

Site-ability: A Website Usability Measurement Tool

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Abstract— Usability plays a major role towards user acceptance of website and it is increasingly becoming an important topic for organizations that develop and implement websites to market their products and services. Thus evaluating usability is critical for organizations in order to develop user friendly websites. One major challenge in usability evaluation is that most of the evaluation methods are subjective which depends on the evaluator's personal interpretations and judgment of the website. This is due to the lack of availability of automated tools in the respective field. Further, most of the usability evaluation methods are involved with manual approaches that consume time and money which is not affordable for organizations. Site-ability is an automation tool for website usability evaluation which is capable of mimicking human usability experts and it is based on usability guidelines provided by U.S. Department of Health and Human Services' (HHS) Research-Based Web Design and Usability Guidelines.

Keywords— Website Usability, Automation, Expert System.

I. INTRODUCTION

"Users experience the usability of a site before they have committed to using it and before they have spent any money on potential purchases" [2]. Thus, developing user friendly websites that meets organizational needs is critical.

The International Standards Organization's ISO9241 standard, defines usability as the "Effectiveness, efficiency and satisfaction with which specified users achieve specified goals in particular environments". The concept of usability can also be defined as "how well and how easily a user, without formal training, can interact with an information system of a website" [3]. Researches show that the users' acceptance of a website consists of both functionality and usability [4]; [5].

"A website can be evaluated based on the presence or absence of certain functions or on the performance of those functions" [6]. By using automation frameworks, evaluation of functionality can be assessed accurately and effectively. However, when evaluating the usability of a website, most of the time companies have to hire usability experts due to lack of expertise in the area. Such experts are evaluating the website usability manually. Thus, usability is not intrinsically objective in nature, but rather is closely intertwined with an evaluator's personal interpretation of the artifact and his or her interaction with it [1]. Also, these methods require the recording of the actions a user makes while exercising an interface which is a time-consuming activity [18] and some companies might not have adequate funds to afford it. The objective of this project is to develop

an automated, generic, reliable, affordable, less time consuming and valid website usability measurement framework based on certain predefined usability guidelines.

II. MEASURING USABILITY

A. Usability Evaluation Approaches

There are 2 commonly used usability inspection methods available,

- Heuristic evaluation
- Cognitive walkthrough

1) Heuristic Evaluation

Heuristic evaluations were introduced by Nielsen and Molich in 1990 in their paper on "Heuristic Evaluation of User Interfaces" [7]. "Heuristic evaluation is an informal method of usability analysis where a number of evaluators are presented with an interface design and asked to comment on it". "Ideally, people would conduct such evaluations according to certain rules" [2]. Heuristic evaluation requires a set of valid usability guidelines to evaluate a website and the presence of at least 1 usability expert.

2) Cognitive Walkthrough

A cognitive walkthrough is also a usability inspection method which is similar to Heuristic evaluation but the emphasis is on tasks. The idea is basically to identify users' goals, how they attempt them in the interface, then meticulously identify problems users would have as they learn to use an interface. The cognitive walkthrough is an extension of earlier work by Polson and Lewis [10] [11]. Similar to other inspection methods, a cognitive walkthrough can also be performed on an interface at any time during the development process, from the original mock-ups through the final release [8].

3) Disadvantages of Existing Approaches

Cognitive walkthrough and Heuristic Evaluation both have common drawbacks as explained below.

- Needs 1 or more experts to evaluate the system [11].
- These experts should have expertise in both usability evaluation and in the specific domain (e.g., Construction, Automotive, etc) [11].
- Neither method is a substitute for testing with actual users. Both offer a potentially cheaper way of identifying problems at all stages of the development process [11].
- It can be difficult to test users on a prototype and these inspection methods provide for early