

Approaches For a Successful Product Localization

Christian Sturm

arolis – international ease of use, Munich, Germany

Abstract

The aim of this paper is to present different approaches for a successful localization of technical products. The initial overview covers four levels that need to be taken into consideration while designing a product for international audiences: a technical level, a linguistic level, a cultural level and a cognitive level. Based on this model, two approaches for the cognitive level are presented as a basis for discussion as this level seems to be the most challenging one.

1 Introduction

Since more than a decade ago have cross-cultural differences been considered now in the scientific disciplines that are related to the field of human-computer interaction (like e.g. in cognitive psychology). But the application into the user interface design both on a process- and structural level has not been explored very well.

This position paper aims to first present a framework structuring the differences that can be found and have an impact if a product is shipped internationally. Second some approaches are presented to close this gap between research and its application. These approaches should be seen as a basis for a further discussion during the workshop.

2 TLCC – a Four Level Framework for Product Localization

The name of the framework - TLCC – is derived from the initial letters of each of the four levels:

- Technical level
- Linguistic level
- Cultural level

- Cognitive level

Each of these dimensions cover one of the variable aspects of a product and cannot be seen independent from one another. Starting at the top, each level provides the prerequisites for the next one. Cultural adaptations for instance do not make any sense if the product is not usable due to the lack of technical prerequisites. The following sections describe the model with each of its levels in detail.

2.1 The Technical Level

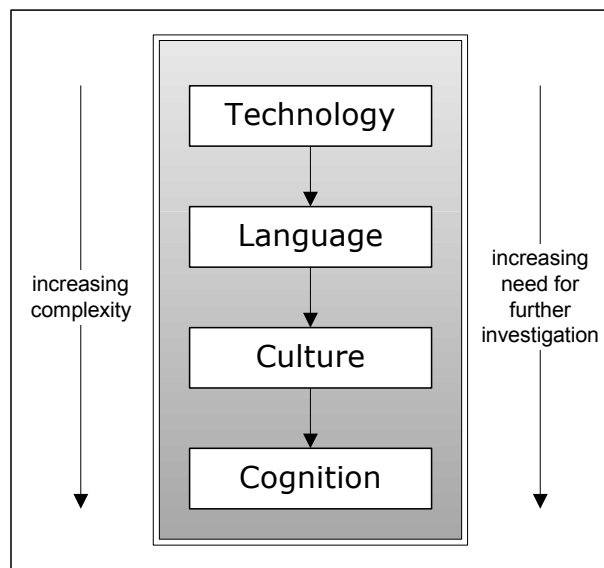


Figure 1: TLCC - The framework for systematic product internationalization

The first level covers all technical aspects of a product. It includes the technical infrastructure and technical standards used in the foreign country the product has to be adapted to. It refers e.g. to

- GSM, TDMA or UMTS in the case of cellular phones
- PAL, NTSC or SECAM in the case of the video norm
- Power supply standards for 50/60 Hz and 220/110 V including plugs
- ISO-norms for character sets, Unicode

The adaptation of these issues ensures that the product works from the technical point of view and is the basis for the next level.

2.2 The Linguistic Level

For most of the technical products the international adaptations stop here, where different language versions are produced. The words and texts of the interface and manuals are translated and several aspects like punctuation, vocabulary and grammar are transferred, but often without the consideration of cultural differences. The following screenshots show the Arabic and English version of “arabia.com”, where the linguistic and graphical variation is handled in a very technical way:



Figure 2: Screenshot www.arabia.com

The whole layout is mirrored due to the right to left orientation of the Arabic language. Furthermore the Arabic version needs more space for each character, what can be seen in the menu bar on the right/left. It contains in both versions the same items.

The cultural level has to be seen apart from the linguistic level as cultural differences in translations are a lot of times disregarded. This can be seen e.g. in the fact that in most of the cases one Spanish version is taken for all Spanish speaking countries. Not only is the usage of words but as well differences in the grammatical structure ignored. In Spanish there are basically two different grammatical forms used to express the past. One is called “pretérito indefinido” and the second one “perfecto compuesto”. The first one describes actions in the past that happened just like a single moment and implicates not only a distance in time but also in action to the happening in the past without any influence to the present. This means that no one has or had any kind of influence on it, basically a passive point of view. The “perfecto compuesto” is used to explain a happening in the past as a duration, which still has influence on the present, what implicates a more active way of seeing it, active meaning because of the influence the person has on it. The interesting point is that in Spain, as a European country tending more to a “doing”-society in the cultural variable of “action” (Brake, 1995), the “perfecto compuesto” is the predominant grammatical form used to express action of the past, whereas Mexico tends to be a “being”-society, using essentially the indefinido as a passive form to express actions in the past. Treating language adaptations not in such a technical way considering the cultural implications leads to a more successful product

internationalization like shown in a research investigating the differences for the design of manuals for cellular phones in China and Germany (Honold, 1999).

