The Challenges of Participatory Design in an Intercultural Context: Designing for Usability in Namibia

Dr. Heike Winschiers
Information Technology Department, Polytechnic of Namibia
Private Bag 13388, Windhoek, Namibia
heikew@polytechnic.edu.na

ABSTRACT
The need for participation in development projects has been recognised broadly. Thus a great number of successful participatory design practices and principles have evolved mainly in the northern hemisphere. However still too many project initiatives in developing countries collapse although participatory techniques were used. Crossing disciplinary or cultural boundaries implies that one should reconsider established assumptions, concepts and habits that were taken for granted. Thus as much as designed products have to be evaluated in the local context so do design methods, techniques and tools. This paper therefore explores the cultural margins of Information Technology design and the challenges of expanding the boundaries across cultures. A theoretical framework supported by a Namibian case study foster the necessity of an acculturated design in context if striving to develop usable Information Systems.

Author Keywords
Usability, cross-cultural design, sustainable development, cultural appropriation.

ACM Classification Keywords
D.2.9 [Software Engineering]: Management: Software process models; H.5.2 [Information Interfaces and Presentation]: User Interfaces – Evaluation/methodology, User-centred design;

INTRODUCTION
Worldwide researchers and practitioners have recognized that good systems can not be built by software developers with only limited input from the users [16] and insufficient knowledge about the context [10]. However the understanding and implementation of participation in ICT projects in developing countries does not always seem to be obvious

Misinterpretation of participatory development can be exemplified by the following extract of a consultant report on the development of an Education Management System in Namibia [15]:

“One of the goals of the Ministry was the ‘democratic participation’ of everybody involved in education, and this implied that the stakeholders had to be informed…..not asking the users about their information needs was the correct method”. The author explains that previous direct enquires by consultants did not lead to expected outcome so further user involvement was considered dispensable and replaced with a document analysis.

Furthermore a recent investigation in software development practices in Namibia shows that local developers claim to use methodologies, which involves users and guarantees frequent communication with them. While at the same time developers report about inadequate client participation in the development process, manifested in lack of interest from the user side, lack of communication, and unavailability of the client [14].

Puri et. Al [12] argues that participatory design and the implementation of ICT in developing countries bring in new challenges to fostering and nurturing participation. Participatory design as well as ICT development itself has evolved in western societies. However their practicability has not been proven in the African context. Being aware of the mutual dependency of culture and ICT development opens new horizons for the appropriation of ICT design in developing countries.

THE CULTURE OF SYSTEM DESIGN
Areas of cultural conflicts identified by cross-cultural psychologists such as values, perceptions and perspectives, and communication codes play an important role in participatory interventions.

The Intrinsic Values of Information Technology Concepts and Methods
Information Technology mirrors the culture and worldviews of its creators. Luis Hestres [5] explicated evidences of American culture, characterized by individuality, low-context communications, competition and cooperation, business, tight time management, and high work ethic within the features (functionality and interface) of Microsoft Outlook. ICT Concepts and methods itself are defined in relation to the underlying societal value system
DESIGN
CULTURE-DRIVEN FRAMEWORK OF SOFTWARE DESIGN

Each software development project unfolds within a unique cultural context and therefore can only be successful with true participation of the users. Considering the challenges of cross-cultural participatory design the author has developed a generic, culture-driven framework for software design in a non-western context, in which cultural variances are determined within the specific development context [17]. At the centre of the process stands a dialogical design which implies the involvement of the users in the definition of the context/problem, the ICT concepts as well as the
methods themselves, thus an appropriation of the design process by the users. To perform such a design process developers and users need to acquire additional skills and knowledge as depicted in figure 1. Biased and inadequate design decisions caused by cultural misinterpretations, as described earlier, can now be avoided.

**CASE STUDY: INFORMATION SYSTEM FOR RARE SPECIES MANAGEMENT**

The following case study illustrates that methods have to be evaluated within the design process and adopted to the context.

The Namibian Ministry of Environment and Tourism aims to improve the management of populations of rare and or high value mammal species. In the past the Ministry staff relied on specially compiled paper-based species- and management reports to make informed decisions. To guarantee wider accessibility and up-dated information the Ministry opted for an electronic system. The end-users will be Chief Wardens and Conservation Scientists whose main tasks are the technical support of biodiversity conservation and wildlife population management. All end-users are both content-consumers and content-providers. [11]

After a transboundary workshop with representatives from Namibia and Botswana, the developer implemented a web-based prototype reorganizing the paper reports as hypertext. The information was structured by species categorized into logical units of ‘habitat’, ‘range’, ‘abundance’, ‘economics’ and ‘background’ which seemed intuitive to the developer. The project management approved the prototype without requesting changes.

However as no user was involved up to this stage of development the usability of the final product was doubtful. The developer agreed to run a usability testing session and invited 14 selected users from the Ministry of Environment and Tourism. The session was organized in form of a one day workshop rather than individual testing sessions to emulate African community processes of decision making.

Prior to the workshop, fourteen Human Computer Interaction students enrolled for the Bachelor of Information Technology at the Polytechnic of Namibia were trained in usability testing and workshop techniques to assist in the design, implementation, running and analysis of the workshop. This showed to be very valuable; one, within the workshop users felt at ease communicating in their native languages; two the interpretation of user behavior could be done by people from the same cultural background. The workshop consisted of a number of different phases around the concept of usability. The introductory activity ensured that all participants understood their active role in the redesign of the prototype.

The ice-breaker, as chosen by the HCI students, established the team building as participants did not necessarily know each other. The users’ own quality criteria was assessed individually, then discussed in small groups and later presented to the whole group. This established a system independent understanding of what participants would call a “good” system and a “bad” system. More time would have been required to actually establish a full definition of a usable system within the given context as well as adapting the following methods of evaluation. However an indication of priority of enjoyment over speed and accuracy was established. This was confirmed in later testing were no correlation between user satisfaction and efficient and effective task completion was found. A task-oriented prototype evaluation was chosen to determine the usability of the prototype yet proved to be ineffective. User satisfaction mostly had to be judged by the observation and analysis of video recordings rather than the user interviews and questionnaires. As in the latter, the African

![Figure 1: Generic culture-driven design framework][17]
communication convention of listener satisfaction surfaced thus the answers did not correspond with the observations. Furthermore interesting was the evaluation tactics of some participants who would first look for known information in order to establish trust into the system. As one participant was requested to judge a relocation of buffalos he discovered that the system had no information on cattle which according to his knowledge represent an important factor in the decision of relocation. Having not found the information the participant refused to use the system to solve any further tasks. Once more this shows that no assumptions on participants’ behavior and preferences can be made but have to be determined within the design context.

The workshop demonstrated the necessity to agree on concepts and methods during the design process itself to implement a system which meets the users’ expectations.

CONCLUSION
Successful participatory intervention in the development of Information Systems in Africa has been hindered by cross-cultural matters. It has to be recognised that Participatory design in a cross-cultural context goes beyond the involvement of users in the design of the product but should include an appropriation of the design process itself. An ethnographic analysis of the design context or modelling of users is no longer sufficient but an evaluation of participatory design techniques within the design context is required. Through enhanced cross-cultural and cross-disciplinary dialogue new knowledge can be created at the frontiers enriching rather than standardizing IT design.

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