

Intuitively usable user-interface concepts – Safety and reliability for usage of new functions and systems

Carsten Mohs

HFC Human-Factors-Consult GmbH
Köpenicker Straße 325
12555 Berlin
+49 (0)30 65763223

mohs@human-factors.de

Astrid Oehme

HFC Human-Factors-Consult GmbH
Köpenicker Straße 325
12555 Berlin
+49 (0)30 65763223

oehme@human-factors.de

ABSTRACT

In this contribution we present an overview of our research results on psychological concepts and methodology for the intuitive use of technology. We focus on the special relevance of concepts of intuitive use for mobile systems and safety systems. Comfort aspects are also considered.

As central and initial theoretical research result the concept ‘*intuitive use*’ will be defined and characterized. The theoretical assumptions then lead to two means for practical application, one of which includes principles for interface design, and the other one comprises criteria for prototype and product evaluation.

Categories and Subject Descriptors

H.1.2 [Models and Principles]: User/Machine Systems – *Human factors, Human information processing, Software psychology*

H.5.2 [Information Interfaces & Presentation]: User Interfaces – *Theory and Methods, User-centered Design, Graphical user interfaces (GUI) Evaluation / methodology*

D.2.2 [Software Engineering]: Design Tools and Techniques – *User interfaces*

General Terms

Human Factors, Theory, Performance, Design, Measurement, Safety, Reliability, Experimentation, Verification

Keywords

intuitive use, intuitiveness, human machine interaction, interface design, usability engineering, attention

1. INTRODUCTION

In times of short product cycles and increasing product functionality users and manufacturers are searching for usability solutions which provide spontaneous “easy” and correct use, probably while solving some other tasks like, for example, driving a car. A common approach to give the user a feeling of easy use is to design interfaces for *intuitive use*. But what does ‘intuitive use’ exactly mean – especially as a scientific term?

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2. DEFINITION OF INTUITIVE USE

Intuitive use is a widely applied term even though there is no clear, consistent, or detailed understanding of the concept’s meaning nor a complete equivalent already exists in other usage concepts. – On the Basis of literature review, expert workshops, user surveys and observations as well as analysis of relevant processes of usage the following definition has been elaborated:

‘Intuitive use’ is an interaction event of a user with an unknown or sporadically used system or object, which happens by spontaneous application of unconsciously transferred and adapted knowledge and thus is accompanied by a feeling of very low mental effort.

Additional we found a characteristic usage concept, holding – compared to other concepts, e.g. familiarity – characteristic features for special demands or requirements regarding the human-technology interaction and therewith proves to be particularly suitable for the respective applications. Furthermore there are special usage situations and usage contexts in which intuitive use provides appropriate support and moreover increases the safety of individuals. Intuitively usable interfaces are highly supportive and facilitate the mental relief in multiple-tasks situations while an effective task processing is still given or even enhanced. This is of special importance when interacting with one of the numerous assistance systems while driving.

3. DESIGN AND EVALUATION MEANS

The theoretical characterization of the construct differentiates clearly between the process description *intuitive use* and the system feature *intuitive usability*. This separation offers the possibility to regard, define, characterise, and substantiate both aspects independently for their particular application. The evaluation criteria are separated in subjective and objective criteria. The design principles combines necessary and supporting principles.

Based on the theoretical results and the criteria for design and evaluation methodological suggestions with respecting tools regarding the integration of aspects of intuitive use in all major phases of a product development cycle have been developed.

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