Everyone's Committed: Evaluating Accessibility Statements Across Design Systems

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Abstract

While most organizations keep their accessibility guidelines private, many digital design systems are public. This allows researchers to study and compare how different systems situate and discuss accessibility. Through a content analysis of over 90 design systems, four different categories of accessibility value statements were identified: framing, modes of address, responsibilities, and commitments. Using critical discourse analysis, each category was assessed through the lens of value sensitive design, an approach focused on how the design process can better identify and debate key values such as ethics, human rights, and inclusion.

The four categories constructed were *framing*—statements inspired by universal design that included the word “everyone”; *modes of address*—statements containing the phrase “we believe”; *responsibilities*—statements that referred to employees of the host organization; and *commitments*, which contained a mix of ambiguous and unambiguous value statements.

The findings indicate that accessibility responsibilities and commitments are more likely to be successful when value statements contain clear language and specific associated actions. Related to this, accessibility value statements would benefit from a shift away from universal design and towards inclusive design to better identify and minimize the unintended consequences of exclusion. Finally, this research suggests that many accessibility statements reflect core aspects of value sensitive design without making direct reference to the approach, indicating potential overlap.

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Introduction

My research into accessibility statements in public design systems was inspired by an article by Amy Hupe on her personal blog, where she writes: “What happens if our components are inaccessible? What if our patterns are discriminatory, or our content is exclusionary? What happens is we create a system of harm” (Hupe, 2022).

Hupe’s article reveals that common design system goals of efficiency, consistency, and scale can hurt users, regardless of their intention to help. Without sufficient thought into diversity and inclusivity, Hupe argues, it is too easy to build a design system that excludes thousands of users, “quickly, consistently, and at scale” (2022).

Similar to Hupe, I am a user experience designer who has spent the past two years building a design system as part of a team of product designers and developers. As part of this work, I have collaborated on content design, accessibility, components, and pattern guidance. Through this work, I have witnessed firsthand how easy it can be to exclude users through weak colour contrast ratios, inaccessible interaction patterns, or confusing language choices.

One of the best ways for organizations to avoid a “system of harm” is through strong and clear accessibility guidelines. While most companies normally keep their accessibility guidelines private, many design systems are public. This makes it possible for researchers to locate, study, and compare how different design systems situate and discuss accessibility.

Kholmatova (2017) defines a design system as “a set of *interconnected patterns* and *shared practices* coherently organized to serve the purpose of a digital product” (p 18). Design systems include both digital building blocks and corresponding guidelines to ensure those blocks are correctly combined into coherent and consistent user experiences. They take the material form of coded components, guidelines, and adaptable graphic assets (often compatible with programs such as Figma or Adobe XD).

Promising efficiency and consistency, design systems have become a popular tool for many companies. But because they are relatively new, design systems have not been thoroughly examined from a critical perspective. Through a content analysis of more than 90 design systems, four different categories of accessibility value statements were identified: framing, modes of address, responsibilities, and commitments.

Then, using critical discourse analysis, each of these categories were assessed against value sensitive design – a theory and approach focused on how human values are identified and expressed through the design process (Friedman et al, 2002). The goal of this research is to use content and discourse analysis to critically evaluate accessibility guidance in public design systems through the lens of value sensitive design.

Many design systems include statements about how accessibility improves usability for “everyone.” However, there is often a lack of detail on how to identify and involve communities or individuals that have been historically excluded from digital design. In other words, it’s hard to design for “everyone” if certain types of users are invisible to the host organization.

There is also an ongoing tension between solving for accessibility at a component level versus considering the overall user experience. Many design systems talk about accessibility being every employee's responsibility, but only a few provide role-specific requirements. Finally, explanations for when accessibility should be considered during the design process are an uneasy mixture of human values and financial considerations.

Literature review

Digital design systems

In his influential book *Atomic Design*, Brad Frost (2016) argues that the key elements of digital design systems are style guides and pattern libraries. Style guides "document and organize design materials while providing guidelines, usage, and guardrails" (Frost 2016). Pattern libraries, meanwhile, "carve out a space to define and describe UI components, articulating considerations ranging from accessibility to performance to aesthetics and beyond" (Frost, 2016, p. 89). In her book *Design Systems*, Alla Kholmatova (2017) also recommends combining patterns and shared practices (how to implement patterns correctly) in a design system: "even the most comprehensive and living pattern library is not the system itself" (p. 36).