2.3 The Cultural Level

The third level includes the cultural dimension of the use of products. It basically covers two areas: the context of the use and the meaning of symbols, graphics, colors and metaphors used in the user interface.



Figure 3: Screenshot of www.hva.nl

The cultural context of the product use and its position in the everyday life delivers the information concerning the required functionality. As Siemens has shown in conducting an intensive field study observing the usage of German washing machines in Indian households (Honold, 2001) it is impossible to determine the number and type of functions needed without taking the context into account.



Figure 4: Screenshot of www.rau.edu.uy/universidad/

In comparison, Internet presentations not only have to consider the context of use, e.g. if the decision making process for buying something on a B2C web-page is group-based or individual-based. Furthermore the goals of the user (Cooper, 1999) have to be seen with their cultural bias like shown in the following comparison (compare Marcus, 2000):

Both screenshots (Figure 3 and Figure 4) are initial pages from University web-presentations. The first one comes from the Netherlands, an individualistic culture with a low power distance index (Hofstede, 1997). These values find their equivalence in the design and the structure of the given web-presentation. The major concern of the target group (potential students) is their possibilities to achieve their own visions and goals. You get on this page the information concerning the student life in Amsterdam and on the campus as well as individual career opportunities.



Figure 5: Screenshot of www.cem.itesm.mx

In contrast, Figure 4 shows an example from Uruguay, a Latin American country being a collectivistic country with a high power distance index (Hofstede, 1997). So in this case the target group (potential students and their parents) is interested in the position the University fulfils through the director as a major representative in the society together with its history and its legitimation. The opportunities for the students to work on an individual self-realization is not important as the correspondent items in the menu, which can be seen as a list of priorities, occur after a long scrolling down action.

Figure 5 shows the case of a Mexican private University, which is organized comparable to a private University in the U.S. There one can observe a mixture between both extremes showed above. The page contains both information for the parents together with the responsibility the school has in the society and information concerning the individual growth of the students. It is an example for the process of cultural change due to the globalization process.

Although it seems to be reasonable to try to find corresponding elements to cultural variables in website presentations this approach is very limited due to its way of treating culture as a national concept only. It does not provide all the necessary information needed to take solid design decisions.

In summary the consideration of the cultural context delivers the information concerning the required functionality and the attitudes and goals of the user while analyzing the context of use.

2.4 The Cognitive Level

The list of the required functions does not yet deliver the information concerning the question of how they should be presented to the user. The cognitive level therefore goes beyond the pure meaning of interface components covered by the cultural level. It en-

closes menu structures, priorities, interaction styles and techniques as well as basic cognitive processes used in human computer interaction. This level is undoubtedly the most underestimated one but has a great impact on the usability of a technical product.

