Perspectives in the Development of ErgoCoIn

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Abstract. This paper presents current actions and perspectives concerning the development of the ErgoCoIn approach, which allows non expert inspectors to conduct ergonomic inspections of e-commerce web sites. An environment supporting inspections based on this approach was designed and a tool is being developed in order to allow the accomplishment of the approach validation plan. Perspectives concern the development of a wiki environment aimed to support this approach evolution as well as the integration of a specific task oriented log analysis tool.

Resumo. Este artigo apresenta as ações atuais e as perspectivas relacionadas ao desenvolvimento da abordagem ErgoCoIn, destinada a permitir que não especialistas possam realizar inspeções da ergonomia de sites de comércio na web. Um ambiente de apoio às inspeções baseadas nesta abordagem foi projetado e um protótipo está sendo desenvolvido visando a validação desta abordagem. As perspectivas ficam por conta do desenvolvimento de um ambiente compartilhado do tipo wiki para apoiar a evolução da mesma, assim como a integração de uma ferramenta especial que realize análises de dados de log segundo uma abordagem orientada a tarefas.

1. Introduction

ErgoCoIn [1, 3] is an approach designed to provide support to inspectors in order to allow them to perform objective web sites ergonomic inspections[1]. With the goal of improving the quality of theirs diagnoses, this approach postulates that inspectors consider web sites context of use data, including: users, tasks and environments attributes. For objectiveness, only questions associated to information demand predefined by checklists are integrated to the contextual analysis interviews/questionnaires. With the same goal, only applicable questions are presented to inspectors while inspecting the web site. They will be performing "discount" context

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of use analysis and applying "low-cost" checklists. Besides objectiveness, the ErgoCoIn approach aims at supporting inspectors producing more homogeneous results when compared to those produced by ergonomic experts.

In this paper we introduce a prototype aimed at supporting the ErgoCoIn approach's validation plan. We discuss the recently identified requirements for the ErgoCoIn development, concerning specifically to the variety and the novelty of the approach's knowledge base. In order to achieve the fulfillment of these requirements, we propose the development of a collaborative effort aimed to insure the continuous enrichment of the ErgoCoIn knowledge base. Finally, we introduce the integration of a task oriented log analyzer to the original EgoCoIn approach.

2. The ErgoCoIn Environment and Validation Tool

Based on the ErgoCoIn logic architecture, we have modeled, designed and implemented a prototype aimed to support the phase of ergonomic inspections. 182 questions linked to 18 Ergonomic Criteria properly ranked are filled into the prototype data base. Once the tool is completed, we will start accomplishing cycles of validation studies focusing on the underlying approach. At each cycle, a number of inspectors will be invited to use the tool in order to perform inspections of a given e-commerce web site. Results from all inspectors, as well as the log of their actions will be gathered and analyzed from both homogeneity and objectiveness points of view. The goal behind revision proposals is to get inspections more objective and reports more coherent. Validation cycles will be repeated until expected objectiveness and homogeneity criteria have being reached.

The inspections cycles will allow us to have a better understanding of the way tasks concerning ergonomic inspections of web sites are accomplished, and specify a tool specially fitted to those tasks. Indeed, we intent to specify an ErgoCoIn user interface able to support inspectors spread all over the world performing ergonomic inspections of web sites from different domains, not only the ones concerning e-commerce. The idea is to offer the tool to those who want to make inspections, and want to contribute to the enrichment of the ErgoCoIn knowledge base and programming code.

3. The Wiki-ErgoCoIn

We propose to change the scope of the ErgoCoIn development in order to support a collaborative initiative. In fact, this kind of initiative is among the most interesting phenomena observed in the recent history of the web. Collaboration is authorized by special functions offered by web sites allowing users to create, share and organize the content by themselves. Best examples of socially constructed web sites are Facebook, Youtube, Flickr, Digg, del.ici.ous and Wikipedia.

