COMMUNICATION BETWEEN MOTOR VEHICLES AND VULNERABLE ROAD USERS (PEDESTRIANS AND CYCLISTS) NOT LEAST WHEN CONSIDERING VEHICLE AUTOMATION

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GENERAL DESCRIPTION OF THE SPECIAL SESSION
Considering that both the scientific community and industry nowadays deal with automation – up to autonomous driving – more and more, this topic should of course be dealt with at any road safety congress. However, there are certain aspects that appear especially interesting and important. One of those aspects is related to vulnerable road users. This is a group of road users the members of which cannot easily be automated. At least, it is difficult to imagine that attempts in that direction will be successful. Members of this group will go on to communicate „analogously“ and not digitally. I.e. interpersonal communication will go on to be important in more densely inhabited areas. These are areas where different modes mix and where higher portions of pedestrians, bicyclists and related types of road users will move about in the public space. How can automation of motor vehicles take „analogous“ communication into consideration? Will it be possible to write software programs for motor vehicles so that they can move about in more densely inhabited areas safely viz. without endangering unprotected road users? From this perspective, this special session will deal with the communication between (highly automated) motor vehicles and vulnerable road users.

As a frame for the special session, the moderator of the session (Risser) will give a short summary of the results provided by a project carried out in Germany in 2016 that dealt with the question reflected by the title. After that a closer look on communication between motor vehicles and vulnerable road users and how infrastructure and other factors influence this communication will be taken (Hujiangbi; Hujiangbi; Sucha). This is followed by a literature-based summary of ITS-effects on pedestrians (Vaa). Thereafter we move to highly automated and/or autonomous vehicles and issues related to their communication with other road users (Zamecnik, Chaloupka). The last presentation deals with the question which communication aspects have to be considered when programming for activities to be carried out autonomously by highly automated or autonomous vehicles in the frame of communication with pedestrians, thereby not forgetting the social climate (Krems).

1. TRAFFIC CHANNELIZATION METHOD IN T-INTERSECTIONS WITH MULTIPLE TRAFFIC MODES IN BEIJING
Chenjiechao Hujiangbi
Institute of architecture and engineering, Beijing University of Technology
Beijing, China
This paper focuses on city road crosses between main road and branch road at no signal control T-intersection. Compared with traffic signal control T-intersection, no traffic signal control T-intersection has the characteristics of unclear road right, traffic disorder-the serious conflict among pedestrians and bicycles and motor vehicles, pedestrians and cyclists are less safe and comfortable.
2. TRAFFIC CHANNELIZATION METHOD AT CROSS INTERSECTION FOR URBAN ROAD UNDER MULTI TRAFFIC MODE IN BEIJING
Chenli Hujiangbi
Institute of architecture and engineering, Beijing University of Technology
Beijing, China
The author discusses the use of bicycle system channelization method in the traffic signal control cross intersections to solve the security problems caused by the mixed traffic and the conflict among pedestrians, bicycles and motor vehicles.

3. PEDESTRIAN-DRIVER COMMUNICATION AND DECISION STRATEGIES AT MARKED CROSSINGS
Matus Sucha
Department of Psychology, Palacky University in Olomouc
Olomouc, Czech Republic
This paper describes pedestrian-driver communication and decision strategies at marked but unsignalised crossings in urban areas in the Czech Republic and the ways in which the parties involved experience and handle these encounters. The main question addressed was what the circumstances and, possibly, the causes of the problems between car drivers and pedestrians are.

4. ITS AND THE EFFECTS ON VULNERABLE ROAD USERS: THE CASE OF PEDESTRIANS
Truls Vaa
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The aim of this paper is to search for and systematize results of studies conducted in real-life contexts concerning the effects of ITS on road user behaviour and/or accidents involving pedestrians. Related literature has been sought for in Google Scholar, Science Direct, IEEE, ITS World Congresses and ITS European Congresses. Of these, Google Scholar is the source which provides the highest number of studies.

5. ITS AND THE EFFECTS ON VULNERABLE ROAD USERS: THE CASE OF PEDESTRIANS
Petr Zamecnik
Centre for Transport Research CDV
Brno, Czech Republic
The focus here is on concerns of the general population in the Czech Republic related to autonomous vehicles, not least those related to the communication between autonomous vehicles and other transport system users, such as cyclists or pedestrians. Variables like general attitudes toward new technology as factors explaining these concerns are assessed. The socio-demographic dimension of the topic through variables such as age, gender, or size of a settlement of members of the public is discussed.
6. AUTONOMOUS DRIVING AND POSSIBLE OUTCOME FOR BICYCLISTS – TECHNOLOGY WHICH HELPS TO IDENTIFY HAZARDS
Christine Chaloupka
FACTUM Traffic and Social Analyses OG
Vienna, Austria
This paper deals with the evaluation of different registration methods for analysing the interaction of cyclists with their environment in the context of a naturalistic cycling study. The presentation discusses pros and cons of existing technological investigation tools for critical incidences involving cyclists. The author presents communication necessities of cyclists with focus on the possible oncoming changes in traffic because of higher automation of motorized traffic participants.

7. THE COURTEOUS AUTOMATED VEHICLE. SLOWING DOWN AS INFORMAL COMMUNICATION SIGNAL TO PEDESTRIANS
Josef Krems
Chemnitz University of Technology, Department of Cognitive and Engineering Psychology
Chemnitz, Germany
Informal communication plays a crucial role for these negotiation processes and thus, needs to be implemented in automated vehicles. The experimental study presented here assessed the effects of daytime, approaching vehicle speed and participant’s age on the expected moment of “courteous” braking initiation. These timings shall be used to implement smooth and comfortable interaction between automated vehicles and pedestrians.