

**User Experience Design in Cloud-Based Cybersecurity**

**An Ethical Consideration of Deceptive Digital Design**

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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**

Digital platforms are intricately woven into individuals' daily lives. In 2022, 307.2 million Americans have internet access, or 92% of the population (Kemp, 2022, [no pagination]). As such, both the cloud-based cybersecurity and user experience (UX) design industries have experienced rapid growth. Cloud computing is essential for digital security; however, the industry is facing challenges scaling to enterprises of different sizes. Cloud computing networks are complex to set up, and effective onboarding UX is lacking. An organized workflow would enable cloud computing companies to sell their services to enterprises of all sizes, finally reaching small and medium enterprises (SME's) who outsource their network onboarding to information technology (IT) professionals.

Widespread recognition of UX as a tool for customer acquisition highlights how users are accustomed to streamlined and aesthetically-designed interfaces. UX designers value these characteristics but balance them with their clients' objectives. Unfortunately, across many industries, this results in "dark patterns" or "deceptive designs" where UX features lead users to specific actions benefiting the platform operator (*Deceptive Design*, n.d., [no pagination]). A danger of this behavior manipulation is that users are unaware of privacy settings they have agreed to and, therefore, give away more personal information than they intend to. Examining deceptive UX design through an ethical lens - building an actor-network theory model and using ethics of care to evaluate human interactions - will discern the future role of these designs and intentions as users expect full transparency with their digital experiences.

## **Technical Topic**

To optimize digital platforms, users must understand how the UX was designed to function, which is achieved through effective onboarding. With modern dependency on and

familiarity with digital technologies, users can overlook onboarding systems in favor of *figuring it out themselves*. While this tactic can be effective, structured onboarding features increase platform efficiency long-term for users and operators. As Bygholm and Sell (2021) found, onboarding “is a specific process that is getting more and more attention as the user friendliness and learnability of a digital system becomes an increasingly important factor to a successful product” (Bygholm & Sell, 2021, p. 16). Without effective onboarding programs built-in, some companies must outsource their IT tasks, where cost, timeliness, and security issues may be concerns (Rosencrance, 2022). Comprehensive onboarding would alleviate this burden allowing companies to set up their own digital systems.

UX is a powerful tool to carry users from initial introduction to utilizing a platform’s full potential. “UX should not only be seen as something evaluable after interacting with an object, but also before and during the interaction” (Vermeeren et al., 2010, p. 521). Vermeeren and others (2010) discuss the “temporal aspects of UX” to consider the designs as a fluid entity that can be iterated on and improved with feedback (Vermeeren et al., 2010, p. 521). The technical research focuses on the client’s onboarding process and organizing their existing workflow. A procedure to design onboarding processes will be established to improve future implementations for unique use cases. The onboarding process operates within the cloud computing industry; however, the framework for conveying the desired workflow is applicable across industries. The team views onboarding as an opportunity to captivate users and optimize their experience on the platform.

While onboarding has an immediate impact on a users’ experience, platform operators are motivated to help users understand their platform as efficiently as possible. With continued technological advances, all types of companies are dialing in on UX design. The UX design

market was estimated to be \$465 million globally in 2021 and is forecasted to reach \$1346.20 million by 2028 (*User Experience (UX) Market and User Experience Service Market Size (2022-2028)*, 2022, [no pagination]). This market encompasses features beyond the onboarding process, yet its projected growth is a powerful indicator of increased demand for organized onboarding. As the digital platform market grows and becomes more competitive, companies must distinguish themselves with user-friendly features and a comprehensive user experience. Similar to the technical research project, many companies will choose to overhaul existing onboarding processes or establish them for the first time and, therefore, must evaluate and convert their desired workflow into simple, effective UX design. Onboarding plays a critical role in user experience, and its success relies heavily on UX design.

### **STS Topic**

Modern society relies on digital platforms to complete myriad tasks - both those compulsory for business, government, and educational operations and those optional for personal entertainment - and success is defined beyond objective metrics. Digital interfaces were once strictly judged on their functionality; however, since 2010, there is a noticeable shift in expectations of user experience to captivate subjective emotions while communicating the platform's capabilities (Cara, 2020, p. 106). With this expanded set of user values, UX designers are challenged to incorporate more human-actor values in their designs. Analyzing UX designs through an actor-network lens demonstrates the contrasting values considered by designers and their clients. "Actor-network theory proposes a radical constructivist semiotic approach advocating human and non-human entities should be treated equally for purposes of analysis," which includes designers, users, and stakeholders along with their respective values and motives for this analysis (Rodger et al., 2009, p. 647). The concept of dark patterns, coined by Harry

Brignull in 2010, has emerged from an imbalance between these actors and their relationships (*Deceptive Design*, n.d., [no pagination]). UX websites and literature widely criticize this practice of explicitly creating UX design features to deceive users into purchasing, sharing personal data, or subscribing to services they do not intend to. Within the actor-network, the human actors decide how to interact with digital platforms based on their personal values, including privacy, functionality, and accessibility.

