

MICRO-INTERACTIONS WITHIN USER INTERFACES

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Introduction



Cognition and emotion cannot be separated; human cognitive thoughts lead to emotions. It is the emotional system that determines whether a situation is safe or not, whether something that happens is good or bad. Cognition provides understanding, while emotions provide value judgments. A person without a functioning emotional system has difficulty making decisions. Human cognition and a functioning emotional system are present in the use of all digital products. If emotions are not taken into account when designing user interfaces, people are left to draw their own conclusions about personality, and these conclusions can be negative or indifferent (Norman, 1990). The world of user experience design is growing rapidly and there are many ways to improve the user experience, including analyzing potential users, good information structure, and thoughtful written content. Many product designers know that a good user experience is much more than just usability. A good user experience also has a lot to do with the look and feel of a product, but when it comes to designing a great look and feel, nothing contributes more than small details like microinteractions. Although they are small, microinteractions have a huge power to make the experience of using a product more effective and emotional for the user. That's why we say that details are not just details, they create design. Digital interfaces are essential to everyday life in today's fast-paced online world. Users' interactions with them shape their experience and perception of the products they use, whether they are shopping online or using social networks. When completing small tasks, most users are unaware that they are constantly encountering micro-interactions. By incorporating user insights, using consistent design elements and prioritizing engagement, micro-interactions can be created that meet user expectations and contribute to product success (Gapsy Studio, 2024).

Experimental part



In the experimental part of the work, prototypes of simple actions in mobile devices were created, which the user encounters daily through microinteractions. The goal of the first designed microinteraction is to warn the user about the changes that occur when the SIM card is turned off. The user's goal is to switch off the SIM card, and this is linked to the rules of this microinteraction. The rules of the microinteraction can be most easily illustrated with a flowchart that graphically depicts the user's path to the goal and the encounter with the microinteraction (Figure 1).

