Chapter I

Interface Design: An Embedded Process for Human Computer Interactivity

Antonio Drommi
University of Detroit Mercy, USA

INTRODUCTION

This chapter will address the issues of interface design and incorporation of human behavior factors into the design process. The traditional process engineering approach to software development embeds interface design as a task component. However, the interface design process has grown as a discipline and is beyond the single process within a larger scheme that may be lost on the priority list. The functionality and specifications for software developers tend to focus on the project and less on the product. In addition, bridging the gap of the design process to include global elements of the software is an issue for products that are internationally distributed. It is something that the computer industry must address and has been historically unsuccessful at doing. Incorporating human interactivity and screen design requires an understanding of the user and their behavior that is not part of the traditional tasks of most designers and programmers. This chapter presents the importance of human interactivity and interface design as an embedded process.

There are major strides towards interface design in the software process. The many approaches and theories guide the practitioner down a path that is normally practiced by graphic designers, artists, writers, psychologists, or marketing personnel. In many cases, the traditional software developer wears many hats plunging into a world of creativity and human behavior. These disciplines are not a natural path for developers who may began their career being computer savvy joining the ranks of the computer experts. Their successes have moved them up the ranks of the industry to lead many projects deemed for global markets.

Initially, many human factors did not play a major role in user interface design. Many of the interactive systems were products of manager decisions or it was implied for the product. Individuals involved in human behavior factors were brought into the projects in the middle or later in the project until they were no longer needed (Hix and Hartsen, 1993). Traditionally, designers have aimed at developing software products that meet the functional requirements of the application domain. We are moving into the direction of incorporating the behavioral domain of the user interaction developer that is responsible for class definitions, interaction design, and human factors engineering (Hix and Hartsen,
Increasing interactivity is a major goal of every software design, which requires mirroring user behavior. The understanding and sensitivity of human nature is not an integral part of traditional approaches to the design process and the MIL-STD-1472C standard was developed by the military entitled “User-Computer Interfaces” to provide practitioners guidelines for interface design. The importance of this document lends itself to the discipline. However, graphical user interface and multimedia development guidelines focus on common sense practice of design. The literature and standards may not provide the developer with the skills of understanding human behavior and culture. We can only hope that the product developed meets the requirements intended for interactivity.

**USER REQUIREMENTS**

If we study the traditional waterfall approach to software development, we notice that design and development are used in a broader term that incorporates interface design within the development process. What we don’t see in this model is whether interface design is actually a process. Nevertheless, interactivity for interface design is a norm and must be part of the process. The difficulty is designing products that can be ready for an audience to embrace. The audience can be a client for which the software is being developed or a target market for which the product to be adopted. Nevertheless, we don’t know how the user of such products will react to the product. With that in mind, designers must develop requirements that reflect the intended user or target market. Therefore, communicating among the project team is essential. Interface design processes must be in the tasks of the project. However, what about interactivity and user reactions and adoption to the products? Project plans need to take stock of the fact that the behavior domain be part of the process. Several tasks may be performed concurrently. These are task analysis, user and audience analysis, market analysis, and cultural analysis. These tasks may seem broad, but are essential for designers who want to reach users expectations of the product.

The father of visual basic Alan Cooper says that design in terms of goals is usually derived from the programmer’s point of view (Cooper, 1995). Cooper suggests that design should be directed toward more basic user goals such as “to not look stupid or make any big mistakes”. A front-end analysis is required to truly capture the essence of what is required of the product and not just examine problems in the application domain. It must also consider the factors that affect the human behavior elements. That requires getting into the mindset of the average user, a performance analyses term that describes a process to study what needs to be done (Rossett, 1999).

**TASK ANALYSIS**

Task analysis which is sometimes known as function analysis provides practitioners with the user tasks or functions that is required of the user. The user tasks are an important feature for investigating every element. Working with potential end users is an important component of the process. Collecting data and communicating with the user on their tasks or job functions paints a picture of their role during interactivity (Hackos and Redish, 1997). At this stage, the behavior or traits of the user begin to surface. The level of user skills is recorded to determine the adopting factor that reflects the user personality and skill level, knowledge, and experience (Galitz, 1997). While this task in this process is taking place, documentation on the user is building up to support some of the missing links of the human behavior domain. Software developers must take stock in this step of the process because it may be the only chance to gather this type of data. It’s not enough to address the users
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