



CMC Newsletter May 2024:

Next phase of activities, new studies published

This newsletter features three topics:

- CMC at the Motorcycle Road Safety Conference
- How CMC activities are evolving
- In the spotlight: Rider Reaction Time studies

CMC at the Motorcycle Road Safety Conference

CMC has been invited to present at the International Motorcycle Road Safety Conference in Zaragoza, Spain.

ANESDOR (Spanish Motorcycle Industry Federation) and the Spanish Ministry of Transport (DGT) organized the conference. Not only technicians, researchers and international organisations shared experiences, also politicians, and traffic planners from various regions, including South America and Asia, presented their contributions to increase motorcycle safety.

CMC showed a connectivity experimental vehicle (Yamaha TMAX base) and a standardized motorcycle target used for testing the performance of ADAS systems on cars. In addition, various production motorcycles and scooters with safety technologies were displayed.

The audience was very interested in CMC activities and progress. In particular, CMC's wide research activities and the combination of connectivity and ADAS functionality was appreciated.

Find out more at the conference's web link: <https://motorcycleroadsafety.com/> where also the video live stream is available.

SHOWROOM ARAS

Motorcycles equipped with different Advanced Rider Assistance Systems available on the market.

SHOWROOM CONECTIVITY

Prototype motorcycles offered by Connected Motorcycle Consortium

SHOWROOM PERSONAL EQUIPMENT

Helmets. Comparison of helmet types. Sample of helmet composition

Equipment. Protections, gloves, boots, jackets, mechanical / electronic airbag

SHOWROOM SUSTAINABILITY

Swappable Batteries Motorcycle Consortium. Prototype

MotoStudent. Petrol and electric prototypes. Moto3.e prototype Moto Engineering Foundation

International Motorcycle Safety Conference in Spain

CMC activities are evolving

Moving into 2024, the Connected Motorcycle Consortium has entered its third phase nicknamed 'CMC 3.0'. The focus for the coming three years will be on further research on both accident scenarios and simulation. In addition, standardization and cooperation with other consortia and governments is going to continue.

Looking back on last year, some very interesting studies have been completed and published by CMC:

- **Accident Analysis:** Extension of Accident Analysis from German data to European level, showing that the overall trends were also applicable to the whole of Europe while also a range of interesting differences were discovered.
- **Use Cases:** Additional use case descriptions have been made for “Longitudinal traffic” and “Lane change”, with both ADAS and C-ITS technologies in mind.
- **Path Prediction:** A whitepaper on Path Prediction was published, with important findings about its current state of the art.
- **Rider Reaction Time:** Scientific studies were performed using a riding simulator setup.

In the coming newsletters we will pay attention to those; we'll start in this newsletter with the studies on Rider Reaction Time.



CMC phases & achievements

- **CMC 1.0 (2016 - 2020)**
 - BS 1.0
 - Test case definition for relevant safety use cases
 - Setting of functional requirements
 - Define architecture of C-ITS unit
- **CMC 2.0 (2021 - 2023)**
 - Live Demo Event
 - Additional focus on ADAS and C-ITS
 - Accident study (in depth) Simulation & Application
 - Rider Reaction study - Accident study Europe, US, Japan
- **CMC 3.0 (2024 - 2026)**
 - Basic academic research in the context of C-ITS and ADAS technology
 - Further standardization activities
 - Strengthen cooperation with infrastructure stakeholders
 - Strengthen cooperation with other relevant road users

A continuous development of CMC's activities

Rider Reaction Time studies

CMC has conducted two significant studies using dynamic motorcycle riding simulators to explore rider reaction times to various warning types. These studies offer valuable insights for enhancing rider safety and designing more effective future C-ITS applications.

Study setup

Both studies compared reactions in urban and rural settings. These did not include imminent crash warnings, but advisory warnings with 3 seconds between warning onset and the potentially critical situation becoming visible.

RRT I (End of 2022) focused on generic visual warnings on the dashboard. Findings indicate that for about one out of six instances, riders failed to notice the warnings. When warnings were noticed, it took riders about 1 second to look towards the dashboard and about 2 to 2.5 seconds to react physically by reducing throttle or initiating braking. Responses were quicker in urban settings, which were deemed more critical by the riders.

RRT II (End of 2023) expanded the research to include 4 more variations regarding the type of warning signals:

- Visual (Mirror-mounted LEDs)
- Visual (Head-Up Displays)

- Auditory (Warning tones)
- Haptic (Vibrations in wristband)

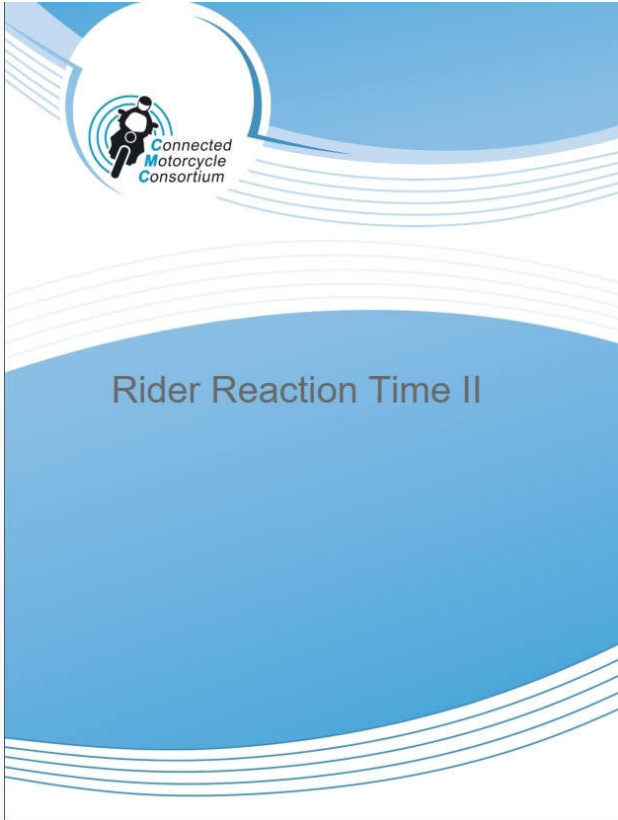


The dynamic motorcycle riding simulator at WIVW that was used for the study

Key Outcomes

- All tested warning methods outperformed the baseline scenario of no warnings, with mirror LEDs and haptic alerts showing no missed warnings at all.
- The primary reaction across warning types was to focus attention on the road ahead, leading to potentially safer deceleration times.
- In urban scenarios, riders began braking upon receiving warnings, even before seeing the obstacle. This highlights the potential of C-ITS applications to improve safety.
- Riders appreciated devices that were fixed on the bike itself, like mirror-mounted LEDs, for their convenience and safety. Helmet- or rider-mounted devices require additional gear and stable connections, and were therefore not so well accepted.
- Compared to passenger car studies, motorcycle riders had more missed warnings as well as longer and more variable reaction times, underscoring the need for motorcycle-specific safety research.

<https://www.cmc-info.net/rider-reaction-time.html>



Together for Rider Safety