Globalization, Culture, and Usability

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INTRODUCTION

Globalization is a trend in the new industrial era. Global economy has seen a huge amount of product and technology exchanges all over the world. With the increase of export and resulting from that, with the increase of world-wide technical product exchange, a product will now be used by several international user groups. As a result, there is an increasing number of user groups with different cultural features and different cultural-based user philosophies. All these user groups and philosophies have to be taken into account by a product developer of human machine systems for a global market.

User requirements of product design have become much more valued than before because cultural background is an important influencing variable that represents abilities and qualities of a user (del Galdo & Nielsen, 1996). However, there is a gap in developers' knowledge when handling product design according to the culture-dependent user requirements of a foreign market (Röse & Zühlke, 2001), so the "*user-oriented*" product design has not always been fulfilled on the international market.

BACKGROUND

Usability is the key word to describe the design and engineering of usable products. The term describes also a systematic process of user-oriented design to engineer "easy-to-use" products (see ISO 13407, 1999). One key element for success in this field is to know the target groups and their requirements. Hence, in time of globalization, usability experts have to integrate intercultural aspects into their approaches (see Röse, 2002). Therefore, usability experts have to know their target group and requirements in this target culture.

For a foreign market, localized design (*local design* is for a specific culture and global design is for many cultures) is needed to address the target culture. "There is no denying that culture influences human-product interaction" (Hoft, 1996). This has caused a change in the design situation in a way that engineers nowadays have to face up to other user groups with different cultures, which they are not familiar with. It is now unrealistic for them to rely only on their intuition and personal experience gained from their own culture to cope with the localized design. Although, it is clear that cultural requirements should be well addressed in localized designs.

INTERCULTURAL HUMAN MACHINE SYSTEMS

Day (1996) pointed out that we have to recognize that "any technology should be assessed to determine its appropriateness for a given culture." This implies that, in time of globalization as far as user-oriented design is concerned, it must also be culture-oriented.

A good understanding of culture could provide designers with clues to answer these questions. A lot of cultural anthropologists and consultants have conducted many cultural studies and obtained plenty of cultural data, (e.g., Bourges-Waldegg & Scrivener, 1998; del Galdo, 1990; Honold, 2000; Marcus, 1996; Prabhu & Harel, 1999; Röse, 2002).

The Human Machine System [HMS] engineering process is influenced by the cultural context of the current developer and the former user. Developer will construct the future product for expected users. With the task and requirement analysis, he is be able to integrate his future user. The matching between developer and user model will influence the product and his construction. For the development of intercultural HMS, it means the following situation: developer from culture A has to construct/design a product

for the user in culture B. Therefore, it is important to mention this fact and to analyze the culture-specific user-requirements. Honold (2000) describes intercultural influence on the user's interface engineering process in these main aspects: user-requirements, user interface design and user interface evaluation. In case of localization, it is necessary to know the specific user's needs of the cultural-oriented product/system. *It is necessary to analyze the culture-specific user-requirements. Such an analysis is the basis for a culture-specific user interface design (see also ISO 13407, 1999). To get valid data from the evaluation of current systems or prototypes with a culture-specific user interface, an intercultural evaluation is necessary. Culture influences the whole user interface engineering process as well as the HMS engineering process. Through this influence, a management of intercultural usability engineering is necessary. This is a challenge for the future.*

Modern user-centered approaches include cultural diversity as one key aspect for user-friendly products (Röse, 2004). Liang (2003) has observed the multiple aspects of cultural diversity, the micro-view on the user and the macro-view on the engineering process.

Technology has changed the ways people doing their activities and accelerated the trend of globalization. The consequences are the increase of cultural diversity embedded in the interaction and communication and the pervasiveness of interactive systems applied in almost every human activities ... Therefore, when we look at cultural issues in interactive systems, we should consider not only human activities supported by the systems but also the activities or processes of the design, the implementation and the use. (Liang, 2003)

According to Röse (2002), the usage of intercultural user interfaces and intercultural human machine systems describes the internationalization and localization of products, and excludes global products. *Intercultural human machine systems* are defined as systems, where human and machine have the same target and the needed functions and information to reach the target are offered and displayed

with ergonomic considerations based on ergonomic rules and guidelines. Beyond this, the intercultural human machine system takes into account the cultural diversity of users—according to culture-specific user requirements—and specific technical features as well as frame or context requirements based on cultural specifics. Hence, the intercultural human machine systems offering needed functions and information to realize a user-oriented human machine system, which is optimized for the target user and the used application in his/her culture determine usage context (Röse, 2004).

It has to be mentioned that there are cultural-based differences between user *and* developer. Therefore, the integration of cultural specifics is a natural tribute to the diversity of user and developer cultures in time of globalization. The mental model of a developer from Germany is mostly very different from the mental model of a developer in China. Differences between developers and users stem from differences of their implementation in a cultural context.

FUTURE TRENDS

New research or application fields offer new challenges. Intercultural human machine system design is a new field with huge challenges. Smith and Yetim (2004) state the following:

Effective strategies that address cultural issues in both the product and the process of information systems development now often are critical to system success. In relation to the product of development, cultural differences in signs, meanings, actions, conventions, norms or values, etc., raise new research issues ranging from technical usability to methodological and ethical issues of culture in information systems. In relation to the process of development, cultural differences affect the manner, in which users are able to participate in design and to act as subjects in evaluation studies. (Smith & Yetim, 2004)

The field of intercultural human machine systems, which is mainly mentioned in the research field of big global companies, is, in practice, a typical topic for global players. But the developers in different

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