



Understanding users' experience of interaction

Sascha Mahlke

Berlin University of Technology

Centre of Human-Machine-Systems



Background

Research framework

Case study



Evaluation of quality in use

(Bevan, 1995; ISO 9241-11, 1998)

- Interaction-centred components
 - Effectiveness
 - Efficiency

- User-centred components
 - Satisfaction



User-centred components get more important!

- User = Consumer
 - Consumer electronics
 - In-vehicle information systems
 - ...

- Design for user experience is as important as design for effectiveness and efficiency



*“... Indeed, many measurements of user satisfaction are limited to, what users think of a given application. Not surprisingly, **instruments intended to measure user satisfaction also tend to be quite crude and vague and focus mostly on the efficiency and effectiveness of the interaction.**”*

(Lindgaard & Dudek, 2003)



*“... Although widely accepted, **usability definition's focus on tasks and goals, their efficient achievement and the involved cognitive information processes repeatedly caused criticism**, as far back as Carroll and Thomas' (1988) emphatic plea not to forget the "fun" over simplicity and efficiency ...” (Hassenzahl, 2005)*



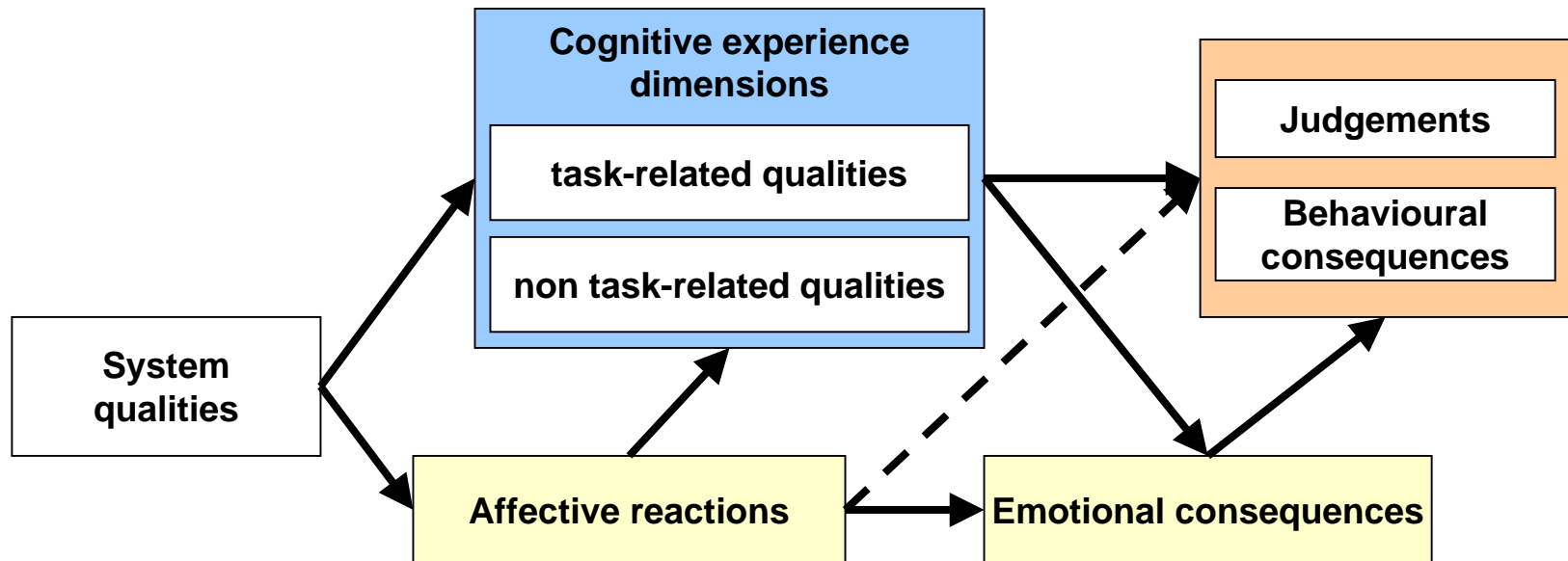
- fun of use (Carrol & Thomas, 1988)
- emotional usability (Logan, 1994; Kim & Moon, 1998)
- ludic products (Gaver & Martin, 2000)
- pleasurable products (Jordan, 2000)
- hedonic quality (Hassenzahl, 2001)
- product emotions (Desmet & Hekkert, 2002)
- visual aesthetics (Lavie & Tractinsky, 2004)
- affective quality (Zhang & Li, 2005)



- User-centred view on product quality gets more important!
- A lot of new components, but ...
 - ... which are important?
 - ... how do they interact?
 - ... how to use them to evaluate user experiences with interactive systems?

→ Integrative model approach

User experience research framework





Better understand the components of user experience and their connections

- ... analyse the influences of affective reactions on quality assessments (Zhang & Li, 2004)
- investigate the effects of affective reactions and quality assessments on emotional consequences (Tractinsky & Zmiri, 2005)
- ... research their influence on overall judgments and usage behaviour
- ... also question which system qualities act on the components of user experience



Find methods to study all aspects of user experience

- Multifaceted measuring of emotional aspects
 - Studying the relationship between different components of emotions (Process Model; Scherer, 1984)
 - cognitive: appraisal questionnaire
 - physiological: skin conductivity, heart rate
 - facial action: electromyographie (zygomaticus, corrugator)
 - subjective feelings: SAM (self-assessment manikin)
 - behavioural: accuracy and speed during working tasks
 - Aim: understand which methods are best applicable to study emotional consequences as part of user experience

User experience evaluation approach

- Studying *instrumental and non-instrumental qualities* as well as *affective reactions and emotional consequences* of system use ...
- ... in the domain of consumer electronics (digital audio players).





- 30 participants
- Questionnaires to survey the components of user experience
 - Affective reactions: affective quality questionnaire (Zhang & Li, 2005)
 - Task-related qualities: perceived usefulness & ease of use (Davis, 1989)
 - Non task-related qualities: hedonic quality (Hassenzahl, 2004), visual aesthetics (Lavie & Tractinsky, 2004), haptic quality (Jordan, 2000)
 - Emotional consequences: self-assessment manikin (Morris, 1995)
 - Judgements: ranking, overall acceptance

Case study



Affective reactions	arousing, neutral valence	positive valence
Task-related qualities		more useful and higher ease of use
Non task-related qualities	higher ratings regarding haptic and hedonic quality as well as visual aesthetics	
Emotional consequences	more pleasurable and arousing	neutral
Overall judgement		higher ranking, better acceptance ratings



- Need to better understand users' perspective on human-technology-interaction
 - New worlds
 - New relevant aspects of interaction
 - No adequate instruments & models
- Integrative model of user experience to integrate approaches to the users' perspective
 - Better understand the components and their connections
 - Find methods to measure all components
 - Use as basis for user experience evaluations



Thank you!

Sascha Mahlke
Berlin University of Technology
Centre of Human-Machine Systems
sascha.mahlke@zmms.tu-berlin.de
www.zmms.tu-berlin.de/~sma