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A User-Centered Approach for Adaptive Systems Evaluation

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Position of the presentation

• The paper proposes a **user-centered approach** for the design and the evaluation of adaptive systems.

• Need to apply all the techniques necessary to realize a user-centered approach, also the disregarded one

• Iterative design and evaluation of user-adaptive systems.

Phases of evaluation

- The requirement phase
- Preliminary evaluation phase
- Final evaluation phase

The requirement phase

Benyon's requirement phase of an adaptive system (Benyon, 1993):

• *functional analysis*, aimed at establishing the main **functions** of the system;

• *data analysis*, concerned with understanding and representing the meaning and structure of **data** in the application;

• *task knowledge analysis*, focused on the **cognitive characteristics** required by users of the system

• *user analysis*, that determines the scope of the **user population** that the system is to respond to

• *environment analysis*

The requirement phase

Methods that can be considered as **generative**,
since it can offer contributions during the design phase by providing the mean of combining **design specification** and **evaluation** into the same framework (Dix et al, 1998)

The requirement phase

• *Task analysis*. Task analysis methods are based on breaking down the tasks of potential users into users' actions and users' cognitive processes

•*Applicability*: functional, data and task knowledge analysis of Benyon's classification

The requirement phase

- *Cognitive and socio-technical models.*
  - the understanding of the internal cognitive process as a person performs a task, and the representation of knowledge that she needs to do that
  - the inclusion of social and technical issues

- *Applicability*: task knowledge and environment analysis of Benyon's classification

The requirement phase

• *Contextual evaluation.* Contextual evaluation is usually organized as a semi-structured interview covering the interesting aspects of a system while users are working in their natural work environment on their own work.

•*Applicability*: user and environment analysis of Benyon's classification

The requirement phase

• *Focus group*. Focus group is informal technique that can be used to collect user opinions. It is structured as a discussion about specific topics moderated by a trained group leader

•*Applicability*: functional, data and environment analysis of Benyon's classification

The requirement phase

• *Systematic observation* . The systematic observation can be defined as a "particular approach to quantifying behavior”

•*Applicability*: functional, data, task knowledge, and environment analysis of Benyon’s classification

Preliminary evaluation phase

•*Heuristic evaluation.* Heuristic evaluation describes a method in which a small set of evaluators examine a user interface and look for problems that violate some of the general principles or guideline (of good interface design)

•*Cognitive walkthrough.* Cognitive walkthrough is an evaluation method wherein experts play the role of users in order to identify usability problems.

•*Applicability*: making prediction about interface adaptations

Preliminary evaluation phase

•*Expert review*. Their presence can be beneficial in the initial implementation phases of an adaptive system

•*Applicability*: making prediction about content and interface adaptations

Preliminary evaluation phase

•*Prototypes.* Prototypes are artifacts that simulate or animate some but not all features of the intended system

•*Applicability*: preliminary quantitative empirical evaluation of the all levels of adaptations

Preliminary evaluation phase

•*Wizard of Oz prototyping*. Wizard of Oz prototyping is a form of prototyping in which the user appears to be interacting with the software when, in fact, the input is transmitted to the wizard (the experimenter) who is responding to user's actions.

•*Applicability*: simulation of real time user-adapted interaction

Preliminary evaluation phase

•*Cooperative evaluation.* The cooperative evaluation includes methods wherein the user is encouraged to act as a collaborator in the evaluation to identify problems and their solutions.

•*Applicability*: preliminary qualitative evaluation with real users

Preliminary evaluation phase

•*Participative evaluation.* In participative evaluation final users are involved with the design team and participate in design decisions.

•*Applicability*: real users participating in the design phase

Final evaluation phase

•*Ethnography*. Ethnography involves immersing the researcher in the everyday activities of an organization or in the society for a prolonged period of time.

•*Applicability*: collection of data in real situation; exploratory study; discovering new phenomena

Final evaluation phase

•*Grounded Theory*. Is a theory derived from data systematically gathered and analyzed through the research process.
The collected data may be qualitative or quantitative or a combination of both types,

•*Applicability*: analysis of qualitative and quantitative data for exploratory study and discovering new phenomena

Thank you for the attention

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