

THROUGH THE EYES OF THE USER

Operating today's smartphones and tablets is child's play – thanks to user-centered design. But what exactly is UCD?

By Samuel Frischknecht and Simon Zweifel

Peter wants to access e-government services in his community. He reaches for the tablet as a matter of course and tackles the registration process. The form has its pitfalls. It refuses to accept his home address. When Peter wants to jump back a step to check the information he entered, it has disappeared. He gives up and tries his luck by telephone.

What is essential to the survival and success of online mail order companies such as Amazon or Zalando apparently still has potential in the world of e-government applications: the user experience. A clearly perceptible paradigm shift is underway in software engineering. While software companies used to base solutions on their technical possibilities, the user experience takes center stage and constitutes the starting point today. How did this transformation take place, and what are the effects on the technology, the established roles and cooperation in the software project? We take a look behind the interface.

Expectations regarding the user experience rose massively when mobile devices took over. The simplicity of mobile

The user experience (UX) by definition (according to DIN EN ISO 9241-210) encompasses all perceptions and reactions of a person resulting from the actual and/or expected use of a system, a service or a product.

User-centered design (UCD) is a model for creating an optimum user experience. Users are involved in development through an iterative process from design to development to testing in order to gain deeper insight into their tasks and their usage context. In software projects, the user experience is not designed by a role or individual. It is created through the interdisciplinary interaction of designers, developers, customers and users. This is the only way to explore possibilities and limitations in order to create the best possible user experience.

Insights gained from this process are manifested in personas (profiles of possible users), scenarios and use cases. Commonly used methods (for example contextual inquiry, card sorting or user journeys) provide the required basis.

**15 YEARS AGO
«INTUITIVE AND EASY TO USE»
APPEARED SUFFICIENT
AS A UNIVERSAL REQUIREMENT
FOR SPECIALIZED APPLICATIONS.**

applications with their natural and direct interaction by touching the interface appears indispensable. There are needs and requirements for an application that, in many cases, apply beyond the context of private use and in the workplace. A logical consequence in an era where «angry birds» and mobile banking apps share the home screen.

UX as a requirement

Let us take a look back: 15 years ago «intuitive and easy to use» appeared sufficient as a universal requirement for specialized applications. This was often left up to the talent of

the developer who implemented the application according to the specification. While this resulted in a functionally correct application, it had to make do with a user interface that appears archaic from today's perspective. As a consequence, users were often preoccupied with operating the GUI instead of focusing on their tasks.

In the years that followed, usability and design specialists rose to the challenge of making applications «user-friendly». As a rule they were only involved once a lot of code and test cases had already been written, so that their suggestions led to added costs and/or project delays.

Recent years have seen the outsourcing of conceptual design to design agencies in order to meet the multilayered needs of the users and the high standards for platform-compliant design and interaction. This approach led to creative concepts and, initially, high user acceptance. But new project risks also resulted for

more complex applications. This is because separating design and development increases the communication effort for implementation, especially when it comes to mobile applications that need to be highly user-centered. Therefore, the additional effort is often at the expense of (user) testing.

**DESIGN DOES NOT HAPPEN QUIETLY
OVERNIGHT. INTERACTION DESIGNERS
NEED ACCESS TO USERS.**

Integrated design

AdNovum follows the approach of integrating the design process in the established software development process. Not only do we actively involve the business and users in the design process, we also validate the results continuously with business analysts and software developers in an iterative procedure. This permits us to review the possibilities and limitations of design solutions early on, and to look for alternatives as needed. Regular feedback loops ensure a joint understanding among all project participants.

Unlike outsourcing design tasks to third parties, this integral approach has proven itself for the following reasons:

- An integrated user-centered solution is developed.
- The dual structure with the specific technical knowledge of the development company and an additional design agency is eliminated. This reduces costs for the customer.
- Synergy effects are realized between business analysis, development and UX design.
- Errors in the interpretation of design requirements are reduced. Mobile applications in particular benefit from the proximity of design and development, because the behavior of the user interface – such as gestures and animations – is difficult to capture with static documents.
- By making the UX designers part of the development team and using an interactive approach, input from the designers that is relevant for the architecture can be identified and taken into account in a timely and cost-effective manner.

