Users' mental models of infotainment systems

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Abstract

This article presents the results of two studies concerning the nature of users' mental models of infotainment systems in passenger cars. The content of a mental model formed by a user in a certain situation during the operation of an infotainment system is defined here as the user's expectancies towards the system in that situation. In both studies verbal protocol analysis and *process tracing* were used to obtain the data. The first study found differences between the users' mental models and the conceptual model of an existing infotainment system with regard to menu structure, system reactions, and labelling. Aggregating the obtained data, the users' expectancies towards the course of operation were extracted for several operational tasks and graphic representations of the mental models were derived. Hypotheses were formed referring to those aspects of the mental models which exist independently of the specific interaction concept of the first system. Since these aspects are thought to be independent of a specific interaction concept, they were expected to manifest in the interaction with a second system that is operated using a different interaction concept. The second study verified the mental models and allowed general recommendations for the design of future systems. Those recommendations are planned to be evaluated in a following prototype study.

Introduction

Modern cars offer more and more infotainment features to the driver and passengers. So-called in-car infotainment systems include the functionality from different domains, such as audio/video entertainment, navigation, and telecommunication. Because several formerly separate devices (e.g. radio, navigation system, mobile phone) have been integrated under one sophisticated user interface, the outer appearance and the interaction concept of the system have changed. Instead of separate devices with several buttons each representing a fixed function, the user encounters a single menu-controlled system. Users will not only expect to find the functionality that they are familiar with in the menu, but also to be able to operate the desired functions in the same way as they are used to. The challenge for the designer during the development process of the infotainment system is to map the operation from a formerly separate device onto a system with a new interaction concept. Since technical devices differ in their interaction concepts and since users have different experiences with various technical devices, the expectancies toward the use of an