Chapter 2
Lack of Naturalness in Human-Computer Interactions

ABSTRACT

There is a problematic difference between interactions of a human with natural and computer environments. The negatives of this difference are particularly painful in the design of software intensive systems, the success of which is unpredictable and extremely low. The root reason for such state of affairs is a very high complexity with which the designers have deals. What we name as "Complexity" is a characteristic of estimations that is discovered in interactions of a human or humans with perceived essences. Therefore, for example, designers need means that will help them in interactions with environments of their activity during real-time work. This chapter tries to show that one of the possible directions of mastering the complexity is bound with the possibility for designers to create conditions of interactions that are similar to conditions of natural interactions. In this case, both types of interactions will be intertwined in coordination in search of simplifying an arisen complexity.

1. PROBLEMS OF HUMAN-COMPUTER ACTIVITY

1.1. Features of Designing the Software Intensive Systems

The development and continuous improvement of Socio-Cyber-Physical reality (SCP-Reality) are useful to understand how artificial evolutionary process

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that intertwines with the natural processes on Earth, including the processes of life. In this interlacement, artificial and natural processes influence each other so that this leads to important events {ei}, the estimations of which are useful for future.

Particularly, similar events correspond to situations of completing the work of designers on projects of software intensive system (SISs). The reality of indicated kind of designing and characteristics of its results have shown that exists a problem with achieving the predictable success in this kind of activity.

Before describing this problem, it needs to present this class of systems. Below, in the text, we will orient on the following definition "A software intensive system is a system where software represents a significant segment in any of the following points: system functionality, system cost, system development risk, development time" (Software Intensive systems, 2006).

In general, this definition admits that software intensive system may include social, physical and software components interacting with each other. Thus, we can assume that now and in the future, the software intensive systems (SIS) are and will be the main components of SCPRealty.

This book focuses on increasing the naturalness of HCI, the current state of which is most fully disclose the problems of designing the SISs. That is why, below, the text of the book will explicitly or implicitly concern this kind of systems. Furthermore, software systems we will qualify as a subclass of SISs, and this will allow us the use of the name "system" as for SISs so for software system when it is not principal.

More particularly, our choice of designing the SISs as a source of used artificial and natural processes and problems in their intertwining was caused by the following:

1. Development of SISs requires the use of the rich experience of software engineering and the experience of different subject areas.
2. The accumulated experience of designing includes a part that supports the continuous improvement of processes, workforces, and products.
3. There is a richest statistics of the success and failures of the completed projects based on software.
4. Numerous and varied developments of different SISs have also led to the creation of mature technologies, the workflows of which help to creatively solve the tasks of different types.
5. In the life cycle processes, designers create and use varied forms of HCI that support personal and collaborative work of designers in the real-time.

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