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4.13.2. *The ADS should interact safely with the user.* ADS are intended for human use. To some degree, human users will have one or more roles in ensuring safe ADS performance. A user may be a user-in-charge, a remote operator, a passenger, or a human being with another degree of interaction with the ADS. In some cases, an ADS vehicle would be operated with two or more available drivers: the ADS and one or more human beings with the capability to assume control over the DDT. Therefore, safe and cooperative interactions between the ADS and a user should be ensured. These interactions include but are not necessarily limited to communication of information and transitions of vehicle control from one driver to the other. The user should have information about the ADS status, its operation, and its intentions to fulfill her or his roles. Transitions of control may occur under diverse conditions involving degrees of cooperation and fallback options to ensure safety. The user interface needs to ensure proper user inputs and feedback to facilitate correct use and safeguard against misuse or user error.

With,

4.13.2. *The ADS should interact safely with the user.* This starting point aims to focus attention on the interaction performance of an ADS with regard to the ADS user. The intention is to enumerate performance elements to ensure correct understanding by the user of the limitations and possibilities of the ADS and to ensure transitions of control between the ADS and the user without compromising traffic safety.

The ADS user does not have an average user-profile but covers a spectrum of wide variances on different dimensions (abilities, limitations, understanding, experience, alertness, etc.). To understand the ADS, the user forms a mental model of its operation and user interactions. One of the challenges is to safely accommodate the full spectrum of different ADS-users in order to have a more predictable Human Machine interaction and more error-tolerant system.

Human Machine Interaction (including transition of control) and relevant interfaces need to be developed (and regulated/standardized) in an harmonized way in order to promote an accurate and reliable mental model of each ADS and thus support learning and the effectiveness of common driver training [proposal to WP1] for all users.

These interactions include but are not necessarily limited to communication of information and transitions of vehicle control. In order to fulfill his/her roles, the user should have information about the ADS status, its operation, its intentions and the expected user responsibilities. Transitions of control may occur under diverse conditions involving different degrees of cooperation and possible fallback options to ensure safety. The user interface needs to ensure proper user inputs and feedback to facilitate correct use of the ADS and safeguard against misuse or user error.

Consideration needs to be given to the user need of being able to switch from one vehicle to another without having to relearn a correct mental model.