One of the benefits of combining repeatable and reusable building blocks (pattern libraries) with usage guidelines (style guides) is that they create a shared vocabulary for designers and developers. In *Laying the Foundations*, Couldwell (2019) argues that a design system is the "harmonious package of design, code, guidelines, and documentation that's used to build consistent, on-brand, and efficient websites and products" (p. 16).

Frost (2016) encourages organizations to make their design systems publicly available to improve accountability and demonstrate a clear commitment to the use and upkeep of the system. Many companies have since followed this advice, and as of December 2023, component.gallery—an online archive of actively maintained design systems—lists 94 different digital design systems.

Despite their popularity with both large and small technology companies, design systems have only recently been reconsidered from a critical perspective. Hupe (2022), argues that design systems "are not just harmless scaling machines." Furthermore, without careful consideration into inclusivity and accessibility, design systems run the risk of "industrializing" discrimination and excluding thousands of users. (Hupe, 2022). This echoes a 1998 article by Mahemoff & Johnston about a pattern language for usability, where they explore the limitations of guidelines to maintain software consistency: "Usability goes beyond consistency, however, since software can be consistently unusable" (p. 1).

The dangers of scale have also been identified by Friedman (1996), who notes that technology "is comparatively inexpensive to produce and disseminate, and thus the values embedded in any given implementation are likely to be widespread, pervasive, and systematic" (p. 21). Friedman concludes that unlike people "with whom we can disagree about values, we cannot easily negotiate with the technology" (p. 21). Finally, Dearden & Finlay (2006) argue that a shortcoming of interaction design is a tendency to identify common, rather than good, design practice.

Accessibility and design systems

As defined by the World Wide Web Consortium, founded in October 1994, Web accessibility "means that websites, tools, and technologies are designed and developed so that people with disabilities can use them" (*Introduction to web accessibility*, n.d.).

In her 2017 book *Accessibility for Everyone*, Laura Kalbag writes that "Web accessibility is the degree to which a website is usable by as many people as possible" (p. 3). And in her 2018 book *Mismatch*, Kat Holmes defines accessibility as "The qualities that make an experience open to all" (p. 55).

Holmes (2018) outlines key differences between inclusive design, universal design, and accessibility. Based on her work at Microsoft, inclusive design is defined as: "A methodology that enables and draws on the full range of human diversity. Most importantly, this means including and learning from people with a range of perspectives" (p. 54). This closely echoes the definition developed by OCAD University's Inclusive Design Research Centre (IDRC): "design that considers the full range of human diversity with respect to ability, language, culture, gender, age and other forms of human difference" (*Philosophy*, n.d.).

A related concept is universal design, described by Holmes (2018) as "The design of an environment so that it might be accessed and used in the widest possible range of situations without the need for adaptation" (p. 55). Holmes argues that universal design typically refers to the built environment and physical objects, while inclusive design is more closely linked to digital technologies (2018). Holmes concludes that: "Inclusive design might not lead to universal designs. Universal designs might not involve the participation of excluded communities. Accessible solutions aren't always designed to consider human diversity" (2018, p. 56). The IDRC makes a similar distinction: "While Universal Design is about creating a common design that works for everyone, [inclusive design has] the freedom to create a design system that can adapt, morph, or stretch to address each design need presented by each individual" (*Philosophy*, n.d.).

The IDRC also outlines three dimensions of inclusive design:

1. Recognize diversity and uniqueness.
2. Inclusive process and tools.
3. Broader beneficial impact.

Recognizing diversity and uniqueness involves acknowledging that "the needs of individuals at the margins become ever more diverse. This means that mass and segregated solutions do not work well" (*Philosophy*, n.d.). Meanwhile, inclusive process and tools require that "inclusive design teams should be as diverse as possible and should include and be guided by the individuals that have difficulty or are excluded from the existing designs" (*Philosophy*, n.d.). Finally, broader beneficial impact refers to the idea that decisions cannot be made in isolation, since "No intended change will survive without considering the nested context" (*Philosophy*, n.d.).

In a blog post for Adobe about integrating accessibility into design systems, Linn Vizard (2020) concludes that, "Because design systems are becoming the foundational structures that inform digital product design and development, we have to ensure that the systems are inclusive and accessible." Swan (2022), in a blog post for Tetralogical, argues that "Accessibility must be embedded throughout the design system." This means both pattern libraries (components) and style guides should contain accessibility principles, techniques, and resources. And Couldwell (2019) writes that accessibility should be "interwoven in every level of your design system model" (p. 94).

