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Accessibility Design in User Experience and Digital Product Design: Ethical and Practical Imperatives

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ABSTRACT

Accessibility (a11y) in digital product design makes software, applications, web apps, and other digital interactive products usable for a diverse human audience. Creating digital products that everyone can use is essential for companies and users. For companies, it means establishing a wider audience for their product and conceptually increasing profits. For users, interacting with fully accessible products means that, regardless of being temporarily or permanently disabled, you can still perform all the tasks within a product without issue. There are rules and guidelines like the Americans with Disabilities Act [ADA] and the Web Content Accessibility Guidelines [WCAG] that outline what digital products must do in order to be considered accessible. As user experience [UX] practitioners, we must challenge and change the common practice and paradigm of companies using the cost of action and avoidance of responsibility as excuses to neglect accessibility. The goal for everyone building digital products should be to shift the focus from creating a 'product that people with disabilities can engage with' to creating products for all people, emphasizing that designing for the extremes benefits everyone. When creating new digital products, there is no excuse not to include accessibility from the start. However, there are barriers to getting there. With existing digital products, there is a cost in adding accessibility into code where it doesn't currently exist. Updating the code is called "refactoring" and takes engineering resources to perform. However, every digital product must be accessible. One does not have to look far to find news articles about corporations facing legal troubles because their digital product is not up to accessibility standards. In the early 2000s, the concept of "responsive design" emerged. A responsive product is the idea that one design could adapt when displayed on different screens to allow one codebase to control multiple views of the same product. Before this idea, a mobile product would need to be created and maintained, as well as a desktop application. At first, responsive products were considered an afterthought and sold as an "add-on" to make maintaining digital products easier. In current practice, responsive design is just how good products are built. Even when a digital product starts as a mobile application, it is (or should be) developed to be responsive for 1: all mobile form factors, and 2: in the future, the product can be utilized in other sizes, like a desktop or web application. Companies and people creating products should think about accessibility first. Accessibility design should be part of the modern baseline for starting and developing all digital products. Through education and visual references, all user experience practitioners must be familiar with accessibility standards as a practice to advocate that all creators of digital products start with accessibility design. We want to break down the barriers to "thinking accessibly." Our field's responsibility is to advocate and push companies to do the right thing from the beginning. Through working cross-team, we intend to support our developer friends in including accessibility from the start and educate them when code is not up to accessibility standards.

Keywords: Accessibility, A11y, Digital products, User experience, Experience design, Design standards, Product design

ACCESSIBILITY AND THE DIGITAL WORLD

Accessibility (a11y) has become an important part of our lives. We want to be able to create products that allow everyone to use them and feel like no one is excluded because all tasks can be performed by anyone engaging with the product, regardless of individual ability.

However, this is not mirrored everywhere in how products, specifically digital products, are conceived and built. Businesses are slow to change, and the perception of accessibility is not unified or universally understood. For many, creating accessible digital products is seen as an extra step, an add-on, or an afterthought.

NORMALIZING THE CONCEPT OF DISABILITY

Think about how people use tools and aids to support accomplishing daily tasks. The severity of this assistance varies. We have all used our phones to map to a destination or used a fork to eat our supper. Aids are integral to the human experience. According to U.S. Census Bureau data from 2021, 42.5 million people in the United States are affected by disability in some way (Leppert, 2023), emphasizing the need for accepting diverse experiences as the norm for creating inclusive experiences.

Inclusion begins at the basics, how we think and talk about disability. Humans have traditionally thought of people with disabilities as an "other" category and assigned the term "normal" to those not within the disabled label. This identifies the first part of the battle in advocating for accessible products. We need to shift the focus from differently-abled individuals to a human standpoint and help to normalize the concept of disabilities.

> *When it comes to people, there's no such thing as "normal." The interactions we design with technology depend heavily on what we can see, hear, say, and touch. Assuming all those senses and abilities are fully enabled all the time creates the potential to ignore much of the range of humanity.*
>
> **Microsoft Inclusive 101 Guidebook**

The Microsoft Design group helps to highlight that disability is a range. For example, the differences in human hearing range from someone who is deaf to someone with an ear infection to someone in a loud situation (Microsoft et al.). Many of the ways that people who do not experience disability think of being disabled as something they are not. It is more accurate to think of disability as something you may not be at that moment. Every human will likely age into one type of disability or another: loss of a level of vision, hearing, movement, and so on.

