REPORT

User Centred Organisational Systems

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Abstract

This paper describes the advantages and disadvantages of involving the user in the design process and the data gathering methods involved. With reference to literature about the topic it discusses how involving the user in the design process benefits the product development, what are the challenges when doing so and if it has more value than the cost of needed resources. Ultimately the research suggests that its benefits usually outweigh the cost and effort put into implementation. This is mostly due the flexibility and scalability of the process and the diversity of the many data gathering methods described in relation to interaction design.

Contents

1. Introduction

User-centered or interaction design is a set of popular methods to help creating user requirements for a product with the inclusion of users. This paper describes the process and how it can be a helpful method when developing a product, reflecting to literature on the topic. Discusses the benefits of using the method and challenges, disadvantages to consider when working on a project. Including the organizational systems, research methods involved in the process.

The paper also describes some ethical and legal considerations regarding user-centered design and the research methods. This is based on guidelines set by the British Educational Research Association, in accordance with the Data Protection Act (1998) and UN convention regarding the Rights of the Child.

To further dive into the research methods involved in the process this paper discusses two data gathering methods based on 'Research Methods in Human-Computer Interactions' (Lazar et al., 2017), their advantages when used correctly and challenges to consider before applying them during the user-centered design process.

In essence the paper attempts to give a general understanding of these advantages and disadvantages, to explore the true value of the process and if it worth implementing in development.

2. User-centered design

2.1 What is user-centered design

In order to accurately set requirements for a product a design team needs to know the user's needs and wants. The simple best way to do this is to ask the user. However, given that a product usually has many users, and no team can individually ask every single one of them, there needs to be a system to collect data that can accurately represent a larger group of people. The product needs to be tested in a real-life context for usability and to ensure practical, technical and quality requirements are met.

User-centered design is a broad term to describe design processes in which end-users influence how a design takes shape (Abras et al., 2004). The concept of user-centered design, or as sometimes called interaction design, is that the user is involved in the design process throughout or at some stages, and in some way influences it. There are many ways the user can be involved; this usually happens during the requirements gathering to help establish a more accurate understanding of needs, and usability testing in order to make the product more accessible and easier to use, efficient based on a prototype.

2.2 Advantages and disadvantages

According to Abras the major advantage of the user-centered design approach is that it can provide a deeper understanding of the psychological, organizational, social and ergonomic factors that affect the use of computer technology. This view does not only consider the user's requirements regarding the product's technical aspects, but also how the user feels and think about the product. That said, from a purely practical point of view the product can meet the requirements set by the user, will be effective, efficient and easy to use.

Usability criteria address issues related to the effectiveness, efficiency, safety, utility, learnability and memorability of the product, and the user's subjective satisfaction with it (Preece et al., 2002). User-centered design and organizational systems can bring the research and design team closer to meet all these criteria. The paper also describes the process as feedback collected in an interactive iterative manner and provides some suggestions on ways to involve the user in several stages of design to identify the mentioned criteria. Such as background interviews and questionnaires to find out the needs and requirements, observation to collect information concerning the environment in which the product will be used, or usability testing to identify measurable usability data.

As Preece describes, UCD also helps manage user expectations and involving the user into the design process from an early stage can create a sense of ownership which often results in smoother integration of the product into the environment, and overall a higher level of user satisfaction.

These advantages suggest that interaction design, when done right, can result in a product being as close to user requirements as possible in many aspects. However, there are many disadvantages to this process as described in the literature. The main challenge being cost. The process requires resources like financial, human, and time. Gathering all this data takes time and effort on its own. As later mentioned in the methods paragraph some of the research methods require well-trained staff, for example to fully benefit from a conducted interview session the interviewer needs years of experience in the field. Usability testing is best done by a usability expert. User-centered design teams also benefit from including specialist from other fields to make communication between user and technical developers easier and to better understand user needs and requirements. These fields usually are not part of a design team, but brought in for this purpose only, like psychologists, sociologists and anthropologists. This requires time and hence adds cost to the project.

Management must consider these benefits and costs and decide if it worth to implement the process.

3. Ethical and legal considerations

3.3 BERA

There are many professional guidelines to help researchers when facing ethical dilemmas. Such guideline is provided by the British Educational Research Association. The guidelines are focusing on general ethical and legal challenges and attempt to advise researchers but encourage consideration and consultation regarding specific issues. In essence researchers should turn to these guidelines to be able to make decisions in ethically challenging situations.

These guidelines include central ethical issues and general advice such as a researcher should operate within an ethic of respect for any person involved in the research, to ensure the well-being and dignity of those they study.