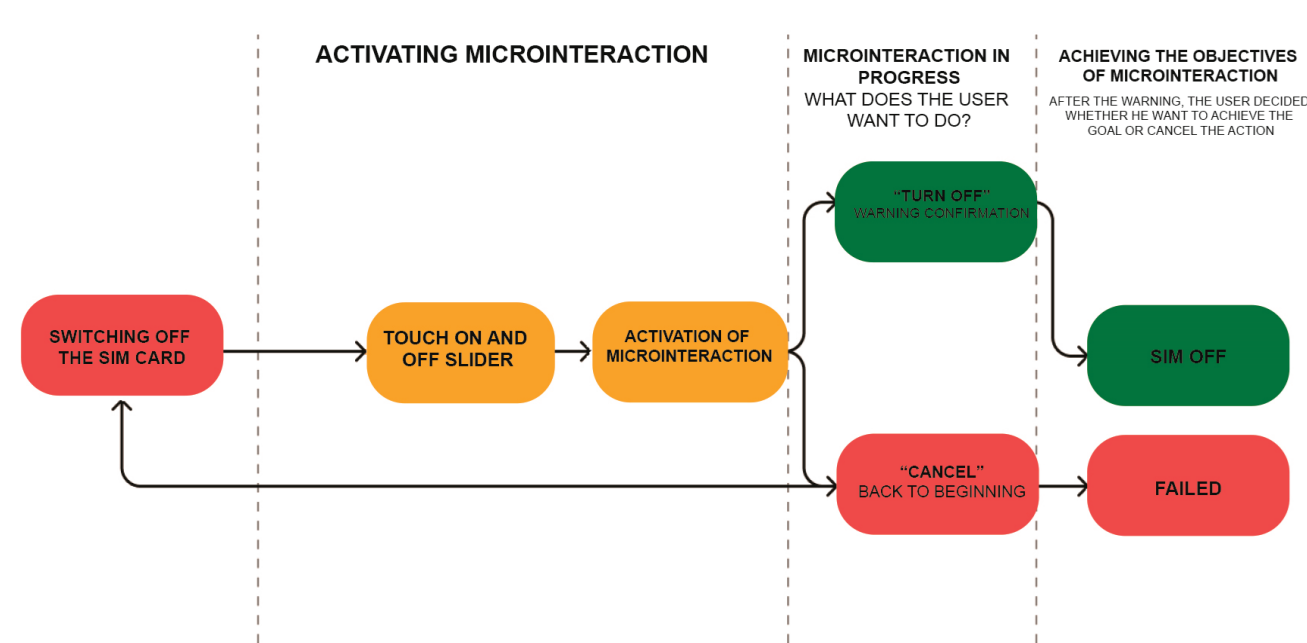


Figure 1
Flowchart for micro-interactions in user alerts

This action can be accompanied by further micro-interactions, e.g. tactile through the vibration of the device and visual through animations and visual feedback. In this example, subtle feedback was also used by changing the color and appearance of the switch as well as a pleasant animation when performing the action.

The second micro-iteration developed for research purposes in this thesis has positive and negative feedback. The goal of the user is to upload the file, while the goal of the microinteraction is to provide feedback to the user about the success of the upload, with a separate microinteraction for success and failure.

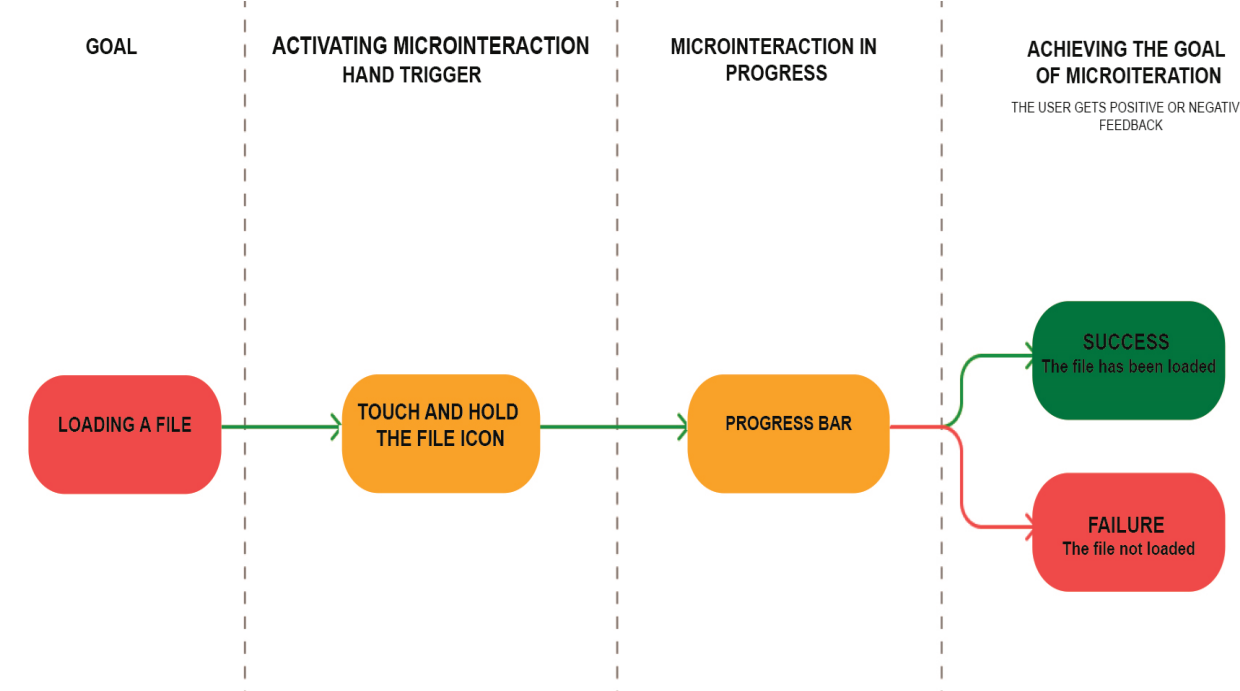
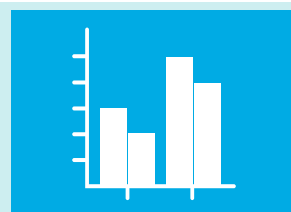


Figure 2
Flowchart for microinteractions with positive and negative feedback

Testing the prototype / analysing the results



Prototype tests and user tests of the previously designed microinteractions were carried out. The test was carried out with 30 test subjects. In addition to observing the time it took to achieve the goal, respondents were asked questions about the individual parts of the prototype and their experiences with them.

