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HEURISTIC EVALUATION OF IPROJECT INTERFACE DESIGN IN CORPORATE PROJECT MANAGEMENT

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ABSTRACT

The system's interfaces should be made considering the needs of users and should adapt to their behavior and expectations. iProject is a project management tool used in SINFO-UFRN that has been developed by analysts without concerning for the user and therefore presents some usability problems. With the participation of SINFO design area experts, an heuristic evaluation was performed for the purpose of assessment tool, in the area for external users, partners and users of the SIG-UFRN systems in response to management of corporate projects, and proposed interface improvements from the identified problems.

Keywords: Human-Computer Interaction; usability; Heuristic Evaluation; Design; Corporate System.

INTRODUCTION

Institutions are increasingly seeking access to new markets, increased productivity, organizational improvement and added value for the user. One of the most efficient ways to generate value is the creation of new products, services, processes or ideas, which necessarily

involve project management (DUQUE and MOREIRA, 2009). Project management is the application of knowledge, skills, tools and techniques to project activities in order to meet project requirements (PMI, 2008).

The corporate project management tools available on the market do not fully meet the needs of the public sector, since they are paid software, which escape the reality of the national scenario in which the government's search for technological independence leads to the use of free software or proprietary solutions (LINS and VERAS, 2011). The Information Technology Superintendency - SINFO of the Federal University of Rio Grande do Norte - UFRN chose to develop its own tool, called iProject, to facilitate the control of variables involved in documentation, development, testing and systems support activities, as well as due to the lack of system management tool that offered the services required for those activities.

In 2009, SINFO began a process of transferring technology from its Integrated Management Systems (SIG-UFRN) to other federal public institutions (external users) and therefore needed to update iProject to meet this new profile. In this sense, Lins and Veras (2011) carried out a study of corporate project management (EPM) and proposed an interface for managing other projects so that partner institutions could monitor the projects, corroborating with UFRN. However, the tool was built without the concept of user-centered design.

In the design and construction of interactive systems, the area of Human-Computer Interaction (HCI) argues that the user must be involved at all stages with the aim of clearly defining their profile and needs. This methodology is normally called user-centered design (PREECE, ROGERS and SHARP, 2005). Interaction design arises with the intention of making the user experience the best possible and extending their possibilities for work, communication and interaction. Therefore, it is user-centered, aiming for comfort in performing tasks and effective results. Preece, Rogers and Sharp (2005) define it as follows: “Design of interactive products that provide support for people's everyday activities, whether at home or at work”.

The search and understanding of information through the interface are elements present in the concept of usability. Among the possible applications of usability, we can highlight Nielsen's (2005) ten heuristics that define relevant characteristics of an interactive system.

Considering the aforementioned scenario, the following hypothesis is established: iProject presents interface design problems in the functionality that supports corporate management, task chart.

OBJECTIVE

Given the facts, the objective of this work is to evaluate the task chart of the iProject tool and propose improvements in order to make it useful, informational and that meets the principles of usability, considering the users.

To achieve this objective, it was necessary to evaluate, using the Heuristic technique, the usability of the iProject task chart, relating the problems identified with the ten principles of Heuristics to suggest solutions for the identified problems.

THEORETICAL REFERENCE

Human-computer interaction, according to Santa-Rosa and Moraes (2008), is an interdisciplinary field of study that aims to understand how and why people use, or do not use, information technology. The authors complement by saying that interaction is a human-computer dialogue through a graphical interface, in which the interface would be the means in which the process of interaction and interactivity between the two realities takes place; a “conversation” between man and machine through an environment.

Taking this “conversation” into account, it is necessary to consider the concept of usability. Usability is the ability of a product or system, in human-functional terms, to be used easily and effectively by a specific user segment, providing them with specific training and support, aimed at executing a specified list of tasks, in the context specific environmental scenarios (SANTA-ROSA and MORAES, 2008).

Development without usability quickly causes market decline, as users are increasingly demanding and aware of the benefits that a good interface can bring. Software programs and their user interfaces constitute cognitive tools, capable of modeling representations, abstracting data and producing information. They facilitate perception, reasoning, memorization and decision making (CYBIS et al., 2007).