3.4 Rights, consent, privacy

The association takes voluntary informed consent to be the condition in which participants understand and agree to their participation, they know and understand their rights and responsibilities. Participants must be informed of their right to withdraw from the study at any time for any or no reason.

The confidential and anonymous treatment of participants data is considered the norm, researchers must recognize the participants privacy and inform them of their rights.

Researchers must also comply with legal requirements regarding the use of personal data as set down by the Data Protection Act (1998). People have the right to know how their data is stored, what is it used for and who can access it, and they themselves have the right to access it.

3.5 Guidelines on working with children

Regarding research including children the association requires researchers to comply with Articles 3 and 12 of the United Nations Convention on the Rights of the Child (Unicef, 1989). These articles require that the best interest of the child must be the primary consideration in all actions concerning children; and that children who can form their own views should be granted the right to express their views. Researchers also ensure they comply with legal requirements in relation to working with school children, such as age of consent.

These associations tend to make sure their guidelines are continually revised and updated in accordance with new findings, legal acts and international conventions. Researchers are advised to study these guidelines in advance to be informed and in any case, they need to make decisions regarding ethical issues.

4. Methods

4.1 Surveys

In ‘Research Methods in Human-Computer Interactions’ (Lazar et al., 2017) the authors describe several research methods in detail, one of these are surveys. It is important to mention that many experts differentiate between survey and questionnaire, but others use the two terms interchangeably. This is the case in this paragraph, as the authors use them the same way.

A survey is a set of questions an individual, or usually many individuals are asked to respond. The strength of a survey is the ability to get a large number of responses quickly from a population of users that is geographically dispersed. It allows the researchers to make accurate estimates for a population. The keyword here is accurate. Since a survey consist of a set of prepared questions that the responders answer without much instruction and supervision, this method requires a lot of preparation to be effective. A survey in many cases can be the ideal method, if it is well-designed, strict controls are used, and the resulting data has a high level of validity.

The sample population is just as important. Distributing a survey to a specific demography and then generalizing the results to a much larger assumed group can be a huge mistake.

Lazar describes advantages and disadvantages of the method in the relevant chapter. For example, that surveys can be a quick and useful way to get an overview of a user population. They do not require advanced tools for development and can be distributed easily online or on paper.

There are a few drawbacks to using a survey. It is very good at getting shallow data from a large number of people, but it is not very good at getting deep, detailed data. Since surveys are self-administered it is usually not possible to ask follow-up questions.

When used appropriately and in a well-designed manner surveys can be a quick and easy method to gather data, but in some cases the situation might not be ideal for it and it is better to use other methods.

4.2 Interviews

Unlike surveys, interviews have the advantageous ability to go deep. By asking questions that explore a wide range of concerns and letting the interviewee elaborate on their answers, researchers can gather data that would otherwise be very hard to capture. Interviews are a conversation between to people, or a researcher and a focus group. This provides the

researcher the ability to change the questions or invent new ones based on the direction the interview goes. This allows the method to be uniquely open-ended and exploratory.

However, this flexibility brings the challenges of interviews as a research method. Interviews are much more difficult to conduct. They require a specific set of skills that can take significant practice to develop. This means that the method demands experts to conduct the interview in order to be effective. Even with practice and expertise behind the interviewer, conducting an interview requires a high amount of effort, alertness and listening. Therefore, it is a much more demanding method than surveys both in time and effort. These requirements also limit the sample size of the method, as it can only include a realistically small number of participants. Whereas surveys can be distributed to even hundreds of potential respondents.

4.3 Problems of recall

Despite their differences these methods share some disadvantages when it comes to the nature of the questions. Both involve data collection that is separated from the task and context. As participants often describe their feelings, and experiences with the designed product they are reporting on what they remember. This can bring problems of recall, and the data collected is, by definition, one step removed from reality.

In conclusion both methods have their advantages and disadvantages, however they are best used in combination with other techniques and as part of a well-designed data gathering effort.

5. Conclusion

Although this paper only describes two data gathering methods and gives a very brief description of the interaction design process, there are many aspects of it. It seems the design team must make decisions based on their context, the size of the project, the financial limitations and budget set for it and the product itself. Based on the literature we can conclude that there are many benefits to the process, and there are many challenges regarding the methods used, the number of methods used, the need for accuracy in each project. Although we have established a design team can benefit for example a whole team of specialists there is obviously no need for this in even the smallest projects. Just like the management needs to calculate the cost benefit balances when making decisions, the used methods should be carefully picked for each project. The same applies to data gathering methods, these methods can be highly beneficial when scaled to fit our needs and used in the proper context and purpose.

6. References

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