



## *CMC Newsletter January 2025: CMC at the 15<sup>th</sup> International Motorcycle Conference*

**CMC goes beyond the expected**, as evidenced at the IfZ safety conference in Cologne recently. Originally focused on C-ITS communication standardization, CMC has evolved step-by-step into a global competence center for motorcycle safety. By means of accident studies and researches into aspects like rider reaction times, path prediction, positioning accuracy, and simulation technologies, CMC broadly addresses the unique challenges faced by motorcycles and paves the way for future research and development, enabling smarter and safer roads for motorcyclists.



*The IfZ safety conference is a two-day event, organised by the German Institute for two-wheeler safety, had over 100 participants from 20 nations and brought together a vibrant community of safety experts, academic researchers, industry leaders, and government authorities.*

### **History**

Hennes Fischer, board member of CMC explains: “Our idea was initially to standardize key elements around C-ITS (Cooperative Intelligent Transport Systems) for motorcycles. When we looked closer into accident scenarios to understand what needed to be standardized and how applications needed to work, we understood that we had to go beyond technical considerations. For example,

one of the first activities we kicked off was an in-depth accident study to find out the most relevant crash scenarios between cars and motorcycles.”

## **Accident study as a base**

CMC teamed up with VUFO GmbH, a company experienced in accident research. Their access to the GIDAS database (German In-Depth Accident Study) provided remarkably detailed insights into individual accident scenarios.

Peter Miklis from VUFO explains: “In addition to general information about accidents, such as the location, weather, and road conditions, in-depth analyses were conducted. These included evaluating data on speeds driven versus permitted, factors influencing the accident’s cause, collision partners, lanes used, and visual obstacles.” Such an extensive study has never been done before.

Hennes Fischer adds: “We needed to understand what happens during every second of a collision between car and motorcycle. This information is crucial for designing warning strategies, improving system performance, and optimizing many other criteria to make C-ITS systems operate as they should.”

## **Global scenarios**

The German data was selected for the first study because it provided the greatest depth of information. As a next step, CMC expanded its research to include more global scenarios. By analyzing and comparing accident data from other European countries, the United States, and Japan, CMC identified similarities and differences in traffic accident scenarios.

This allows to evaluate whether standards and system performance could be harmonized across regions.

This direct comparison of different regions represents an important milestone in accident research within the framework of CMC and offers insights into motorcycle accident patterns worldwide.





*Expert talk moderated by mr. Antonio Perlot of ACEM, where mr. Matthias Mörbe from Bosch and mr. Hennes Fischer from CMC answered questions*

## **Role of ADAS / ARAS**

CMC has also studied the performance of both Advanced Rider Assistance Systems (ARAS) on motorcycles and Advanced Driver Assistance Systems (ADAS) in cars in order to evaluate and improve their potential.

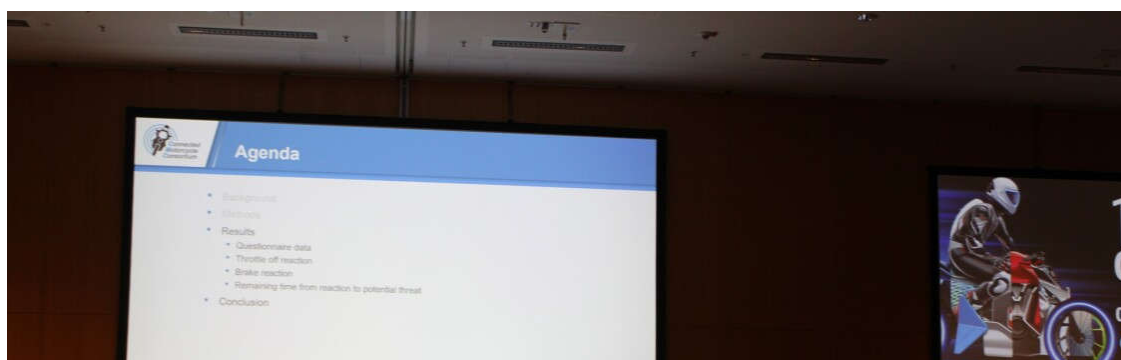
**ADAS** systems in cars use on-board sensor systems like cameras, radar and LIDAR to detect objects such as motorcycles. However, the unique shape, silhouette, and small frontal surface of motorcycles present challenges for these systems, as also evidenced in a CMC study on motorcycle conspicuity.

In this context, CMC has supported the development of a **standardized 'motorcycle target'** for testing ADAS systems.

Additionally, talking about **ARAS** systems, CMC member Sebastian Will from the Würzburg Institute for Traffic Science (WIVW GmbH) explains: "C-ITS, which enables communication between vehicles, could play an increasingly important role, alongside on-board sensor-based assistance systems, to detect the other vehicle. However, as long as motorcycles cannot take evasive action autonomously, the rider is the one to take action, so the motorcycle must communicate the detected threats to the rider very clearly."

## **Human factors**

Consequently, designing effective warnings is essential, as poorly designed ones can completely undermine the benefits of assistance systems. CMC has initiated a user-centered research process with three consecutive studies to investigate motorcycle rider responses to different types of warnings and the effects of timing on rider reaction times and acceptance. These studies deliver important findings for future Human Machine Interface design.





*Dr. Sebastian Will from WIVW presented the outcomes of Rider Reaction Time studies*

## **Technical factors like positioning accuracy or path prediction**

To improve riders' safety with C-ITS, a highly accurate vehicle position is required to provide and receive precise and reliable warnings. This is called High Precision Positioning (HPP).

CMC member Mitsubishi Electric conducted real-world tests on motorcycles to evaluate current positioning accuracy and explore methods for improvement.

In addition to positioning, accurate path prediction is vital for future system development. CMC conducted an analysis of the state of the art of path prediction, detailed in a whitepaper published in early 2024. In the meantime, other companies have used the CMC paper as a basis for further studies on improvement of path prediction, with findings presented at the 2024 IfZ conference.

## **Simulation**

C-ITS deploys complex applications involving a multitude of traffic participants, e.g., connected cars, connected motorcycles, vulnerable road users, or intelligent roadside units.

Simulation software plays a key role in efficient development, testing, and evaluating these applications. Simulation enables immediate feedback and quick iterations and substantially reduces the need for costly and time-intensive real-world testing. On top of that, it avoids the actual danger associated with physical testing and is therefore particularly beneficial in the motorcycle domain. For these reasons, CMC has already carried out various simulation projects and is going to increase its activity in this area.

## **CMC: in fact a Motorcycle Safety Consortium**

The studies conducted in recent years have transformed CMC from a

standardization organization for C-ITS into a comprehensive motorcycle safety consortium and a competence centre for motorcycle safety as a whole. Hennes Fischer reflects: “This has been an organic development which was neither planned nor anticipated. By addressing our initial goals, we realized the necessity for a broader view on connectivity and we’ve naturally expanded our focus and ended up looking more and more towards motorcycle safety as a whole.”

*For more information visit our website:*

*<https://www.cmc-info.net/>*

*Presentations from the IfZ conference can be found at the IfZ website: <https://www.ifz.de/international-motorcycle-conference/>*

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***Together for Rider Safety***