What can I do? User Onboarding in Industry 4.0

Sarah Zielinski, Stefan Geisler
firstname.surename@hs-ruhrwest.de
University of Applied Sciences Ruhr West, Institute of Computer Science
Bottrop, Germany

ABSTRACT

Lifelong learning and dealing with new technologies will be part of the daily work routine in the future. It is therefore all the more important to have effective methods for familiarizing employees with a new field of work. The aim of the project is how a user onboarding should be designed for an interactive assistance system with functional and non-functional animations.

CCS CONCEPTS

• **Human-centered computing** → **Empirical studies in HCI**; • **Applied computing** → **Computer-assisted instruction**.

KEYWORDS

life long learning, user onboarding, functional animation, industry 4.0

1 INTRODUCTION

With the spreading of digitization and the Industry 4.0, new challenges arise with regard to employee training. In particular, interactive assistance systems that work cooperatively with employees. In the best case, the skills that make up an employee and the skills that a machine can do more efficiently are used. To do this, it must be ensured that the employee has confidence in the system. This can be supported by a well designed user onboarding. User onboarding aims to teach the user how to use the system with learning by doing. Functional animations are used to provide feedback on user interaction. For example, a transition to the left while swiping. Non-functional animations are linear animations that call the users' attention, e.g., the flashing of a button as a demand for interaction. In order to investigate how user onboarding can be designed using functional and non-functional animations, the basics of user onboarding [1], functional animations [3], gamification [4], and interactive assistance systems in industry 4.0 [2] were examined. The results of the literature research are guidelines that have been developed by consolidation of the different recommendations with respect to the usage scenario.

In total, six design guidelines for animation-based user onboarding were developed: (1) User always has control over the system (System Controllability), (2) User is convinced to be able to do the work task with the system (Credibility), (3) Communicating of progress and following steps (Progress), (4) Comprehensive feedback, successful interaction feedback (Visual Feedback), (5) Distract attention, self-describing ability when function is changed (Attention), (6) Iterations that promote the learning process (Redundance). To validate the guidelines a test scenario was designed. The user requirements were defined with a contextual inquiry in a food factory. The work was observed during the weighing process of different foods. The aim was to digitize the weighing process with an interactive assistance system and to design a user onboarding to train the usage of the system especially for temporary workers from different countries with low German language skills.

2 STUDY AND RESULTS

Based on this, an Axure Prototype was created, which was evaluated with a total of eight study participants using the Wizard-Of-Oz method. To do this, every participant had to go through the user onboarding process, think aloud during that and was observed by the experimenter. In addition, a non-standard questionnaire was used to check whether the previously defined user requirements had been met.

All participants were able to operate the system after the user onboarding. The animations were perceived as helpful and supportive in the learning process. Participants also claimed that the animations bring the system to life, but had problems when non-functional animations were overlooked in a moment where attention was not on the system.

3 CONCLUSION AND FUTURE WORK

The study has shown that functional animations are suitable for designing a user onboarding. The system not only looks livelier, but also gives users helpful hints. As next steps, the design guidelines will be explored in other contexts, as well as finding a solution for the overlooking of the non-functional animations.

REFERENCES

[1] Samuel Hulick. 2014. *The Elements of User Onboarding.*
[2] B. Ludwig. 2015. *Planbasierte Mensch-Maschine-Interaktion in multimodalen Assistenzsystemen.* Springer-Verlag.
[3] M. Lund. 2015. *Functional animation - Interactive animation in digital artifacts.* Aalborg University Press.
[4] G. Zichermann and C. Cunningham. 2011. *Gamification by Design - Implementing game mechanics in web and mobile apps.* O'Reilly.