

# Joy of use in automotive touch screen UI for the driver

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## ABSTRACT

Touch screens are now an integral part of our everyday interactions and have also made their way into vehicles recently. With manufacturers always looking to provide something new and interesting to the customer, “joy of use” is now seen as one of the methods to do so. This contribution identifies some of the key aspects of designing for joy of use in automotive touch screen interfaces for the driver. An expert evaluation is used to firstly identify the in vehicle tasks that could be supported through a touch screen interface. The expert evaluation is followed by designing for joy of use where some sources of inspiration and a list of important dos and don'ts while designing for an in vehicle scenario gathered from discussions with the experts and other literature are presented.

## Keywords

In-vehicle touch interfaces, joy of use.

## 1. EXPERT EVALUATION

An expert evaluation was conducted with a group of 5 experts in the fields of design, usability and vehicle ergonomics to identify the in vehicle tasks that could be supported through a touch screen interaction. The method adopted was to first classify the in vehicle tasks as primary, secondary and tertiary tasks [1]. Following the classification, the evaluation of the tasks with respect to the safety aspects resulted in the decision that only the tertiary in vehicle tasks would be supported by the touch screen. This mainly due to the inherent nature of touch screens, of not being directly very useful when the vehicle is in motion. The tasks supported by touch screen interaction were decided to be Media, Navigation, Car information (oil and tire pressure levels), Communication and Climate control.

## 2. JOY OF USE

Joy of use can be understood as an extension of user experience. This implicates joy of use lets the user profit from using a product and increases the positive emotions by using [2]. It is widely accepted that good usability practices contribute greatly to joy of use. It has also been seen that certain task unrelated features such as music, graphics, animations, color, etc increase hedonic qualities [3] thereby joy of use.

## 3. DESIGNING FOR JOY OF USE

### 3.1 Inspirations

- Interactions from popular product interactions such as the iPhone, Xbox, etc
- A word exploration exercise to define characteristic words for joy of use (surprise, funny, etc) and translate words to definite features of the interface (informal language, movement, etc).
- Metaphors and paradigms from joyful everyday tasks.

### 3.2 Don'ts

- Deep hierarchical menu systems.
- Tasks requiring multiple actions/decisions from user.
- Excessive visuals, animations and graphics.
- Explanatory / long pieces of text.

### 3.3 Dos

- Multi modal feedback for user actions – haptic and / or auditory feedback in addition to the visual feedback.
- Support already familiar touch screen gestures for frequently used tasks – example: pinching for zooming.
- Select, drag and drop actions with large target sizes and target areas.
- Break down tasks into smaller chunks or simplify them for execution with minimal learning times and task completion times - example: control temperature and air speed together with one action on the climate control screen.
- Easy shortcuts and direct access to key functions and main menu items.

The above in addition to the well established principles of good usability and user centered design involving continuous, frequent evaluation of the design concepts with the users.

## 4. REFERENCES

- [1] Bubb, H.2003: Fahrerassistenz primär ein Beitrag zum Komfort oder für die Sicherheit? VDI Nr. 1768, pp. 25–44. VDI-Verlag
- [2] <http://www.joy-of-use.com/approach.html>
- [3] Marc Hassenzahl, Andreas Beu and Michael Burmester. 2001: Engineering Joy. IEEE Software.