xFlow Holodeck: A Dashboard to Track Workflow Metrics

Exploring the Effectiveness of Accessibility Guidelines in Enhancing User Experience Design for People with Disabilities

A Thesis Prospectus
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By
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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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Overview:

Designers and developers create websites but fail to provide the necessary additions for disabled people. My project highlights the current issues with accounting for accessibility in site designs for different devices and reviews what individuals and companies can do to start making a change. Readers will learn how to approach website design in a new lens and be able to identify different accessibility standards.

Positionality:

My name is Siddharth Tickle, and I am an Indian American Computer Science student at the University of Virginia. I was born in the greater Toronto area and moved to Michigan and Virginia before settling in Fairfax, Virginia. As a child, I tinkered with technology around the house, played with Legos, and even built my own computer. In high school, I took multiple Computer Science, engineering, and Mathematics courses. Hands-on activity with Science Olympiad and Robotics projects kept me busy and taught me what I'm really interested in: creating solutions to help other people. I focused on my research on understanding the interaction between computer interfaces and those with visual and physical disabilities. At UVA, I study Computer Science- but outside of school, I have a passion for UX Design and even taught a course to other students on the topic. Interning at Syntrillo, a local startup focused on stroke-prevention technology, taught me how to design interfaces for stroke patients with a lack of motor skills, vision impairments, and more. I used these skills at my next internship at Qualtrics to ensure the quality of the product I was designing was accessible to all my potential customers. These experiences developed me into the designer and software developer I am today. My end goal is to ensure all software in the current era is accessible to those who need it most.

Problematization:

According to The WebAIM Million Report, an annual report on the top million webpages

on the internet, 96.3% of webpages had a failure as per the Web Content Accessibility Guidelines (WCAG). This is unacceptable in the modern era of technology as all websites developed for use by everyone should also be accessible by everyone. The main actors are developers at large companies that create websites that influence society and the users that use those sites. At this point in society, users rely on websites for basic needs and essentials like ordering food or filling our government documents.

Guiding Question:

How can we improve awareness to improve accessibility of websites on the internet today?

Projected Outcomes:

My argument would follow affordance theory to approach the systemwide accessibility improvements needed to analyze the current state. Users who require sites to be accessible would benefit from this approach.

Technical Project Description:

Qualtrics needed an easier method for tracking internal metrics since its current solution forced users to go through multiple third-party services to access the information. As a member of the xFlow Runtime team, I developed a web-app named xFlow Holodeck using React, JavaScript, Node, Jenkins, and Mocha to serve as a dashboard and a one-stop shop to view the data from each of the third-party services. The problem revolved around debugging workflows; a product widely utilized within the company. Workflows, triggered every time a user submits a Qualtrics survey, can consist of a variety of tasks utilizing native and third-party services. Since the product is used within many engineering and customer service teams, they all need access to data related to specific workflows. To access JSON data about a workflow, users must go through multiple services. For example, to access an ID related to a specific workflow, users must go to the workflow within the Qualtrics service, copy the ID, go to the Amazon DynamoDB instance with that specific ID having permission from engineers on other teams, then finally view the information associated with the workflow. This problem was consistent with many different fields related to a workflow. The current

solution was to use two existing APIs to access this information. However, this was not customer-friendly and there was no existing user interface for users to access the same information. This was important because the target users not only consisted of engineers, but also the resolutions team in charge of customer service and support calls. Thus, there was a need for a UI-based tool to retrieve data associated with workflows.

Preliminary Literature Review & Findings:

The articles I reviewed focused on multiple different point of views to the accessibility issue. I was able to understand a lot of different perspectives on the issue at hand, including physical accessibility issues. The first article I want to highlight focused on wheelchair accessibility. Although the study focused on a physical matter, the lesson learned from this, and much other sources' research is that implementing inaccessible users in the design process improved the final product for all end users. According to Lazar, involving disabled people throughout user testing and feedback is vital to ensure all needs are fulfilled (Lazar, 2017). This information is extremely helpful as I can implement this into my design thinking process. The mindset I would take in the development process would be to ideate a list of solutions to the problem, define problem statements from the ideate stage, and prototype the best idea from the list. The most important stage after this is to test with a wide variety of users. This would include users who, before could not use the site try the prototype to see if the improvements made during the ideate stage make the experience better. Thus, the entire design thinking process needs to be reevaluated to allow disabled users to participate all the way through. The Design the Future Team at Stanford coined a design thinking framework where disabled people consisted of the center of the framework, and all other parts stemmed from there (Coleman, 2019). Finally, a vital point is scale- these changes need to be made at scale to notice any difference. At this point in time despite all the efforts to reduce it, disabled users still experience a "digital divide" on the internet (Šumak, 2023).

STS Project Proposal:

STS is the study of interactions between technology and humans. It attempts to study how products are researched, designed, and developed while keeping mind towards how it may impact society both through intentional and unintentional means. My project studies this relationship in its edge cases and attempts to figure out how each side, humans, and technology, adapt to the other in the case where they are not a perfect match. Often, websites are not developed to the ADA standards set in place and users report problems related to accessibility which renders some fully designed websites unusable. The problem here lies within design, the transition from design to development and the users that developers test their website with. The design and development of any web application begins with someone trying to solve a certain problem. Additionally, the design process is really a cycle, and this is often missed in the design thinking mindset. The first step in the cycle is the empathize stage where developers must understand who their customers are and what the problem at hand is. This is a vital stage because you must understand the range of your customer base as it includes all the possible users that could be using your software once it is developed. Once this is determined, developers move on to the define stage where they must research the importance of the topic and understand the specific needs of the solution in context of the user base and problem statement. In the ideate stage, users list potential problems to the problem statement regardless of how realistic or unrealistic they may sound. This is to get as many ideas on paper as possible so that in the prototype stage developers can select the best idea from the list and create a prototype as the name of the stage suggests. The prototype stage gives developers an opportunity to build out an idea and see if it works for their solution, they verify this during the test stage, another vital part of the cycle. Developers must test their product with a wide range of users to ensure that they can cover the entirety of their customer base. By the end of the test stage, developers understand what improvements they need to make to their product, and they start the cycle again from the empathize stage. The cycle is not really a “cycle” per se, but the natural method of thinking of creating a product. In the end the most important things to

consider are understanding who your customers are, why they need a solution, how a solution could look, and if that solution works for all the customers at hand.

Barriers & Boons

I associate engineering with my identity because I try to use my engineering background to approach problems I encounter. Whenever I encounter a personal problem, I start to think about how I can solve the problem on my own. This is a barrier for myself because I cannot directly relate as deeply to the problems my users may face. I need to learn how to put myself in my users' shoes to understand their point of view when viewing an inaccessible website.

References

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