed by all ACEM manufacturing members:



\*Powered Two Wheeler

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# CMC Vision & Objectives

## VISION

Enhance Riding safety by jointly promoting, researching and developing C-ITS for Motorcycles

## OBJECTIVES

- **Integrating** Motorcycles as an accepted and recognized partner into global future ITS strategies
- **Joining** our forces to create a common approach on ITS for motorcycles
- **Achieving** a successful implementation and deployment of motorcycle ITS functions



## Thank you for your attention

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BMW Motorrad 

 **HONDA**

 **YAMAHA**

**Kawasaki**



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Motorcycle  
Industry In  
Europe

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[www.cmc-info.net](http://www.cmc-info.net)



[contact@cmc-info.net](mailto:contact@cmc-info.net)