Platform operators are motivated by their company's success and, by translation, this influences the work of their UX designers. A 2020 report on dark patterns warned of a “worrying trend [, which] is the emergence of companies that offer dark patterns as service,” where enterprises pay for customizable interfaces depending on the user (Narayanan et al., 2020, p. 13). Users' data and their privacy settings are key actors that influence the human actors; however, if targeted and acquired unfairly, this could jeopardize users' trust and adoption of digital platforms. The social, political, and economic implications of deceptive designs spread throughout the actor-network model as companies take action based on the data they have collected, including advertising, strategy, and forecasting decisions.

One form of user data preyed upon by platform operators is their personal location data, as seen through a case study on Google Maps. Google Maps enables location tracking by default; however, changing multiple settings to disable this function is not intuitive - causing users to falsely believe their data is private (McNealy & Nguyen, 2021, p. 21). More broadly, this issue is relevant to an investigation of data control by the New York Times in 2019 following instances across the US of mobile device location data being seized by local and state authorities (Valentino-DeVries, 2019, [no pagination]). As Valentino-DeVries (2019) discusses, “location data is a lucrative business - and Google is by far the biggest player” (Valentino-DeVries, 2019,

[no pagination]). Media and press play a powerful role in the actor-network model exposing deceptive designs and motivating designers and their clients to operate with full transparency. In the actor-network model of deceptive designs, human and non-human actors are inextricably linked and interact through both actions and emotions, which are often targeted by UX features. These relationships question how designers and operators act with the interests of others in mind.

The actor-network theory model establishes all actors in their interconnected network; however, it is important to consider how the decisions of each human actor affect the others, which is possible with analysis using the ethics of care framework. Taylor and others (2020) write, “ethics of care demands that science-based policy reorient regularly from the notion of the majority to that of the collective. Seeing people and groups rather than populations offers more possibilities for taking particular vulnerabilities into account” (Taylor, 2020, p. 5). Through an ethics of care lens, there are clear disparities between who benefits and who is taken advantage of throughout instances of deceptive designs. Parrilli and Hernández-Ramírez (2020) explain the emergence of “‘surveillance capitalism’, a relatively new economic system based on the constant extraction, accumulation, and trading of users’ data” (Parrilli & Hernández-Ramírez, 2020, p. 253). Contributing to surveillance capitalism, designers prioritize platform operators’ and/or companies’ desires above user values. (A critical distinction is that while some users are comfortable with sharing their private data, deceptive designs can take away the agency to make this choice leaving users unaware they have agreed to share their data in the first place.)

Despite these negative consequences of some UX design, positive solutions offer improved digital experiences for users, designers, and platform stakeholders. Proposed solutions for prioritizing user values in designs include allowing users to customize their digital interfaces to control the content and presentation (Kollnig et al., 2021, p. 2) and *reversing* the direction of

deceptive design patterns to the most restrictive privacy settings (Parrilli & Hernández-Ramírez, 2020, p. 253). A 2018 study conducted by Chivukula, Brier, and Gray conveyed that designers share core values for users, including “right to information, usability, security, flexibility, automation, optimization, trust, and aesthetics;” however, the designers ultimately make decisions based on the clients’ values (Chivukula et al., 2018, p. 90). They observed that in moving towards persuasive practices, designers end up implementing deceptive designs. Evaluating deceptive designs as a persuasive tool through an ethics of care lens challenges the efficacy of design *suggestions* in addressing user values.

### **Conclusion**

Digital technologies create new opportunities for innovation, communication, education, and security. However, to serve these purposes, interfaces must be designed to captivate users and convey the platform’s functionality. Onboarding to new digital platforms can be a powerful tool for users to optimize its features, yet these services are currently lacking across many industries. Through designing an onboarding system in the technical project, the team must consider the implications of their UX design choices to avoid deceiving users. Both within onboarding and everyday digital usage, users are faced with designs curated by platform operators, and these actors often have conflicting values regarding privacy and persuasion. While these design features may seem as small annoyances on our phone or laptops, allowing these practices to progress unchecked could erode trust between users and UX designs, which could create massive barriers to innovative technology adoption. Deceptive designs are powerful tools widely implemented; however, actor-network theory and ethics of care analysis convey ethical concerns with existing practices.

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