Changing how we think about disability supports the disability community and benefits everyone. It is important to prioritize the disabled experience and advocate for accessible aids for those who need them. Humans all require aid in various forms due to our evolving nature and advancing technology. How we act when creating products that support everyone regardless of disability

adds value to products. Approaching software development with an accessibility perspective that views disability as a natural extension of the human experience directly leads to more inclusive outcomes.

As we normalize disabilities, we help change the human perspective and build empathy, allowing us to create digital products for a more complete user base. However, we acknowledge that normalizing disabilities may have unintended consequences, and addressing these is essential to mitigate their severity. To lower this risk, considering various perspectives is crucial:

1. **Diminishing perspectives**: Normalizing disability may inadvertently overlook the unique experiences and perspectives that individuals with disabilities bring.
2. **Potential stereotyping**: Concerns arise about normalization leading to oversimplified or stereotyped views of people with disabilities, neglecting the richness of their individual stories.
3. **Preserving individuality**: Some argue that normalizing disability might unintentionally undermine the emphasis on recognizing and appreciating each individual's strengths and differences.

The Impact of Normalization Within Education

It is not a new idea that promoting inclusion is critical because of the benefits to users and society (Bonilla-del-Río et al., 2022). The following are a few benefits of sharing the classroom with disabled students:

1. It upholds the rights and dignity of individuals with disabilities, ensuring their equal participation in society. Inclusion fosters a sense of belonging, reducing social stigma and discrimination.
2. It opens doors for individuals with disabilities to access education, employment, and healthcare, enhancing their overall quality of life.
3. Inclusion contributes to diversity, fostering a more equitable and just society. Embracing and valuing the contributions of all individuals, regardless of their abilities, helps build a more inclusive and harmonious community for everyone.

Including students with diverse abilities in the classroom can positively impact teachers and other students. A study by Anjum Bano Kazmi, Mahwish Kamran, and Sohni Siddiqui on teachers supporting diverse learners demonstrates a correlation between positive attitudes toward diversity and better support for all children in reaching their goals (Kazmi et al., 2023). For teachers, it provides an opportunity to develop their skills in inclusive education and adapt their instructional strategies to cater to the needs of different learners. For both teachers and students, it promotes empathy, understanding, and cultural sensitivity among teachers and students alike.

Having diverse peers promotes acceptance, tolerance, and appreciation of individual differences for neurotypical students or individuals without significant cognitive or neurological variations. It creates a rich and inclusive learning environment where everyone can learn from one another and develop a sense of belonging. This multifaceted approach to diversity not only enhances the educational experience for students with disabilities but

also contributes to the overall growth and enrichment of the entire learning community.

INCLUSIVE DESIGN

What is meant by 'inclusive design' is to create products, services, and environments that consider and accommodate the diverse needs and experiences of a broad range of users. Inclusive design ensures that everyone, regardless of their abilities, age, gender, race, or other characteristics, can interact with and benefit from the designed solution (Joyce, 2023). The purpose of inclusive design goes beyond addressing specific disabilities, aiming to create a universally accessible and welcoming experience for as many people as possible. This often involves understanding and valuing diverse perspectives, engaging with users throughout the design process, removing barriers to access, and fostering a sense of belonging and equality.

As digital product creators, our intentional design of experiences, backed by best practices, principles, and data, can extend to catering to various types of disabilities. Inspired by the Inclusive Microsoft Design concept, we navigate the spectrum of disability encompassing permanent, temporary, and situational conditions (Microsoft et al.).

Our collective responsibility is to build the best products, whether a stakeholder, developer, project manager, interaction designer, or analyst. In each role, it is crucial to advocate for including accessibility in the product. This is done through examples that spark conversations, encourage constructive pushback, and voice optimal user experiences.

CURRENT HURDLES TO ACCESSIBILITY IN DIGITAL PRODUCTS

From a Business Perspective

The approach to creating digital products has only recently turned towards supporting audiences with accessibility needs. Companies become increasingly aware as they hear about others going through litigation for non-inclusive products. This starts off the conversation from a position of concern or defense. "Is our product accessible? I had not considered it until right now. We need to act fast but in the most economical way." Even when starting a new digital product, common excuses are often faced by businesses to create accessible products.

Excuse 1: Accessible Products Are More Expensive to Create

A common excuse revolves around the perception that creating accessible products is inherently more expensive. This concern is valid from a refactoring standpoint. The process involves comprehensive audits, seeking guidance on necessary fixes, educational initiatives, and investing in implementation time. Additionally, education is required to ensure that accessibility principles are accounted for throughout the product process. Without strategic planning, this can evolve into a disruptive and expensive undertaking, highlighting the need for a well-thought-out approach to incorporate accessibility into the product development lifecycle successfully.

