

# Cross-Cultural User-Interface Design for Work, Home, Play, and on the Way

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## ABSTRACT

*User interface design requires good visual design of metaphors, mental models, navigation, appearance, and interaction to represent data, functions, tasks, roles, organizations, and people. Techniques of simplicity, clarity, and consistency can improve the communication effectiveness of user interfaces for the Web, mobile devices and information appliances, and performance (productivity) tools. In particular, the use of appropriate typography, layout, color, animation, and symbolism can assist developers to achieve more efficient, effective communication to more diverse user communities.*

**KEYWORDS:** Culture, dialogue boxes, diversity, e-commerce, design, information visualization, m-commerce, metaphors, multimedia, performance tools, productivity tools, rhetoric, semantics, semiotics, user interfaces, Web.

## INTRODUCTION

The Web enables global distribution of products and services through Internet Websites, intranets, and extranets. Professional analysts and designers generally agree that well-designed user interfaces improve the performance and appeal of the Web, helping to convert "tourists" or "browsers" to "residents" or "customers." The user-interface development process focuses attention on understanding users and acknowledging user diversity of demographics. In a global economy, how can one understand the differences of cultures world-wide? What impact might these cultures have on the understanding and use of Web-based communication of content and tools? This tutorial contributes to the study of these the complex and challenging issues posed by attending to the needs, wants, preferences, and expectations of different cultures.

Web user-interface and information visualization designers seek to resolve complex interplays of user-, business, marketing, and engineering requirements. Their development process includes iterative steps of planning, research, analysis, design, evaluation, documentation, and

training. As they carry out all of these tasks, they would do well to consider their own cultural orientation and to understand the preferred structures and processes of other cultures. This attention will help them to achieve desirable global solutions and to determine to what extent international or universal approaches might be better than localized, customized designs.

Most people will agree that cultures world-wide, and even within some countries are very different. Sacred colors in the Judeo-Christian West (e.g., red, blue, white, gold) are different than Buddhist saffron yellow or Islamic green. Subdued Finnish designs for background screen patterns (see Figure 1) might, or might not be suitable in Mediterranean climates, in Hollywood, or Bollywood. The differences go deeper than just appearance. How might these cultural differences be understood?

Many analysts have studied cultures thoroughly and published classic theories; other authors have applied these theories to analyze the impact of culture on business relations and commerce, but these works may not be well known to the user-interface design community. This tutorial introduces the work of one theorist Geert Hofstede and applies some of his culture dimensions to Web user interfaces to illustrate his concepts.

## HOFSTEDE'S DIMENSIONS OF CULTURE

During 1978-83, the cultural anthropologist Geert Hofstede conducted detailed interviews with hundreds of IBM employees in 50 countries. The subjects were constrained to one corporation's employees world-wide, and thus to one company culture. Through standard statistical analysis of fairly large data sets, he was able to determine patterns of similarities and differences among the replies. From this data analysis, he formulated his theory of five fundamental dimensions of all world cultures, although admittedly his data was collected from a pre-selected segment of all societies. He also maintained that there is a dominant culture for each country.

Hofstede published an abbreviated version of his research publication in *Cultures and Organizations: Software of the Mind* [Hofstede]. His focus was not on the definition of culture as refinement of the mind, or "highly civilized" attitudes and behavior, but rather on essential patterns of thinking, feeling, and acting that Hofstede

asserted were well-established by late childhood. These cultural differences manifest themselves in a culture's choices of symbols, heroes/heroines, rituals, and values. Hofstede identified five dimensions and rated the 50 countries on indices for each dimension, normalized to values (usually) of 0 to 100. The five dimensions of culture are the following:

- Power-distance
- Collectivism vs. individualism
- Femininity vs. masculinity
- Uncertainty avoidance
- Long- vs. short-term orientation

Each of Hofstede's terms appears below with explanations, implications for user-interface design, especially for the Web, which is accessible world-wide, and illustrations of characteristic differences in Websites

Each of Hofstede's dimensions can be used to describe and explain user-interface design differences, especially for the Web, which is accessible world-wide.

## COURSE DESCRIPTION

In this tutorial, researchers, software developers, graphic designers, human factors specialists, cognitive scientists, and users will learn how culture dimensions affect user interface design; how effective attention to culture differences benefits usability, productivity, and preference; and how to use knowledge of culture differences more effectively. Illustrated lectures will introduce terminology, principles, and guidelines for current and future products that make them more intelligible, functional, aesthetic, and marketable.

Studies from the Web and of mobile phone design will illustrate how to analyze and design screens based on analysis of users and their cultures. Pen-and-paper exercises will give participants experience in applying the principles.

Researchers and developers will learn practical principles that are immediately useful, become familiar with existing literature and concepts, and discover potential new research topics. They will observe and analyze techniques for making products and displays more intelligible, functional, aesthetic, and marketable.

The principles, guidelines, and case studies will be relevant for most application UIs on the Web, devices/appliances, and client-server networks. The course will emphasize analyzing and designing metaphors, mental models, navigation in the model, appearance characteristics, and interaction techniques as well as the process for achieving innovative designs.

Mr. Marcus, a pioneer of graphic design for computer graphics and a leader in the field of UI design for multimedia, Web, electronic document design, and knowledge visualization will lead the tutorial.

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