

User Experience Design for Development of Technology in Sub-Saharan Africa

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ABSTRACT

There is increasingly an availability of and drive to distribute technology to developing countries, with many Non-Government and Government organisations attempting to encourage development within these countries through multiple areas of technology. This drive has led to technology created within the developed world being released in the developing world, through donations and sale. The author discusses the research and development of a project to create user-centered technology for rural sub-Saharan African communities, using and adapting established methodology in User Experience Design, with the aim of demonstrating that current technology development and distribution within the aforementioned societies are currently not benefiting the end users as they should be. The project will give evidence that the differences between developed world and developing world societies are significant in terms of the appropriate uses for technology, and that this comes into play especially when much of the same technology is being developed by one for the other. The range of works available on User Experience Design, under its many synonyms, is considerable, and these, along with the range of research available on technology within - and the lessons to be learned from previous attempts at developing - the developing world, will be brought together to form the initial building blocks of a recommended solution to technology and development in the developing world. The author will also discuss why this issue is of importance, and how it is perhaps more relevant in today's world than many realise.

Categories and Subject Descriptors

A.0 [General Literature] General;
D.2 [Software Engineering] General;
H.5 [Information Interfaces and Presentation] User Interfaces; Group and Organisation Interfaces;
K.4 [Computers and Society] Social Issues;

General Terms

Documentation, Design, Experimentation, Human Factors, Standardisation, Theory.

Keywords

User Experience Design, Human-Computer Interaction, Software Development, Developing World, Rural Sub-Saharan Africa, Appropriate Use of Technology, Mobile Phones.

1. INTRODUCTION

I intend to focus, for the purposes of this work, on Sub-Saharan Africa, as my example of a developing area affected by the developed world and technology. My methodology will focus on the lessons learned through software failure in the developed world, and the subsequent theories and practices that have evolved from it. It will not be an exhaustive comparison of every theory or practice, but will largely cover established versions tried and testing by myself in the development of software for my own (developed) society. It will also draw on lessons learned through past interaction between the developed world and Africa, where we (the developed world) have attempted to aid development in Africa through applying our conceptions of the ways that this should be carried out, which are based on our own experiences and examples. These two areas, the established theories of User Experience Design, and consideration of previous interactions will be used to develop a User Experience Design methodology of my own, for the Africa. This methodology will lead to the development of a software-based project, which will be aimed at proving the methodology through helping a rural African community.

2. USER EXPERIENCE DESIGN

2.1 Established Theories & Theorists

The User Experience Design (UXD) theories that I will draw upon are ones that I have previous experience with through development for web based applications. The first theory is that of Alan Cooper, who's book 'The Inmates are Running the Asylum' [4] has been credited with bringing about change in attitude towards software which stems from his work within his company Cooper who produce 'product design for a digital world' [6], and have had many successes due to his methodologies of UXD. The second theory that I intend to use is Jesse J. Garrett's, which he depicts in his book 'The Elements of User Experience' [5]. This theory is much more of a methodology for it's readers compared to Cooper's, which was intended to serve more as an argument for, and evidence of the benefits of UXD. Garrett's suggestions have been the foundation of my previous work (although they are simply, as recognised by the author, an overall guide for more thorough methods and practices). The third theorist who has had an impact on my work subsequent to this has been Jakob Nielsen, often accredited with the title of 'The King of Usability', who's documentation on usability is an invaluable source of reference and evidence for myself and reluctant clients or colleagues. [7]

2.2 Africa specific technology

An example that I believe shows a potential step towards recognition that technology can, and needs to be, made for the specific end users, in the case of Africa, is the \$100 laptop. The MIT project redeveloped existing hardware and software, in this case a PC laptop running open source software, to correspond to the needs of children who do not have the experience needed for lateral thinking that children in the developed world do in regards to technology.

2.3 Africa available technology

There are many examples of technology that has been made available in Africa, but one of the most prominent examples is the mobile phone, due to its infiltration into the developed world, largely over the last 10 years, and its use within Africa. Mobile phones have become popular in Africa, largely due to the benefit over wired telephones. However, the phones provided (or sold) are the same as the ones available in the developed world, and are produced by and for the developed world. Therefore, their development relies on factors such as easy access to electricity, a capacity for lateral thinking with technology, a desire for a certain set of features, and an income that allows for either a monthly contract payment or outright payment of handset. I do not believe that if a mobile phone had been developed with the attitude of the MIT \$100 laptop developers, that a product matching the ones available would have been the logical solution.

3. IMPORTANCE OF SPECIFIC TECHNOLOGY FOR AFRICA

One factor that I feel is important to discuss— what is the point in making software for the developing world? I am aware that many people see it as helping the disadvantaged, and whilst this is true, and is a large part of the reason why I personally am working on this project, there is also a bigger issue, and one that affects all of us - globalisation. Globalisation can be defined as the transference from the old Westphalian system, which has been in existence since the late 17th Century, where the nation-state ruled through national governments (although the author is not ignoring other fractions such as religious groups and unions who have had significant impact) - to a system where nation-states have lost - and it is argued will continue to lose - power over their countries. NGO's, united government organisations (United Nations and European Union for example), and transnational corporations now control more of the global power than is often acknowledged. However, it *is* happening and it *is* (arguably) irreversible. One problem we currently face is a widespread reluctance to acknowledge or deal with the fact, which is leading to a lack of perception and understanding by the global population in general. [3] One of the most common misconceptions about globalisation is what it actually is. It is popularly conceived to be simply an economic issue, which it is not. It covers all aspects of life, from environment, health and education, to employment, crime and war. [3]. My point here is that in a global world, which is what is predicted we are heading for, as UNESCO said, 'It is an illusion to think that humanity as a whole can afford to ignore the welfare of a large proportion of its members. Globally, we can only advance at the pace of the slowest member.' [1] Therefore, if we do not help areas such as Africa to progress, we will hinder the progress of the world as a whole, not just Africa itself.

4. PROJECT DEVELOPMENT

The project itself, and the methodology needed to develop it, will require me to travel to Africa to undertake research based on the UXD methods previously discussed. From this research, I intend to produce a product which will help rural African communities. The methodology will be an adaptation of my current UXD process, to cover the specific requirements of African technology. How this will differ, and how much it will differ, remains to be seen, and will be a fascinating area to study. Although the project will, by definition, have to be defined after the research is completed, I have been able to undertake preliminary research, which has given me an indication of an area that I would like to study on my trip. It appears that the rural African farming communities have many needs that have not been addressed. These needs centre around problems with their lack of knowledge regarding efficient agricultural methods, lack of knowledge about the external market value of their products, lack of resources to make contact with potential buyers, lack of communication between farmers and mistrust of information sources, through previous bad advice. However, they do generally have access to mobile phones, they are apparently keen to try new ideas, and are somewhat aware of what is possible through technology. I hope that through my work I will be able to pinpoint a specific issue for which I can develop a software-based product to solve it. My aspiration is that this will be a success, albeit a small one in the grand scheme of things, but that its real success will be to lead others to consider the effect that they could have in developing larger scope projects along the same or similar methodology. At the time of the workshop, on 6th April, I will have completed the project, and will have either finished testing it, or be in the process of doing so. I am aware that this may be a slight disadvantage in terms of the workshop, but I strongly believe that the documentation, project and evidence I will have will allow me to present a strong case for UXD and share an interesting and useful experience.

5. ACKNOWLEDGMENTS

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