TU/e technische universiteit eindhoven

Usability evaluation of component-based user interfaces

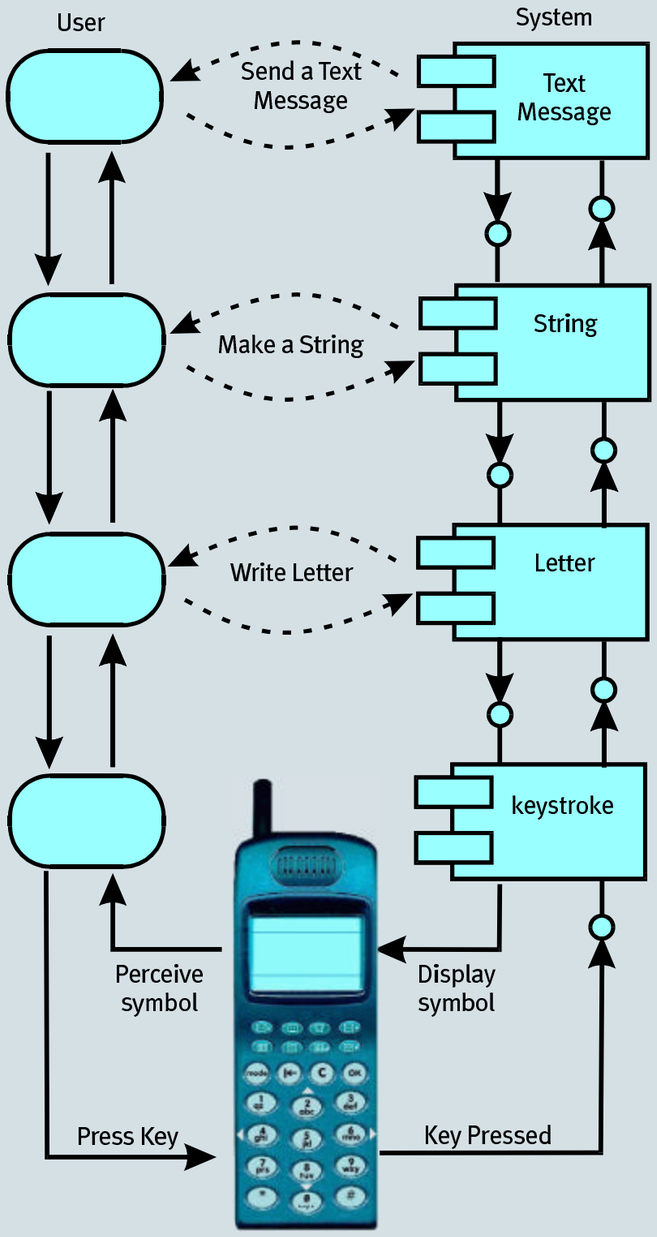


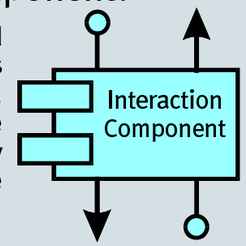
Figure 1: The user communicates with interaction components by sending and receiving virtual messages. These virtual messages are sent via mediation of lower levels. Only at the lowest level are the user and system able to communicate directly.

Research Question

Whether and how the usability of an interaction component can be tested?

What is an Interaction Component?

An interaction component (IC) is defined as a unit within a device that receives direct or indirect signals from the user, which enable the user to change the physical state of the IC. The user is by definition able to perceive or to infer the state of the IC.



Experimental Paradigm

- Applying different versions of the interaction component and leaving the rest of the system the same creates different system versions.
- Users are observed while they perform a task to achieve a specific goal with the different system versions.
- The users have to reach the goal, and to do this they have to alter the state of the interaction component.
- The users are instructed to reach the goal as fast as possible.
- All messages sent to the interaction component are recorded in a log file.

Hypothesis

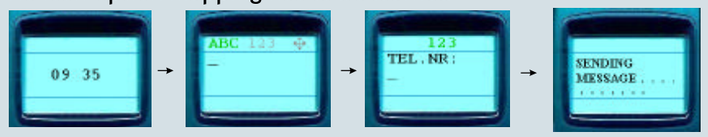
The interaction component version that receives the fewest messages is the most efficient one.

Validation Experiment

- Mobile phone with two versions of Send Text Message Function.
- Version 1 was designed to be more efficient than version 2.
- 40 users performed an unfamiliar task with version 1 and 40 users performed the same task with version 2.

Steps to send a Text Message

Version 1, the more efficient version.
No icon-option mapping has to be learned



Version 2, the less efficient version.
Several icon-option mappings have to be learned

Preliminary Results

Number of messages is a more sensitive measure than task time or number of keystrokes.

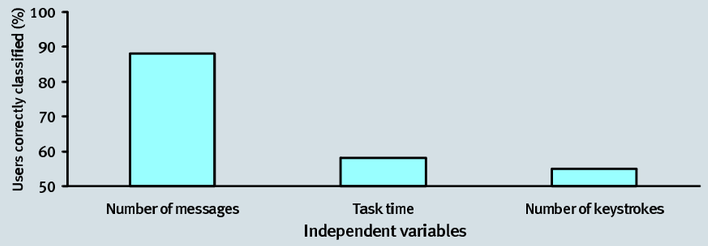


Figure 2: Discriminant analyses with the version of the Send Text Message Function as dependent variable. The analyses predict which version a user worked with, based on one of the three measures.

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