At the same time, Jackob Nielsen and Molich, created Heuristic Evaluation in 1990 as an inspection method to identify problems in a user interface. According to Koyani, Bailey and Nall (2004), it involves usability experts examining the interface and judging its suitability based on the ten recognized usability principles available on the website, useit.com. The term heuristics typically refers to considerations based on experience and common sense. Grouping these guidelines forms sets of verification items that are useful resources for evaluating systems.

Nielsen's (2005) heuristics are summarized below: 1) visibility of the system state – the user must have control and understand what happens, being informed through adequate feedback, given in a reasonable time; 2) correspondence between the system and the real world: the system should use words, phrases and concepts familiar to the user, rather than system-oriented terms; 3) user control and freedom: quick exits should be possible, for when users find themselves in unwanted situations, and undo and redo options; 4) consistency and standards – the user should not have to think about whether different words, situations or actions mean the same thing; 5) error prevention – better than providing good error messages is preventing errors from occurring through careful design; 6) recognition rather than remembering – objects, actions, options and instructions for use must be visible or easily retrievable; 7) efficiency and flexibility – provide flexible ways to perform tasks so that the system can serve novice or experienced users; 8) aesthetics and minimalist design – irrelevant or rarely necessary information that interferes with the visibility of the rest of the content should be avoided; 9) help users recognize, diagnose and recover from errors – the system must use simple language (no codes) to describe the error and indicate how to resolve it; 10) help and documentation – this information must be easy to search, the help must be described in steps that can be easily followed.

METHODOLOGY

In this work, Heuristic Assessment will be used, which consists of an inspection method to find certain types of problems in a user interface that violate some general design principles (NIELSEN and MOLICH, 1990).

The target population is made up of two evaluators, which represents all specialists in this area linked to SINFO, one with a degree in computer science, a specialist in corporate systems and a postgraduate degree in the area of design with an emphasis on HCI and the other with degree in design and also studying postgraduate studies in design.

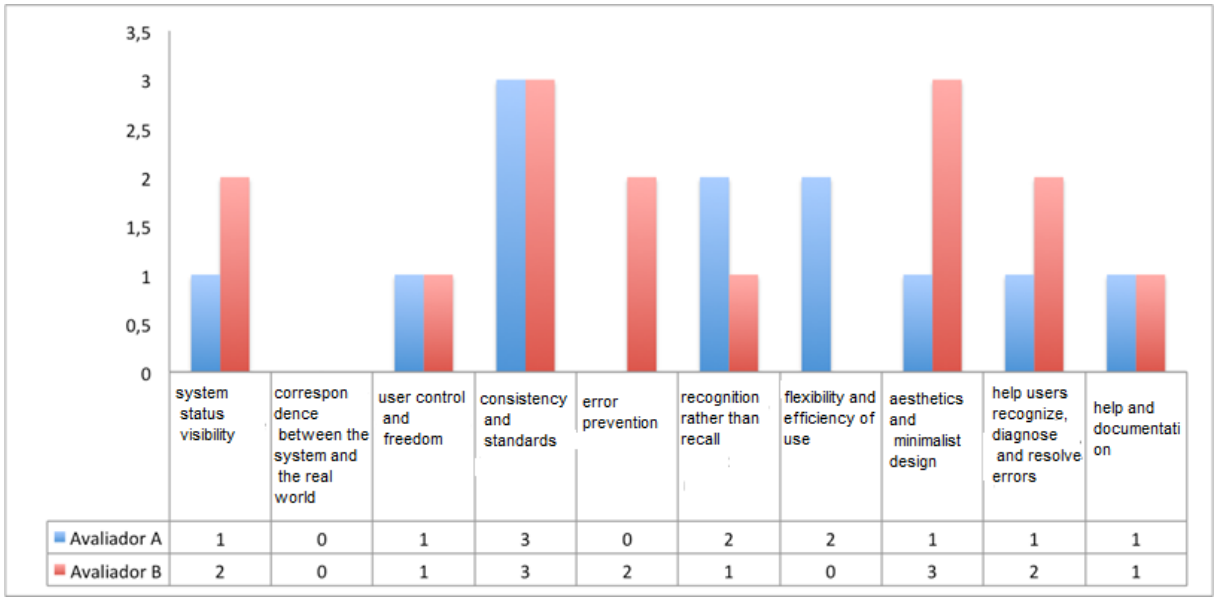
Data collection will be carried out in a qualitative way, in which the aim is to verify the relationship between reality and the object under study, obtaining various interpretations of an inductive analysis by the researchers (DALFOVO, LANA, SILVEIRA, 2008) through a script