Excuse 2: Accessible Products Take More Effort to Build and Support

Developing and supporting accessible products requires heightened effort, particularly when navigating the complexities of the Web Content Accessibility Guidelines. While the WCAG is commendable in its objectives, its technical language and intricate requirements pose substantial challenges. Understanding the intent behind these guidelines can lead stakeholders, especially those not immersed in technical implementation, into in-depth complexities, acting as a significant barrier. This challenge becomes even more pronounced for non-technical stakeholders attempting to distill technical information for practical application in their roles. Opting for a gradual integration of accessibility into the product process emerges as a strategic approach to address these challenges, facilitating a smoother incorporation of accessibility principles into the overall product lifecycle.

Excuse 3: "Why Make It Accessible If No One Is Taking Legal Action?"

A common approach where companies, while recognizing the potential for scrambling later on, assess the short-term costs of a refactor against the perceived absence of immediate legal consequences. This stance frequently aligns with a risk-averse strategy, as companies may wait for legal action before committing resources to accessibility. Convincing organizations to embrace a proactive stance, viewing accessibility as a fundamental aspect of the product process, poses a considerable challenge. Effecting this shift necessitates acknowledging accessibility not only as a legal obligation but also as a strategic investment in user experience and the long-term sustainability of the product.

Excuse 4: Hopefully, Feigned Ignorance

Some stakeholders have the misconception that their product does not have disabled users. We challenge this assumption, even when the product is an internal-facing product. Not only is it impossible for them to definitively know their users' and employees' situations for legal reasons, but many might be experiencing situational or temporary disabilities, like navigating a computer with a broken finger.

From a Business Perspective

Individual contributors often face common excuses when it comes to embracing accessibility.

Accessibility Is New and Expensive to Learn

The perception that diving into accessibility is both novel and costly can be a barrier. However, learning accessibility practices is an investment that pays off in creating better, more inclusive products.

Accessibility Is an Extra Step

Some contributors may see accessibility as an additional, cumbersome task. Shifting this perspective to consider it as an integral part of the design process can streamline the workflow and yield more effective outcomes.

"Do We Have to?"

Accessibility might not be an identified passion, but recognizing its importance as a fundamental aspect of good design can help contributors view it as an opportunity for growth and skill development.

RESOLUTIONS

Accessibility is multifaceted, going well beyond the commonly associated aspects of accessibility, such as voice-over and color contrast. Detailed accessibility reviews delve into the broader landscape of visual disabilities.

Depending on the size of the digital product, an accessibility review could take two to six weeks to identify, document, and make recommendations for how to resolve. This work then goes to a development team to accurately fix and implement found issues. After the updates are made, another review must be performed to ensure that the known initial accessibility infractions have been resolved correctly and have not created more accessibility problems during the resolution.

This work is essential from a legal liability standpoint. The time and effort for adding accessibility will be an investment, but will even out over time. The investment will be more costly if the development code needs to be refactored and updated. Ultimately, it is up to the business to decide if fixing, adding, and maintaining accessibility for the product they support is worth the cost of avoiding what could be very expensive and very public litigation.

Avoid Quick-Fixes

When cost, time, and potential legal action are a concern, corners tend to be cut to "just get something out there." Decisions are being made not from a point of understanding and inclusion or empathy and support. These decisions are made from the pocketbook.

Trying to add accessibility quickly and with a low expense has led to many plug-ins offering to make a non-accessible website accessible overnight. These plug-ins approach the solution of adding accessibility to a product as an add-on. These products appear to be quick and easy fixes that will solve accessibility concerns overnight for the low cost of a licensing fee. However, in review, many of these products have been debunked as effective accessibility resources. They do not provide the level of accessibility needed, which fails to mitigate legal risk and potentially causes more accessibility problems than they solve (Gibson, 2024).

Change the Perception of the Audience

Recognizing that accessibility is not an extra burden but a core principle is vital. By doing so, contributors and businesses can consider accessibility as a

means to contribute meaningfully to a project's success. Embracing accessibility creates a more inclusive, user-friendly, and successful design and product process. Fostering a culture where contributors recognize the intrinsic value of accessibility in creating digital experiences that cater to a diverse audience and contribute to the overall success of projects is essential. Providing ongoing support, recognition, and opportunities for collaboration can further reinforce the importance of accessibility in the broader context of design excellence and user satisfaction.

Accessible Design From the Beginning

While not always possible, it is best to start thinking about accessibility before any development has been performed at the beginning of a product. The investment in making an accessible product will be less if you start from the beginning. With existing products, returning to the drawing board when performing code refactoring is more manageable, allowing that time to modernize the product for a wide-ranging audience.