Get out of the building

Design decisions have to be made. Continuously. Contrary to the belief that design happens quietly overnight, interaction designers need access to users. For custom software in particular, the roles of the users are often complex and demand a deeper understanding of the usage patterns. For example, the interaction

designers have to know whether a user repeats a task (typical for stack processing) or keeps doing different tasks (case processing). This provides important indications how the user interface for this role should be structured, what terminology has to be used and what degree of contextual help in the application is suitable.

The better the understanding of a task or the cause of an operating problem, the more precisely can a design decision be made. This attitude has already taken the AdNovum UX specialists into the passenger seat of a truck at a logistics company and to a medical consultation for clinical studies. All in the interest of getting a first-hand look at the context in which the application is used. Such research offers valuable insights and promotes acceptance and cooperation in the project.

Prototyping and frameworks

In practice, UX activities are constrained by limited project resources and must be carefully selected according to the available budget. Therefore, the design process is kept slim and only enough design is produced that value is actually added. When it comes to verifying the sequence of a registration process for example, pencil and paper (paper prototype) constitute an effective tool for quickly sketching proposals and defining details together with customers or users. Then the user experience can be realistically simulated in another iteration with an interactive prototype and tested with actual users, even before production code is written by the programmers. New requirements are often revealed in this process.

Prototyping is important from the engineering perspective as well. With the help of frameworks that correspond to the target platform and include a number of established code modules already, the technical feasibility of a design can be confirmed

**THE BETTER THE UNDERSTANDING OF A
TASK OR THE CAUSE OF AN OPERATING
PROBLEM, THE MORE PRECISELY CAN A
DESIGN DECISION BE MADE.**

early on. Such coordination reduces the risk of later encountering «blockers». If a function can be realized in the prototype, it can be integrated in the end product exactly like that. At the same time, the design prototype gains value for the end user when the interaction possibilities can already be experienced and correspond to the end product. Various behaviors using different web browsers or devices can for example also be compared and addressed early on.



Simon Zweifel and Samuel Frischknecht: Combining technology and design to create user-friendly solutions .



Therefore, 10 seconds x 50 tasks x 60 users equals a time saving of one full workday of 8.4 hours. Including more than one test subject is important here, similar to classic usability tests.

**WE SEE DESIGN AS A TOOL
TO NOT ONLY DEFINE
THE INTERFACE BUT
THE ENTIRE USER EXPERIENCE.**

Conclusion

We see design as a tool to not only define the interface but the entire user experience. What is visible and especially experienced through the interface is ultimately always a result of considerations and decisions based on a deeper understanding and the compilation of facts. When we think from the user's perspective and when designers and developers work together closely from the outset, nothing stands in the way of a positive user experience. ■

Software developer profiles

The user-centered approach means the roles within a software development project have to be adapted as well. In the past it was important to have software developers with a universal skill set, covering the broadest possible variety of tasks with consistent quality. Even though this qualitative requirement continues to apply, a software developer can specialize in various common profiles. Differentiation between frontend and backend developers is a natural step, in particular for the development of a client-server application. While the focus in the backend is on stability, performance and backwards compatibility, usability is implemented in the frontend. Frontend developers with their technical understanding and their feel for usability constitute an important link between backend developers and UX designers.

Not tangible but measurable

Notwithstanding the common definition, the user experience is not easy to comprehend. Yet improvement measures in design quickly make themselves felt, especially when the original condition led to user errors and the application is noticeably easier and more convenient to use afterwards. Next to the subjective impressions, the effect of improvement measures can also be quantified, measured and statistically analyzed with the help of standardized questionnaires or log files. One example of a simple calculation: (measured time savings per task) x (number of tasks per user and day) x (number of users).

Samuel Frischknecht

Samuel Frischknecht, Interaction Designer (Eidg. dipl. Interaktionsleiter), started developing the user experience discipline at AdNovum in 2011. He focuses on mobile applications and generally on projects with a high level of user interaction, where he assumes the role of the user. Outside AdNovum he prefers to spend his time out and about on four wheels or with four paws in nature.

Simon Zweifel

Simon Zweifel, MSc in Computer Science ETH, has been with AdNovum since 2005. In his role as Technical Project Manager, he has already assumed responsibility for several larger banking and e-government projects. Very often the modernization and usability of an application was among the main objectives. In Simon Zweifel's private life, it has all been about the latest addition to the family since this summer – in other words, he currently leads a baby-centered life (BCL).