structured for evaluators in the design area who must, firstly, freely navigate the iProject "task board" interface and secondly, follow a list of tasks with the aim of understanding problems and correlating them to the 10 heuristic principles , suggesting solutions.

RESULTS

The script was answered by two design experts from SINFO, and represents all the possible evaluators of the system in the institution, which is in accordance with the guidance given by Nielsen (1993) when reporting that a single evaluator identifies around 35% of the usability problems existing in the interface and, therefore, highlights the importance of employing more than one evaluator to carry out the Heuristic Assessment. In normal situations, it suggests three to five, estimating the detection of around 75% of existing problems. Furthermore, he emphasizes that the number of problems found does not depend exclusively on the number of evaluators.

The evaluators had no doubts about following the proposed script, there were no technical problems that could modify the evaluation, but the period used to analyze the iProject task chart was different. Evaluator A found 12 problems and completed the evaluation in 2 hours while evaluator B finished it in 1 hour and 30 minutes and identified 15 problems (see Figure 1), corroborating Nielsen by clarifying that the experience of each evaluator behaves as another variable for identifying problems of usability.



	system status visibility	correspondence between the system and the real world	user control and freedom	consistency and standards	error prevention	recognition rather than recall	flexibility and efficiency of use	aesthetics and minimalist design	help users recognize, diagnose and resolve errors	help and documentation
Avaliador A	1	0	1	3	0	2	2	1	1	1
Avaliador B	2	0	1	3	2	1	0	3	2	1

Figure 1 Number of problems identified by evaluators for each Heuristic principle

The analysis of the heuristic evaluation indicated a total of 21 distinct problems (Figure 2), 5 noticed by both evaluators and 1 in duplicate by evaluator A, categorized into different principles, totaling 27. Of the 5 common ones, only 1 problem was related to the same principle “consistency and standards”. Still under “consistency and standards”, Evaluator A listed a problem that was broken down by Evaluator B into 2 and categorized as “aesthetics and minimalist design”. Furthermore, Evaluator A correlated 1 problem as “help and documentation” and the same problem was classified as “consistency and standard” by Evaluator B.

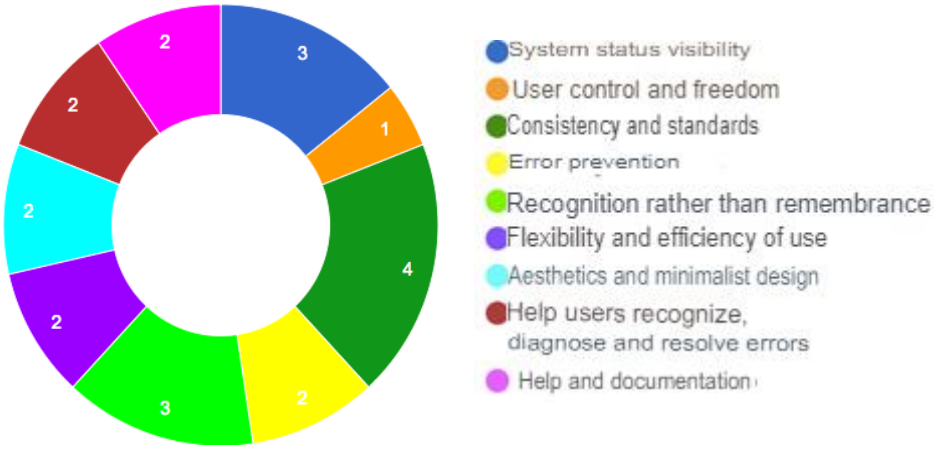


Figure 2 Number of problems per principle

The principle of consistency and standards along with aesthetics and minimalist design presented the most errors identified (Figure 1). In this same graph, it can be seen that the principle of correspondence between the system and the real world had no problem identified by both evaluators, demonstrating that the system is concerned with making the information familiar to the user.