Microinteraction for user warning, a prototype was tested with four additional questions relating to the respondents' experiences. The average duration of the survey was 9.3 seconds.

Using data from the Maze analytics platform, it was found that the first screen of the prototype takes the longest time, as users read the prototype's instructions on this screen. Important information relates to the second screen, as this is when the micro-interaction is activated. Users spend an average of two seconds on this screen, which indicates that the user reacts clearly and quickly to the system message.

In the survey part of the test, questions were asked about the warning message, the subtle animation of the switch and the overall impression of the interaction. The goal of this part of testing test is to uncover human behavior and get feedback on the user experience during testing.

Respondents were asked a question about the warning message. In the prototype example, we used a standard message that each mobile device displays when we want to disconnect one of the SIM cards. The native component of the Android system was used for the layout of the dialog box (Figure 3).

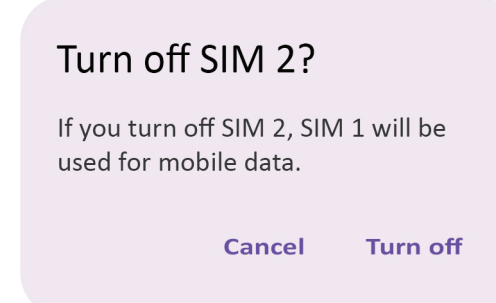


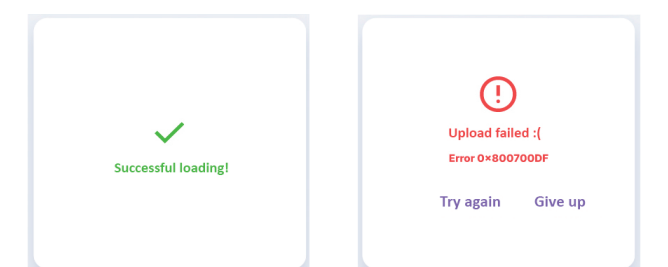
Figure 3
Warning message

In microinteraction for positive and negative feedback, the effects of positive and negative feedback on users were examined. The test took the form of an A/B test in which respondents tested two prototypes of the same end goal and answered questions about the experience of using the two prototypes.

In the first part of the test, respondents had the task of dragging the file icon to the marked location. The tested microinteraction appeared at the end of the action, i.e. on the last screen of the prototype, after the loading bar was filled. In the first prototype, the test subjects received a success message in green, in the second prototype an error message in red (Figure 4).

Figure 4

Success and error messages



The statistics obtained show that, on average, respondents took between 10-16s to reach the goal, of which 3s were spent loading the progress bar. The initial microinteraction of dragging the file icon was the trigger for all users to activate the microinteraction, which took an average of five seconds per user.

Conclusion



When developing digital products, it's all about the details. Microinteractions provide appropriate feedback about the user's current action. Microinteractions are not product features, but they are just as important. Users encounter them every day.

User testing has shown that special attention should be paid to the choice of shapes, colors, etc. in the design. Well thought-out and creative micro-interactions significantly improve and contribute to the design and user experience. When testing the prototype carried out in this paper, it was found that a poor error message is frustrating for users. Research has shown that in such situations users often ignore the problem, whereas the correct message should help them and offer a solution. The feedback the user receives has a direct impact on their mood and actions. It can therefore be said that microinteractions create an emotional connection between the user and the product. These connections have a direct impact on the user's perception and experience of using the product. Designing microinteractions is about finding the right way to make the desired interactions as pleasant as possible without overdoing it. These small details make the design and user experience special and create a strong connection between the user and the product.

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