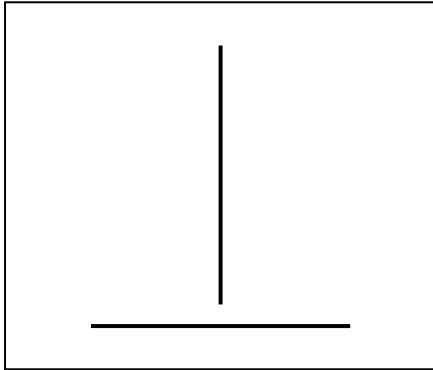


Figure 6: The horizontal-vertical illusion

The design of menu structures and function priorities can be investigated e.g. with simple card sort methods. But when it comes to cross-cultural differences in cognitive strategies and external referential systems, a lot of required interdisciplinary research is still on the agenda. A problem can be found in the different goal of the two scientific approaches of cognitive psychology searching for universals across humans and cultural anthropology investigating differences on a group level. Cognitive anthropology as a section in anthropology tries to close this gap since a couple of decades (D'Andrade, 1995), but the transfer to the field of HCI is still in its infancy. An interesting finding is shown in Figure 7, where the horizontal-vertical illusion (Figure 6) was investigated cross-culturally (Segall, 1999). In cultures that are used to have an "open vista" like on a plain the upper vertical line is recognized longer than the horizontal one whereas groups living e.g. in the rain forest perceive both lines with an equivalent length. Findings of this kind have a direct impact e.g. on the design of icons or symbols. Another interesting research connected to the cognitive level was conducted by Nasar (Nasar, 1984). He found, that in contrast to Japan, where vegetation and vehicles are most frequently recognized in urban street scenes, the people in the U.S. mentioned new buildings as most significant element. This should lead e.g. in the case of an interface for a navigation system in the car to different results concerning the design of maps and speech interfaces in both countries.

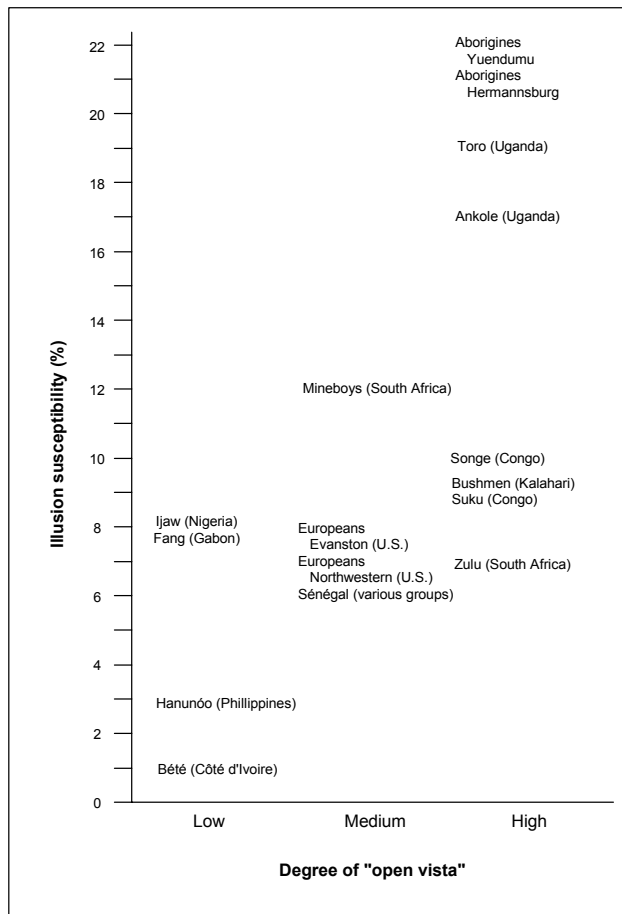


Figure 7: Horizontal-vertical illusion in comparison

3 Approaches for Application

3.1 TLCC

The application of cross-cultural differences according the TLCC-Framework is fairly simple for the first three levels. Technical and linguistic aspects can be adapted through the simple exchange of the involved components of the interface or technical product. Cultural differences that determine the scope of the required functionality considering the context of use can be identified through ethnographic research and guidelines respectively and find there correspondence in the existence or non-existence of functions.

When it comes to cognitive differences the following matrix can be suggested:

cognitive dimensions	user interface components			
		menu structures	interaction principles	...
	field-independence			
	field-dependence			
	analytic			
	holistic			
	...			

The question here is how cognitive processes that dominate in a culture affect the presentation of the device's functionality.

3.2 Approach of Aaron Marcus

The approach of Aaron Marcus (source: several workshops and tutorials at CHI and IWIPS) is similar in the way that he has chosen as well a matrix to map (Hofstede's) dimensions to components of the technical device:

	Metaphors	Mental Model	Navigation	Interaction	Appearance
Power Distance					
Individualism vs. Collectivism					
Masculinity vs. Femininity					
Uncertainty avoidance					
Long-Term Time Orientation					

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Kontaktinformation

Wenn Sie Fragen zur Einreichung Ihrer Beiträge haben, wenden Sie sich an:

arolis – international ease of use
Christian Sturm

Meistersingerstr. 124
D-81927 München
c.sturm@arolis.com

Tel.: +49 89 93 93 34 60
Fax.: +49 89 93 93 34 70