

Effective Onboarding User Experience Design for Complex Systems
(Technical Topic)

Exploring the Negative Side of User Experience Design: Behavioral Manipulation
(STS Topic)

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On my honor as a University student, I have neither given nor received unauthorized aid on this assignment as defined by the Honor Guidelines for Thesis-Related Assignments.

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Introduction

User experience (UX) design is a fundamental aspect of how people engage with different platforms and interfaces. UX design is the process of designing systems or products that aren't only useful, but easy to use and creates an enjoyable experience when interacting with the product. It's about making sure that users are interacting and engaging with the product in a way that provides value to the users. Good UX design occurs when designers understand the expectations and values of the users and intentionally design a product that fulfills those needs as well as the goals of the company or business behind the product.

My technical research will focus on the user experience design of a complex software system for a client company. The service that the client offers is the industry's first cloud-managed SaaS (Software as a Service) solution that enables users to centrally control and automate IP address management for cloud networks. Since this is a novel system, it's difficult to configure correctly and customers aren't fully aware of the necessary steps, and thus aren't getting the highest potential value from it. In conjunction with our client company, my Systems Engineering Capstone team aims to redesign the onboarding user experience of the system to allow users to be able to set up the system accurately and effectively using UX design methods and approaches.

My STS research aims to unpack the flaws and negative aspects of UX design specifically regarding how it can be used to manipulate and exploit users. As we enter a society where technology becomes increasingly a means of our daily lives, user experience needs to be evaluated from all different perspectives (Allam et al., 2013). Human-Computer Interface, which is the study of designing systems to best serve their users, increasingly points us to explore the philosophy of technologies and the resulting impact it leaves on users (Fallman, 2011).

With my research, I hope to better understand UX as a whole and identify design processes and implementation that result in the most effective and positive user experience.

Technical Topic

The goal of our client company is to become an industry leader in modern networking solutions. Although working with new concepts in the realm of computer networking such as automated cloud-based networking is innovative and modern, the current capabilities the client is offering aren't matching the design and process of the system. Complicated technical software systems such as cloud-based networking require extensive knowledge to use them effectively and accurately. Several times, to use these complex interfaces, the users, regardless of their knowledge levels, have to go through an onboarding process to understand how to use the system. Generally, software onboarding can be complicated and can create confusion for the user or prevent the user from fully implementing the benefits of the product. Although the client company is currently combating these issues with a well-trained professional services team, the interface must be re-evaluated and redesigned with the user in mind to ensure a clearly defined workflow and onboarding process for a more stable and long-term solution.

The current system does not indicate how to set up the system for the user. Since it's not a linear workflow, but a workflow with several steps and substeps, the creation of the onboarding process requires a thorough understanding and study of the capabilities of the system and typical user requirements and objectives. Onboarding in general is "the first time a new user interacts with a product" (Kapusy & Logo, 2022, p. 1). For most interfaces, the goal of onboarding is to "introduce new users to a website or application and to carefully familiarize the product - to accommodate users and teach them about individual features" (Kapusy & Logo, 2022, p. 1).

However, for a complex software system with many layers, Megyeri & Szabo (2021) argue that the goal of onboarding is to not only familiarize the product, but also ensure that the user is accurately employing all of the features and receiving feedback on successful implementation, understands the hierarchical workflow and setup of the design, and can easily keep track of their current stage in the set-up process as this process is rather lengthy and intricate. I agree that an effective onboarding process would allow users to have a clear understanding of the workflow to ensure an accurate setup for their unique needs. Users would be able to pinpoint exactly where they are in the setup process and what steps they need to complete to get to a properly configured system. With a new system workflow and feedback-focused onboarding design with the addition of receiving feedback, the users would have a smoother onboarding experience.

Our team is guided by Professor Gregory Gerling, an Associate Professor in Systems Engineering at the University of Virginia, who has invaluable expertise in user experience design and building complex interfaces. Our team is working closely with the client to create the necessary diagramming and establish a better understanding of what the end product should look like. By building out user journey maps and performing a hierarchical task analysis after conducting and viewing user interviews, our team has gained an understanding of the basic concepts of networking and cybersecurity as well as a solid grasp on the current system. Our team hopes to map the workflow of the current system to eventually envision an improved workflow. This will be brought to life through a final functional user interface prototype which we will evaluate and iterate on through testing during the spring semester.

STS Topic

The goal of the STS paper will be to identify the impacts that UX design of mobile apps can have on users in the form of altering their preexisting opinions, behaviors, and actions.

