

# A RAPID METHOD FOR TAILORED, MULTI-PERSPECTIVE EVALUATION OF USER INTERFACES

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## ABSTRACT

The computer-supported evaluation method FACE can be used for rapid evaluation of user interfaces without restriction to a single perspective or a standardized technique. This paper lists the considerations on which its design is based, describes its use, and reports on a field test.

**KEYWORDS:** Interface evaluation, empirical methods.

## OBJECTIVES

Empirical evaluation of an interface is often skipped because the time investment is considered to be too great. The FACE method was designed to allow an experienced evaluator to complete all aspects of an evaluation with a total investment of 8 hours. FACE was designed to support the use of a number of different evaluation techniques, so as to yield a thorough evaluation with maximal validity; and to be applicable to a wide variety of interfaces, present and future.

## GENERAL DESIGN CONSIDERATIONS AND KNOWLEDGE BASE

A review was conducted of existing literature on user interface evaluation methods. (References and details are presented in [1].) This survey yielded several general recommendations concerning the design of FACE, including the following:

*Efficiency* Ways of maximizing the efficiency of an evaluation method include: (a) the provision of templates that guide the evaluation and minimize the amount of information that must be entered; and (b) the on-line accessibility to the

evaluator of as much as possible of the relevant background knowledge.

*Multiple Perspectives* The evaluator should be given full information on the properties of a wide range of evaluation techniques and helped to determine their applicability to the situation at hand. The techniques employed in a given situation should not elicit judgments only from an experienced evaluator, or only from end users, as these different categories of persons provide valuable complementary perspectives. A modular structure for the overall method permits a flexible evaluation that yields a multivariate view of the interface.

*Tailoring* To allow tailoring of the evaluation to the specific situation, the method should facilitate the construction of customized lists of usability dimensions, questions to be asked, and guidelines to be considered. The evaluation should be aimed at the interests of the specific persons that will be making use of its results (e.g., end users, or managers). Its purpose should be discussed in advance with a representative of the organization, and background information should be collected on both the system and the organization.

## Knowledge Base Concerning Specific Evaluation Techniques

The above-mentioned literature survey also yielded a compilation of information about various specific evaluation techniques. The following 10 techniques were covered: system walkthrough, heuristic evaluation, questionnaire and checklist, thinking aloud, interview, group discussion, naturalistic observation, picture presentation, audio recording, and video recording. This survey yielded, for each technique, the following types of information: (a) points to attend to in order to apply the technique rapidly yet validly; (b) an appropriate form for documents to be consulted and filled in while applying it; and (c) strategies for analysing the data generated.

## USE OF THE EVALUATION METHOD

FACE is implemented as a hypertext stack which is worked through in three phases: *preparation*, *evaluation*, and *presentation*.

### Preparation Phase

Before the evaluator directly confronts the system, he or she contacts the organization to obtain the types of background information mentioned above. Two checklists are filled in by end users and one checklist by a manager, revealing the characteristics and perspectives of the users and the organisation, respectively.

### Evaluation Phase

This phase itself begins with a preparatory part, in which the evaluator walks through the hypertext stack, working out the evaluation design step by step. FACE actively supports the evaluator in choosing a set of techniques to apply, drawing on its general knowledge base about the techniques. First, the evaluator specifies four situational factors: (a) the number of evaluators available to examine the system; (b) the extent to which users are available for testing; (c) the extent to which the system can be interrupted from its normal functions; and (d) the size and complexity of the system. FACE then uses a set of relatively simple rules to make tentative recommendations. For example, if the evaluator rates the system to be not especially complex or large, FACE is likely to recommend consideration of the *picture presentation* technique; but it will do so only if users are available for the evaluation. The evaluator can second-guess the recommendations FACE makes: By clicking on the corresponding icons, the evaluator can consult background information on each technique or change its status from "selected" to "not selected", or vice-versa. In the latter case, FACE makes a new estimate of the total time required to apply the techniques in the current context.

FACE prints out forms that can be filled in by hand during the application of the evaluation techniques and gives hints concerning the effective application of the set of techniques selected. No computer support is currently provided during the application of the techniques in the field (though with the advent of highly portable pen-based computers the introduction of such support is a logical next step).

### Presentation Phase

The evaluator begins the analysis of the data collected in the field by entering it into a word-processing document comprising all of the forms used in the field. The evaluator then reorders the information (in outline mode), so that all information relevant to a given issue is contiguous within the file. On the basis of this overview of

the results, the evaluator formulates conclusions, e.g., concerning strong and weak points of the system and possible improvements. The evaluator then pastes these conclusions into a report template into which FACE has automatically entered information such as names and dates.

## FIELD TEST

FACE was tested on a small scale in an evaluation of an information system used by the administration of a psychiatric institution. Two evaluators with several weeks' experience in empirical interface evaluation were given a 90-minute introduction to FACE. They were then given the information that resulted from the Preparation Phase (carried out by the experimenter), e.g., filled-in checklists and system documentation. Each evaluator then used FACE independently to design a data-collection strategy. They disagreed in part in their selection of evaluation techniques. To ensure comparability, they were given an evaluation design that represented a compromise between their two designs, comprising a system walkthrough, a thinking-aloud session supported by audio recording, and an interview.

Sticking closely to the prescribed time schedule, the two evaluators independently produced reports describing a total of 80 usability problems with the system; about half of those found by each evaluator were found by the other one as well. Two employees within the organization rated the evaluation process as having not been time-consuming to them and judged the information in the reports to be relevant to the goals of the organization. The behavior of the evaluators did exhibit several inefficient aspects which pointed to the need for local improvements in FACE.

Especially considering that the evaluators had no previous experience with FACE and that not all possibilities for computer support have yet been exploited, even this small-scale study demonstrates that a tailored evaluation using several different perspectives and methods can be conducted within severe time limitations.

## REFERENCE

1. Hulzebosch, R. *Not just a pretty FACE: A computer-supported method for fast usability auditing of user interfaces*. Master's thesis, University of Nijmegen, Department of Cognitive Science, 1992. (Available from the author.)