



Usability Inspection Methods

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ABSTRACT

Usability inspection is the generic name for a set of cost-effective ways of evaluating user interfaces to find usability problems. They are fairly informal methods and easy to use.

Keywords: Usability engineering, heuristic evaluation, cognitive walkthroughs, pluralistic walkthroughs, feature inspection, consistency inspection, standards inspection.

INTRODUCTION

Software inspection [1][7] has long been used as a method for debugging and improving code. Similarly, usability inspection [25] has seen increasing use since about 1990 as a way to evaluate user interfaces. The four basic ways of evaluating user interfaces are *automatically* (usability measures computed by running a user interface specification through some program), *empirically* (usability assessed by testing the interface with real users), *formally* (using exact models and formulas to calculate usability measures), and *informally* (based on rules of thumb and the general skill and experience of the evaluators). Under the current state of the art, automatic methods do not work and formal methods are very difficult to apply and do not scale up well to handle larger user interfaces.

Empirical methods are the main way of evaluating user interfaces, with user testing probably being the most commonly used method. Often, real users can be difficult or expensive to recruit in sufficient numbers to test all aspects of all the versions of an evolving design, leading to the use of inspection as a way to "save users." Furthermore, project schedules or budgets sometimes impose restrictions that make informal methods like inspection desirable as a "discount usability engineering" solution [16][21] since they are highly cost-effective [8]. Several studies have shown that usability inspection methods are able to find many usability problems that are overlooked by user testing but that user testing also finds some problems that are overlooked by inspection, meaning that the best results can often be achieved by combining several methods [5][6][11].

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INSPECTION METHODS

Usability inspection is the generic name for a set of methods that are all based on having evaluators inspect the interface. Typically, usability inspection is aimed at finding usability problems in a design [13], though some methods also address issues like the severity of the usability problems and the overall usability of an entire design [28]. Many inspection methods lend themselves to the inspection of user interface specifications [17] that have not necessarily been implemented yet, meaning that inspection can be performed early in the usability engineering lifecycle [19].

- *Heuristic evaluation* [23][27] is the most informal method and involves having usability specialists judge whether each dialogue element follows established usability principles (the "heuristics" [15][18][21][22]).
- *Cognitive walkthroughs* [12][29][30] use a more explicitly detailed procedure to simulate a user's problem solving process at each step through the dialogue, checking if the simulated user's goals and memory content can be assumed to lead to the next correct action.
- *Formal usability inspections* [9] use a six-step procedure with strictly defined roles to combine heuristic evaluation and a simplified form of cognitive walkthroughs.
- *Pluralistic walkthroughs* [3][4] are meetings where users, developers, and human factors people step through a scenario, discussing each dialogue element.
- *Feature inspection* [2] lists sequence of features used to accomplish typical tasks, checks for long sequences, cumbersome steps, steps that would not be natural for users to try, and steps that require extensive knowledge/experience in order to assess a proposed feature set.
- *Consistency inspection* [31] has designers representing multiple projects inspect an interface to see whether it does things in the same way as their own designs.
- *Standards inspection* [31] has an expert on some interface standard inspect the interface for compliance.

Heuristic evaluation, cognitive walkthroughs, feature inspection, and standards inspection normally have the interface inspected by a single evaluator at a time (though heuristic evaluation is based on combining inspection reports from a set of independent evaluators to form the list of usability problems). In contrast, pluralistic walkthroughs



and consistency inspections are group inspection methods. Finally, formal usability inspections combine individual and group inspections. Many usability inspection methods are so easy to apply that it is possible to have regular developers serve as evaluators, though better results are normally achieved when using usability specialists [20].

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