

INFORMATION SOCIETY TECHNOLOGIES (IST)

PROGRAMME



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AIDE scenarios and use cases definition

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1 Executive Summary

This deliverable aims i) to perform a review on user needs with respect to different human-machine interface (HMI) functions based on feedback by both drivers and experts and ii) to describe the general AIDE system functionality through the derivation of AIDE design scenarios and use cases. This work will form the basis for the work on designing and developing the adaptive integrated HMI in WP3.4 as well as the requirements and architecture work in WP3.2. It will also provide important input to SP1 and SP2. It should be noticed, however, that this deliverable concerns the AIDE design scenarios and use cases needed for designing the AIDE system and not the evaluation scenarios that will follow (addressing system's testing purposes) based on these design scenarios.

The user needs results most relevant for AIDE purposes are reported in the main body of the deliverable, while elaborate analysis and establishment are documented in the Annex 2. These results were taken into account during the derivation of scenarios' general solutions and moreover aim to feed the work in WP3.2 "AIDE requirements and specifications" in point of HMI guidelines. The user needs analysis was based both on results from previous projects regarding the end-users needs and preferences but also in the analysis of the results of a questionnaire-based survey of relevant needs and preferences of experts mainly from the Industrial partners of AIDE. This work was used both for the next part of this deliverable, the definition of design scenarios but it will mainly be used for the needs of WP3.2 (HMI requirements) and WP3.4 (HMI design).

The second part of the work reported in this deliverable is addressing the issue of the Design Scenarios needed for the design work of AIDE. In addition, the AIDE metafunctions are derived and reported at this report leading together with the Design Scenarios to concrete Use Cases to be used both for the design and development work of SP3 but also for the creation of evaluation scenarios from SP2. The AIDE Design scenarios are taking into account all situations where possible conflicts between ADAS and IVIS warning and information messages can occur and which can lead to problems for the driver, taking into account always the Driver's, Environment and Vehicle's situation. Special attention was given also to the creation of specific use cases related to Nomadic devices and their use within the vehicle environment and the personalisation of the AIDE HMI.

A key objective of the AIDE system is to resolve HMI-related conflict situations. This includes conflicts between different systems interacting with the driver as well as conflicts between this interaction and the driving situation. A major difficulty in describing these conflicts is that there are infinitely many possible combinations of interactions and driving situations. A key innovative aspect of the present work is the development of a methodology for describing the relevant conflict scenarios in a generalized way that the AIDE system should address. These generalized *AIDE design scenarios* define the scope of the AIDE system and will be used to derive the general AIDE functional requirements (in WP3.2).

The driver-system interaction is represented in terms of (driver/vehicle initiated) *actions* and the driving context defined in terms of *Driver-Vehicle-Environment (DVE-) conditions*. The generalized scenario descriptions were achieved based on parameterization and categorization of the actions and DVE conditions. The categorization schemes developed are explained in detail in the deliverable, as well as the actual design scenarios and use cases. Moreover, a set of general AIDE "meta-functions" for solving the conflict scenarios are derived from the scenarios.

Finally, a set of AIDE use cases not directly related to conflict situations are defined. These are mainly related to integration of nomad systems and adaptation to driver characteristics.