

## Exploring Design Criteria for Intuitive Use

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**Abstract:** "Intuitive Use" is increasingly mentioned as being a requirement for product design. However, it has not been established as a scientific term in the HCI community so far. Even though this disparity exists, practitioners need to know how intuitive use can be defined, how it can be measured, and how it can be designed. In usability engineering, several design criteria are discussed. But, to what extent are these principles used when designing for intuitive use and how effective are they when implemented? Are there design principles that have not been discussed yet but need to be? With the participants of the present workshop we aim to develop answers to these questions and explore possible design principles for intuitive use.

### 1 Background and Aim of the Workshop

*Intuitive Use* is often stated as a requirement for designing products. To make it a design goal, it has to be defined what *intuitive use* exactly means, how it can be measured, and finally how it can be influenced by designers. Based on literature research on the terms *intuition* and *intuitive* (cf. eg. [Ra94], [Sp05], [Bl06]) as well as empirical analyses of the usage of these terms by developers, users, and usability experts, the following definition of *intuitive use* has been established: "A technical system is intuitively usable when leading to effective interaction by using previous knowledge unconsciously." [Mo06]. From this definition, approaches to the measurement can be derived: *intuitive use* should come along with effectiveness and low mental effort regarding the use of the system. But how can *intuitive use of user interfaces* be influenced from a design perspective? Regarding those questions, usability engineering experts usually consider gestalt principles, affordances, consistency, compatibility, population stereotypes, the user interface metaphor, etc. However, are these principles actually used for designing usable systems, and, if so, how effective are they? Are there design principles that have not

been discussed yet? Together with the workshop participants we would like to develop detailed answers to these questions.

One major result of the workshop shall be a set of possible design criteria for *intuitive use of user interfaces*, meaning approaches for answering the following questions: What requirements does a system have to meet (for a certain user in a certain context) in order to be *intuitively usable*? Can, for all contexts of usage, mandatory and optional aspects be identified? The overall goal is to provide guidelines to designers and developers. In a joint discussion we would like to identify concrete design criteria, as, for example affordances, etc. and develop suitable design methods.

## 2 Workshop Organizers and Participants

The workshop “Exploring Design Criteria for Intuitive Use” is initiated and organized by the IUI Research Group (Intuitive Use of User Interfaces). Within this interdisciplinary group we have been working for several years now on the concept of *intuitive use* and its theoretical basis. We also try to find out what distinguishes *intuitive use* from other related or competing concepts. After the joint development of a definition of *intuitive use*, we would now first like to get a vivid discussion started with scientists and practitioners working at related topics. Second, we would like to derive concrete guidelines for designing interfaces from our concept as a theoretical basis.

The workshop addresses an international audience and is open to all disciplines dealing with human-computer interaction (computer science, design, engineering, human factors, psychology, etc.).

## 3 Current Research on Intuitive Use

All workshop participants submitted a position paper discussing their theoretical approach to intuitive use and, deriving from this theoretical basis, examples of intuitive and non-intuitive use. The papers were also supposed to contain the authors’ conclusions for designing interfaces. In the following, the five accepted workshop papers will be introduced briefly:

*Blackler, Popovic & Mahar* developed three principles for designing for intuitive use based on an own definition. They describe intuitive interaction as a mostly unconscious cognitive process which is enabled by the familiarity of features the user experienced in past interactions.

*Petruschat, Fekete, Lahr, Laabs, Freitag & Wacker* state a transfer of learned knowledge that is generally unconscious. They point out the role of curiosity that helps the user in the process of exploration of unknown things. The presented design guidelines include the aspect of the user’s objectives.

Former publications document the intense research of *Israel & Hurtienne* in the field of intuitive use. The authors now address the seam between physical and digital objects or elements in mixed reality. By discussing well-known design principles and dimensions they aim to specify the differentiation between physical and digital elements.

*Visch* sees a big challenge for interaction design in learning from attribution theory and embodied cognition theory. He explains that intuitive interaction is experienced by the user when embodied affective knowledge, like distinctive motor behavioral components, is activated. Designers should predict the user's behavior with the help of an automatic attribution process and integrate embodied cognition theories to interface design.

In a student's class work, interfaces have been collected that were found as non-intuitive to use. Dimensions of intuitive use were measured by a combination of questionnaires. *Drewitz & Dreßler* present the student's studies that include a redesign of the interfaces. The results are applied in implemented interface mock-ups.

## References

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