Title: Data collection and evaluation methods in the fields of ITS technologies for VRUs

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Recent developments in the ITS sector have put a stronger focus on vulnerable road users (VRUs), leading to an increased demand for research activities in this field. Consequently actual effects of these emerging technologies need to be assessed in view of safety, mobility and comfort aspects of pedestrians, cyclists and powered two-wheelers. To address the rising need for data on both potential user groups of these systems as well as on data on potential impacts a broad inventory of research methods, ranging from exploratory to (quasi) experimental designs have to be applied. Sustainable solutions, especially in the ITS sector, need to be developed and evaluated not only based on basic usability and design principles, but also take underlying levels of road user behaviour and mobility needs into account.

Based on experiences in national Austrian projects such as TrafficCheck.at (Urban sensing platform to improve traffic lights), TellMeTheWay (Multi-modal routing in urban transport systems), Ways2Navigate (Pedestrian navigation technologies based on speech, digital map and augmented reality), applied methodology is discussed. Focussing on both data collection as well data analysis a variety of different methods is presented.

Methods discussed cover the basic research phase of technology development projects, including user need assessment and identification of special interest groups (i.e. in course of exploratory and heuristic methods, including expert interviews and focus group discussions). In addition sociological and psychological methods applied in course of iterative development processes of solutions specifically addressing VRU mobility needs, based on user-centred design approaches are discussed. Proven instruments and issues in research design and participant sampling experienced in course of the above mentioned projects are introduced.

Specific tools for Usability assessments, field trials and stakeholder involvement are presented in view of their advantages and potential disadvantages in research projects, where user experience and involvement is treated as resource for the development of technological innovation.