

Strategies for a better user interface

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Even though it has not been formally defined what a user-computer interface is; it is possible to describe the challenges and compromises a system designer must confront to approach that definition. The way those challenges and compromises are solved represents, more than a simple formalism, a strategy, which means, an ingenious solution not necessarily according to the traditional methods for problem solving.

The challenges in the user interface design process may be a lot, so the strategies are also a lot, but, it is possible to organize that set of decisions into five principal groups:

6. Challenges and strategies for representation
7. Challenges and strategies for localization
8. Challenges and strategies for acquisition and actualization
9. Challenges and strategies for creation, change and destruction
10. Challenges and strategies for action and response

Confronting those five challenges and defining the corresponding strategies the complete design of a user-computer interface is achieved.

Challenges and strategies for representation

Information exists outside computers before it may exist inside computers. Outside, computers information is found in all the reality, (in every being, each one containing as much information as its metaphysical being itself), and in the mind of intelligent beings, (intelligent beings can capture

beings and make their own mind to take the form of those beings in a process also called information). In both places reality is as it is (assuming the information process has been correctly achieved), but computers are limited to a current technology, which turns out to be never enough to fully and satisfactorily represent reality, even though each day there are major advances and approximations.

Reality has properties, philosophically known as accidents, which must be represented in computers, colour, form, height, speed, texture, capital amount, obligations, letter font, etc., are all accidents of specific realities which exist in real world.

Some accidents are easily represented, some other instead, need to be represented through a formal scheme in which the user makes a translation and interpretation from the formal representation to an easier one.

The challenge is to represent reality in the computer in the most accurate way and to achieve a satisfactory solution; the designer needs to create a series of strategies related to representation.

Challenges and strategies for localization

Reality does not comprise only one being and it is not reasonable that computers store only one being. This implies that in the computer will be a lot of beings represented, which will be of different kinds, some will be related and some will not. The challenge here is to organize this huge set of objects (the information about them) in a logic scheme that makes it easy for users to locate a specific one.

There are really two challenges and two strategies, the first one is the challenge and strategy of organizing the objects, and the second one is the challenge and strategy of providing a way to access the stored beings.

It is obvious that a good organization of information is not enough, it is also needed to provide an information access method. In the real world we go to objects that we need and then we concentrate our attention over them, in the computer the access scheme should be at least similar, but that is a decision taken by the user interface designer. It is not needed to say that if organization is efficient but access is not, the resulting interface will not be efficient either.

Challenges and strategies for acquisition and actualization

Reality is outside computers but must, some way, get into computers. At least a representation of reality must reach computers. This challenge implies the design of a strategy for acquisition of information that makes it possible to get information from outside to inside computers. Once the information is inside the computer it won't remain the same for long in most of the cases, because reality itself is not static. Processes are needed to reflect in the computer's image the changes that reality has gone through, so it may be arranged to accurately represent reality. It is also needed to adjust reality to reflect the changes that its image has suffered inside the computer. This two ways process is completely justified because computers are tools whose main purpose is to empower the human capacity to handle reality and to change it to his/her own convenience. All this is why it is needed to have strategies for acquisition and actualization of reality inside and outside computers.

Challenges and strategies for creation, change and destruction

Not every being represented inside a computer has ever existed first in reality; some are "created" first in the computer. This is because they don't represent something that already exists, but represent ideas that have existed in a human mind first.

The challenge here is to provide a scheme that permits the creation of these new beings. The strategy followed by some designers is to provide the user with the "prime matter" to create these new objects. This seems to be an adequate logical scheme.

Once created, objects do not remain the same through time. That is why it is needed to provide a change scheme. The change is different from actualization only in a logical way. Change is imposed by the will of the user to make objects similar to the ideas in his/her mind. Actualization is imposed by the reality to make it conform to its image in the computer.

Finally, objects don't always have to exist as a representation in the computer, so it is needed to design a process to destroy them.

Challenges and strategies for action and response

Interaction between user and objects represented in the computer has to be defined and ruled by certain action and response parameters. The challenge the designer has is to define a strategy for action that permits the user the greatest possible interaction spectrum, so whatever the user specs to do with real objects, based on what is possible to do with reality, be also possible with objects in the computer.

The representation of the responses the reality gives to the actions performed by the various existent agents is also a challenge for the designer. It is not always possible to represent that response accurately, so the designer has to choose metaphors and analogies.

Because the possible actions to be taken by the users are virtually limitless, it is not possible to say that the designer will require only one strategy. There may be needed many strategies, or just one general strategy subdivided in many others.

The difference between strategies for change and those for action and response is that change implies a certain "before-state" and a "after-state" of the same object. On the other hand, action and response are conformed by the intermediate states that the object goes through before reaching the final state.

When designing strategies for change the principal worry for the designer is to make sure the user will completely identify the object in its final state as the same object as that one in the initial state. The designer thinks only in those two states, the way the user will indicate the change must occur or how the change itself will be represented is not important at this stage.

The strategies for action and response concern mainly with the methods and tools the user will need to make the change take place and the representation of the change.

Evaluating and comparing user interfaces

A user interface may be designed attending to the strategies used to solve the described challenges, and then the designer may write a document specifying the description of those strategies. It is also possible, analysing a given user interface, to identify the underlying strategies, even if they were never defined or wrote in a paper.

That is why that the strategies-definition or strategies-identification schema establishes parameters for comparison between user interfaces implementations. To establish if a specific strategy is better than other is quite more difficult. It is better to use the practical experiences gathered after the implementation.

It is possible to use others criteria for deeper comparison, but by now it is only important to establish that it is possible to achieve such comparison.

On the other hand, user interfaces may be defined in two different levels, the operative system level or the application program level. It is also possible to define them at the system tool level, but that depends on the specific operative system implementation.

When two user interfaces are compared in the operative system level, it is easier to use the schema explained here, but when comparison is desired at the application program level and there is no more than one application available (a similar application to compare to is not available), comparison is impossible to achieve. Even though it is always possible to evaluate the quality of the decisions made by the designer at the strategies election stage. It is always possible to find different strategies that permit to solve the problems that the system or the application program presented, in a better way. If those strategies are identified, the evaluation of the interface can be done evaluating the strategies compared to those that have been found and have prove to be better solutions.

Final Words

While systems and information sciences keep advancing we will always have a hope to achieve the principal goal of the whole computation technology: to keep the user informed. To help this goal to be achieved it will be needed to start by

building better user interfaces in a more structured and functional fashion. I hope that these ideas may help.

About the Author

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