

Fluid Interfaces

Supporting Specific, General, and Minimal Interaction

Klaus Marius Hansen
Computer Science Department, University of Aarhus
Aabogade 34, 8200 Aarhus N, Denmark
marius@daimi.au.dk

Abstract

Fluid interaction, interaction by the user with the system that causes few breakdowns, is essential to many user interfaces. We present two concrete software systems that try to support fluid interaction for different work practices. Furthermore, we present specificity, generality, and minimality as design goals for fluid interfaces.

What is Fluid Interaction?

Fluid interaction is interaction with *fluid interfaces*. An interface is fluid if it allows users to focus on their primary activities while interacting through it. This definition is in line with [4] that defines "fluid interaction" as interaction that "allows unhindered expression of ideas" and [1] that defines "transparent interaction" from an activity theory perspective as "handling the computer through operations". Breakdowns and focus shifts are signs of broken fluidity [5].

Fluidity cannot be a feature that in general can be built into software systems: activities change both through their development and the users learning processes. Thus, fluid interfaces will need to adapt to changing activities, users, and contexts.

Supporting Fluid Interaction

The Knight tool [2] (Figure 1) support object-oriented modelling on a variety of input devices ranging from electronic whiteboards to tablet PCs.

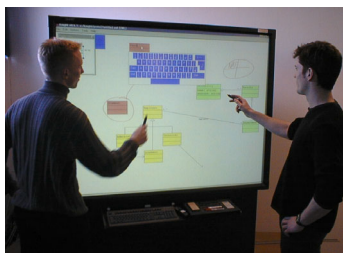


Figure 1. The Knight tool for collaborative modelling

Pens are used to draw gestures that resemble the object-oriented modelling symbol that the user needs. Thus, the interaction resembles very much what we saw was being drawn in informal modelling sessions using traditional whiteboards during our user studies. Also, the Knight tool supports the frequent transitions between working at whiteboard and desktop computers by providing an interface that is adapted to both kinds of uses.

The Kimura system [3] aims at supporting multitasking and background awareness using peripheral display (Figure 2).

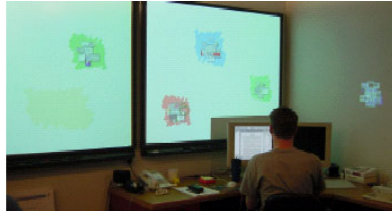


Figure 2. The Kimura augmented office environment

The user works at his or her ordinary desktop that is being monitored together with the user's working context in order to provide summaries of activities in the form of visual *montages* and cues to events of interest on the peripheral displays. If the user sends an e-mail to a colleague and that user happens to be in the coffee room, the system will provide salient, visual cues of that in connection to the activity in which the e-mail was sent. Furthermore, the user may manipulate activities using gestures on the interactive peripheral displays.

Issues

In order for an interface to be fluid it has to at least support:

- *Specificity*. For different types of activities, different types of interfaces supports fluid interaction. In collaborative object-oriented software design, the whiteboard is an effective metaphor for a fluid interfaces, in industrial design, physical artefacts may provide such an interface.
- *Generality*. A fluid interface needs to adapt to its context: when transitioning from use on large displays for collaboration to smaller displays for personal use, the interface needs to be able to adapt to the changing displays. This is especially important in the context of mobile computing.
- *Minimality*. Fluid interfaces need to support the activities that it should support but preferably not more.

References

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