Gradually incorporating accessible design while allowing more creative freedom to adhere to these principles can foster a more beneficial learning process. This contrasts with the alternative approach, where a team is compelled to prioritize accessibility solely out of fear of repercussions, such as a lawsuit, which not only taints their motives for creating accessible experiences but also tarnishes the brand of accessibility.

Accessible Design as "Good Design"

Accessibility design, synonymous with good design, extends beyond visual aesthetics and contains the core of creating inclusive and usable experiences. Similarly, accessible code aligns with the principles of good code, emphasizing clarity, efficiency, and adherence to standards. Let us explore the connection between accessibility and Gestalt principles, foundational concepts in design psychology that define how people perceive and interpret visual elements.

Gestalt principles are rules for organizing visual elements into meaningful wholes. These principles include proximity, similarity, closure, continuity, and more. For accessibility design, these principles are essential to creating aesthetically pleasing, understandable, and navigable interfaces for users with diverse needs. Similar to how physical closeness implies a relationship in the context of proximity, the user can infer a connection based on the "closeness" of content read back to back or presented as a group when using a screen reader. The mental model remains the same. These parallels can be made for every principle.

Understanding Gestalt principles and accessibility can reshape our perspective on design as a tool capable of shaping experiences that might not always be visible. It highlights visual and functional elements in creating a cohesive and inclusive user experience. With this attitude in mind, we can have a rounded comprehension of each guideline, adding layers of understanding to address specific accessibility challenges without compromising the overall user experience.

PARADIGM SHIFTS

In navigating the realm of business, it is essential to acknowledge that the primary driver for products is often monetary gain. Instead of moralizing or reprimanding businesses for their profit-centric approach, the more effective strategy is to communicate in the language they understand — that of financial interests and personal perseverance.

Rather than raising voices or employing confrontational tactics, educating businesses about the substantial value that aligns with their monetary objectives when embracing accessibility can be far more persuasive. Threatening lawsuits might not always yield the desired results; however, providing valuable resources and insights can serve as a more constructive and cooperative approach, fostering a better understanding of the significant benefits tied to inclusive design practices.

In creating products, businesses must deliberately consider individuals' diverse needs and bridge the gap between profitability and social responsibility. This symbiotic relationship creates a more user-friendly, accessible experience. As in the educational method referenced above (Bonilla-del-Río et al., 2022), we need to normalize disability to stimulate employee personal growth and create an environment where embracing diverse perspectives is seen as a means of advancing one's skills. By integrating considerations for accessibility, we improve our products' usability and contribute to our team members' individual and collective growth.

The business paradigm shift that needs to happen is understanding that accessibility should not be viewed as merely a procedural step but as a foundational principle in human philosophy. Designing accessible products from the start enriches the user experience for everyone and offers a vast realm of innovation.

To get to that understanding, we can apply the inclusive classroom approach (Kazmi et al., 2023) to the tech industry, as mentioned above. It is worth noting that this perspective is not a novel concept, and Microsoft has actively embraced this mindset, as discussed in a podcast.

> *Discomfort is always a great driver for growth, and that discomfort was an amazing driver for innovation in technology.*
>
> **Ann Paradiso**, Microsoft Research Podcast (LoPresti, 2020)

The NExT Enable group at Microsoft Research is working towards identifying new interaction paradigms for assistive technologies. Designing technologies and patterns that cater to the extreme constraints faced by people with disabilities opens up new possibilities for innovative solutions that can benefit everyone, including non-disabled users. These solutions can lead to more intuitive and creative problem-solving approaches, improved user experiences, and advancements in technology overall.

It is crucial to implement minor, more easily digestible changes in how we perceive accessibility and the responsibility we carry as contributors. Individuals need to draw connections between accessibility principles and the specific subjects in which they are involved. Additional studies highlighting

the advantages of this approach are essential. Participating in more discussions about accessibility is vital for promoting understanding and effecting meaningful change. Collaboratively enhancing our experiences and educating the next generation of tech builders does not have to be challenging; it is just a shift in mindset. We are capable.

Empowering individuals to interact with the world on their terms fosters an environment where everyone can contribute to society and enrich the cultural tapestry in which we live. Diversity is the cornerstone of a well-rounded culture. While no one is expected to fully grasp the intricacies of every aspect of a diverse culture, the collective effort to contribute to it is paramount. Disabilities may pose challenges to individuals and products, but they do not have to be limiting. Embracing and thinking from other perspectives enhances the world's collective experience, creating a more comprehensive and inclusive narrative.

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