Organic User Interfaces

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INTRODUCTION

The WIMP interaction style, introduced by D. Engelbart in 1968, was a major milestone for the design of graphical user interfaces and is still predominant among current operating systems [1]. Since then, many design guidelines and rules [1,2] have been proposed. With the notion of Organic User Interfaces (OUI), we try to capture the essence of these principles in a new design metaphor.

OUIs respect and are inspired by the natural laws of physics, biology, and human cognition. They must follow the principles of fluidity, intuitiveness, robustness, and calmness.

FLUIDITY

An interface is fluid if it s governed by a set of simple rules, easily understood by the user. This principle is manifested in our seamless interactions with the physical world: a typical desk activity like thumbing through a pile of paper is a graceful transition from awareness to focus. Because the laws of physics are always in effect, the pile never acts in an unexpected manner. Similarly complex biological systems, like bird flight paths, emerge from simple rules that make the overall system appear self-organizing. OUIs support this notion by providing clear rules that enforce consistent constraints throughout the system.

INTUITIVENESS

OUIs appear familiar by making use of clear affordances, natural mappings, and constraints [3]. Analogies are found in biological systems: a leaf avoids being weighed down by manifesting an appropriate form and texture to repel water. This can be considered as an evolutionary affordance. For the user, we must understand the abilities and limitations of human cognition, and eventually find the most natural interactions and representations to support the task. OUIs convey a natural understanding of their underlying functionality.

ROBUSTNESS

The underlying system of an OUI must be as robust as possible. Like biological systems, it should avoid hazards, recover from errors, and operate with degraded functionality, until repair is available. Although this notion has been explored in biologically inspired algorithms, it has not been adapted to the user interface.

CALMNESS

A calm interface will never interfere with the user's natural flow of work. Information output is represented in a non-intrusive way, which is immediately available if needed but otherwise not distracting. In nature, a forest conveys a great deal of information in a very calm and soothing way. The visitor can concentrate on the information provided or simply ignore it and focus on something else. Similarly, OUIs must allow the user to decide, how much attention to focus on the interface.

CURRENT PROJECTS

Fly [4] is an organic presentation tool that adds a spatial structure to a presentation. It uses the concept of Mind Maps to organize the structure of a presentation. Using color associations, spatial relations, and fluid movement, Fly creates a meaningful overview of the underlying content.

The Associative PDA is an organic user interface for mobile personal information management (PIM) [5]. The system stores information in an associative network, connecting related items with each other. This method allows the user to draw on a natural understanding of the underlying model and facilitates effective integration into the user's line of thought.

REFERENCES

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