By understanding the potential negative implications of manipulative design, regulation of designers or responses from users can be investigated as methods to mitigate the effects of such manipulative design and give more power and autonomy to users. According to Northeastern University Professor Ari Ezra Waldman, “The power of design means that our choices do not always reflect our real personal preferences. At worst, online platforms manipulate us into keeping the data flowing, fueling an information-hungry business model” (Waldman, 2019, p. 107). A common example of this can be seen in Amazon’s design. By employing persuasive patterns to recommend alternative products and offering the ability to purchase items with one click, users can get tricked without even realizing it. The emphasis on creating ever-more-effective interfaces to manipulate and exploit users to get them to behave and react in a certain way, which usually favors the product owners, continues to grow, resulting in consumers becoming increasingly vulnerable to powerlessness.

Certain UX aspects allow the designers or companies behind the products/platforms to have authority over the users’ abilities to make decisions for themselves. Limitations imposed by designs oftentimes weaken the user’s ability to make rational decisions for themselves. By citing multiple existing examples in the technology ecosystem, such as Facebook and LinkedIn, Waldman (2019) depicts how platforms are socially constructed and designed by people who have implicit and explicit biases. He proves that users care about their autonomy, but because of the cognitive limitations used on different interfaces and platforms, they are unable to act effectively on those concerns and preferences. As a white male himself, Waldman (2019) is cognizant of the biases that are involved in the designing of platforms as he states, “...the mostly white male engineers and technologies on the ground play a critical role in channeling ideas into design” (p. 107). Using examples of similar large companies, my research will use case studies

to depict ways in which society is impacted by deliberate design decisions which target certain groups of users according to factors such as their existing beliefs, race, gender, and even skill/knowledge level.

The STS paper will build on this topic through the framework of actor- network theory. Through actor-network theory, all of the involved actors are considered equal and their values are all equally important. The actors include users, UX design, company stakeholders, designers, user data and business metrics to name a few. Understanding the different values and biases that might exist of the human actors based on how they react to manipulatively designed interfaces by breaking them down based on factors such as age, gender and skill level would help further analyze the issue in a socio-technical frame.

One type of method that is used in UX interactions is dark patterns which take advantage of users by getting them to do something they didn't initially intend to do. "Dark patterns are designed to mislead or trick users and essentially exploit human psychology" (Gray et al., 2018, p. 2). Based on examples such as Facebook and LinkedIn, it's seen how users are being exploited due to our profit-driven society. Protecting users' ability to make choices is a critical aspect of ethics, but giving users autonomy, which can be defined as "the ability to use an interface in a way that aligns with personal preferences and priorities, can conflict with increasing key business metrics" (Kohler, 2022, no p.).

Prioritizing user experience over business metrics and following ethical design processes would allow for the mitigation of manipulative UX. In my research, I hope to identify manipulative designs that exist and discuss methods in which users can be given more autonomy. I'm looking into research papers discussing the effects of behavioral manipulation in UX design and ways to combat its prevalence in our everyday interfaces, specifically social media

applications. Examining case studies that discuss the different ways in which user interfaces are harming users and understanding what psychologists and human behavior researchers say about this would give me a better understanding. Similar to other experts in the field, such as Kohler (2022), Gray et al. (2021) argues how user satisfaction and expectations add to how users react to a specific interface based on their intentions. Figuring out how to give users autonomy in their thinking and behaviors while maintaining their initial intentions afterward is the ultimate goal. Additionally, researching actions UX designers can take to combat and lessen the impact of behavioral manipulation would be beneficial. Companies must abide by certain regulations to ensure that the user has authority over the impact a design may have, however, Professional UX Designer Luis Castro (2020) argues in his article that designers and users need to actively pay attention to potential manipulative practices in the UX field. By “elevat[ing] the conversation, start early before bad practices become normalized or the reputation of UX [...] become[s] tarnished by bad actors” (Castro, 2020, p. 3), the user design experience can allocate more autonomy and power to the user.

Conclusion

Throughout my research for both of the reports, I hope to better understand the socio-technical implications of user experience design. I’m looking forward to creating the redesigned onboarding system for the technology project while deliberately implementing and recognizing design features that are ethical and understanding the boundaries that exist without crossing into manipulative and exploitative designs as I research for the STS report. Looking at the bigger picture, I aim to be able to use my research to convey a new perspective regarding effective and

positive UX design that emphasizes and values the user, which ultimately is at the core of UX design, and something UX designers can be reminded of.

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