Particularly, the Wikipedia is the most successful example of collaboration concerning scientific content on the web. This socially constructed encyclopedia features remarkable internet traffic numbers as it is the 9th most visited web site in the whole Web. From 2001 to now, 7.2 million of articles were posted in Wikipdia. Those were produced by 7.04 million of editors following some style and ethic rules [4]. Wilkison and Huberman [5] performed a study concerning 52.2 million edits in 1.5 million articles in the English language Wikipedia posted by 4.79 million contributors

between 2001 and 2006. They splitted out a group of 1,211 "*featured articles*", which accuracy, neutrality, completeness and style are assured by Wikipedia editors. Comparisons between featured and normal articles showed a strong correlation among the article quality, the number of edits and the number of distinct editors. In the same study, the authors were able to associate attractiveness of the articles (number of visits) to the edits novelty.

The goal of having ErgoCoIn as a collaborative web initiative is to increase the generality and attractiveness of its contents as well as the quality of the results this approach could lead to. Indeed, the Wiki-ErgoCoIn is being designed in order to allow ergonomic inspectors all over the world to share efforts and responsibilities concerning the ErgoCoIn knowledge base extension and generalization. In doing so, we can expect that the Wiki-ErgoCoIn will always feature newly proposed questions concerning ergonomics of web sites from different application domains, interface styles and components. Contributions should fulfill a basic requirement: follow free-content collaboration rules like those developed by Wikipedia. We believe that the results obtained by such a cooperative approach can be much more efficient and reliable than the ones that would be obtained solely by individual initiatives.

4. The UseMonitor component

Another kind of extension that is being considered concerns the integration of the results from the analysis of usage log data produced with this approach. Such data can be collected using specific software tools for this purpose. In fact, a usability oriented web analyzer called UseMonitor is being developed and associated to the ErgoCoIn approach. This tool can present warnings about the "a posteriori" perspective on usability problems, i.e., interaction perturbations occurring while users are interacting with the web site in order to accomplish their goals. Basically, the UseMonitor can indicate when the observed efficiency rate is particularly low. Detailed efficiency indication is about the rates and time spent of unproductive users' behaviors like solving error, asking help, hesitation, deviation, repetition and so on. Furthermore, the UseMonitor can indicate web pages related to this kind of perturbations. A logic architecture based on the integration of (i) a typology of usability problems, (ii) the ergonomic criteria/recommendations and (iii) a model of interface components is also being defined. This will allow the UseMonitor warning the inspectors about a detailed interface aspect causing an actual usability perturbation (a posteriori result), while ErgoCoIn will be helping inspectors identifying the user interface component responsible for such perturbation as well as indicating how to fix it (a priori result). The integration of ErgoCoIn and UseMonitor defines the ErgoManager environment [2]. As a tool for usability evaluation of such an environment will be automating both processes, the failure identification (by log analysis) and failure analysis (by guidelines processing. Details of this architecture are being defined and will be introduced in future publications.

5. Conclusions

ErgoCoIn is an inspection approach strongly based on knowledge about ergonomics of web user interfaces. This knowledge is intended to guide inspectors while undertaking contextual data gathering and analysis, checklists based inspections and report actions. In this paper we described details of this approach and the environment designed to

support it. We have also introduced the tool that is under development to validate its structure and contents. We will perform the validation activities following cycles of application-analysis-revisions until the approach reaches expected objectiveness and homogeneity goals.

However, the success of the ErgoCoIn initiative depends basically on the variety and the novelty of its knowledge. Nowadays, this approach is linked to the ergonomics of the current e-commerce web applications and interfaces technologies, styles and components. Indeed, all these aspects may evolve continuously using just e-commerce may be a very limited scope. Consequently, there is the need to undertake actions in order to face the challenge of continuously getting ErgoCoIn contents up to date and varied to support the production of inspection reports in different web sites domains. An open initiative is being proposed by which anybody knowledgeable will be authorized to contribute to the enrichment of the Wiki-ErgoCoIn knowledge base. Consultative and executive boards will be created to define strategies and policies concerning implementation of this ergonomics inspection wiki.

6. References

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