The principle “visibility of system status” had 3 problems presented, 1 from evaluator A and 2 from evaluator B and as a suggestion for correction, it was suggested to change components on the screen and better display of system functioning indication when selecting an option.

The “user control and freedom” principle presented 1 distinct problem for each Reviewer. Evaluator A noted the need for feedback to the user after registering a task while Evaluator B identified a problem with the manage filters option, so that it did not present an option to change, just delete a filter already registered. It was also noticed that Evaluator A also categorized this same error as the principle "help users recognize, diagnose and resolve errors", indicating a correlation between these principles.

The “consistency and standards” principle indicated 6 problems, 3 of which were noticed by evaluator A and 3 by Evaluator B. Only 1 of the problems reached a consensus in this categorization and it was suggested to replace the nomenclature in the registration of a filter to avoid misinterpretations that generated a result not expected by the user.

The “error prevention” principle, although not diagnosed by Evaluator A, Evaluator B presented 2, both not correlated to the task list presented, but related to the need for improvement in defining the task status and adding criticism to the user trying register two filters with the same name.

The principle “recognition instead of recall” indicated 3 distinct problems, 2 by Evaluator A and 1 by Evaluator B. Evaluator A noticed that the shortcuts for accessing the task board and opening tasks were poorly positioned on the screen in order to make it difficult visualization, in addition to the icons for generating graphs and making settings not being highlighted. Assessor B identified that the task is recorded using a 6-digit number, meaning that the user has to memorize it to consult, making access to the created task difficult.

The “flexibility and efficiency of use” principle, although there is no record of problems by Evaluator B, 2 problems were identified by Evaluator A in terms of search by restricting to exact terms and in the filter option due to the requirement to click on the refresh button to reload the page .

The principle “aesthetics and minimalist design” presented 4 problems. Evaluator A noticed a problem in visualizing components (menus) and elements (icons) indicating the need for a redesign. Evaluator B identified 3 problems, the first related to the error message when a mandatory field is not informed, indicating the need to replace this message with attention to filling out and signaling the fields to be completed. The other 2 deal with readability breaks, also detailed by evaluator A and correlated with consistency and standards.

The principle “help users recognize, diagnose and resolve errors” presented 3 problems. While Evaluator A identified the problem of feedback, for the user, in the task registration both in the principle of user control and freedom, as well as in this. Evaluator B noticed the same thing in the task registration and correlated it only with this principle, adding a new problem in indicating the error message displayed far from the fields, making it difficult to see.

The “help and documentation” principle presented 2 problems. One by Evaluator A who identified the need for help on the status of the task and another by Evaluator B who indicated that not all icons presented in the interface had captions.

Furthermore, it was noticed that Evaluator A, less experienced, identified more problems than Evaluator B in the principles "recognition instead of recall" and "flexibility and efficiency of use", demonstrating that his undergraduate training in the area of design presents a vision most appropriate technique, also evidenced by the suggested solutions presented for each problem. In analyzing the problems identified by Evaluator B in the error prevention principle compared to none by Evaluator A, it is also concluded that the evaluator's experience allowed him to have a broader view, identifying a serious problem with various task statuses that confuse the end user. .

CONCLUSION

It is concluded that the hypothesis that iProject presents interface design problems in the functionality that supports corporate management, task chart, is true and that the heuristic evaluation made it possible to glimpse improvements in the tool by identifying interface errors raised by the evaluators in addition to suggestions for correcting these errors. As a future perspective, the application of other techniques is suggested, such as usability testing, Cooperative Assessment in which the user participates directly in the tool evaluation process and which can present other collaborations to improve the tool under analysis.

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