Frost (2016) notes that, “Baking things like accessibility into a living design system scales those best practices, allowing your interfaces to reach more users” (p. 97). However, Hupe (2022) argues that “When we create design systems without a conscious intention to mitigate harm, and a strategy to help us fulfill that intent, we end up excluding people.” Finally, echoing the IDRC, Hupe (2022) argues that without a diverse set of perspectives and backgrounds, it’s unlikely that a design system team can successfully create inclusive experiences.

Pattern languages and design systems

In *A Pattern Language*, the architect Christopher Alexander et al. (1977) explain that, “Each pattern describes a problem which occurs over and over again in our environment, and then describes the core of the solution to that problem” (p. x). As Welie & Gerrit (2003) put it, “The basic assumption in the concept of a pattern language is that patterns are related to each other, forming a network of *connected* patterns” (p. 2).

Mahemoff & Johnston (1998) argue that because design guidelines or heuristics can be misinterpreted or misapplied, a better approach is a pattern language for usability: “Contrary to general design guidelines, which are mainly *descriptive*, and merely state desirable general features of a ‘good’ finished interactive system, patterns are *constructive*: they suggest how a problem can be solved” (p. 373).

In the context of human-computer interaction (HCI), Borchers (2000) defines a pattern as “a proven solution to a recurring design problem” (p. 369). However, in their critical review of pattern languages in HCI, Dearden & Finlay (2006) argue that “Patterns are not neutral but explicitly reflect design values” (p. 61). Borchers (2000) makes a similar observation: “Patterns, to a large extent, represent the values of their author” (p. 371). In the conclusion of their critical review, Dearden & Finlay (2006) propose four main areas of future research, including “the way values are explicated and promulgated in pattern languages and in pattern-led design” (p. 86).

Borchers (2000) also points out that “It is less known that Alexander's goal in publishing this pattern language was to allow not architects, but the inhabitants (that is, the users) themselves to design their environments. This is strikingly similar to the ideas of user-centered and participatory design, which aim to involve end users in all stages of the software development cycle” (p. 370). As Alexander (1979) argues in *The Timeless Way of Building*, “If we want a language which is deep and powerful, we can only have it under conditions where thousands of people are using the same language, exploring it, making it deeper all the time. And this can only happen when the languages are shared” (pp. 241-242).

But instead of a shared language between users, designers and developers, pattern languages in HCI offer a common language only for software professionals. Erickson (2000) argues that interaction design is a “communicative process” that could be more egalitarian if it developed and used a common language (*lingua franca*) across all stakeholders, especially end users. Dearden & Finlay (2006) reinforce this idea when they write that, “Patterns should support discussions with people who are not specialists in the domain … patterns in HCI should be accessible and understandable by end-users” (p. 60).

Value sensitive design

Matt May, head of Inclusive Design at Adobe, notes that "Your design system documents what you value" (Vizard, 2020). The challenge is how best to identify and assess the implicit and explicit values embodied in a design system. One of the most relevant and theoretically robust approaches is value sensitive design (VSD). Friedman et al (2002), describe value sensitive design as "a theoretically grounded approach to the design of technology that accounts for human values in a principled and comprehensive manner throughout the design process" (p. 1). As Friedman & Hendry (2019) explain, value sensitive design targets "the design and development process to enable technologists and others to be proactive about engaging human values in the design process" (p. 14). For example, VSD has been used to improve browser cookie requests by taking an "informed consent" approach across the design process (Friedman & Hendry, 2019).

Friedman & Hendry (2019) define human values as "what is important to people in their lives, with a focus on ethics and morality" (p. 4). Friedman (1999), describes value sensitive design as being focused on "human well being, human dignity, justice, welfare, and human rights" (p. 3). These same concerns also underpin disability rights, accessibility and inclusive design. While there is a clear overlap between accessibility and VSD, explicit linkages between the two are rare. Friedman & Hendry (2019) include a brief mention of "special populations" in their book on VSD, defined as "stakeholders who embody or represent a form of diversity that is normally considered outside of the mainstream" (p. 42). Despite the lack of explicit linkages, the VSD framework and general approach is both compatible and relevant to an evaluation of accessibility guidance.

Avoiding technological or social determinism, value sensitive design is interactional in approach. For Friedman et al. (2017) this means that "human beings acting as individuals, organizations, or societies shape the tools and technologies they design and implement; in turn, those tools and technologies shape human experience and society" (p. 68).

Friedman (1996) argues that bias in technology creation can be explicit and intentional or implicit and unconscious. Because of this, Friedman et al. (2002) believe that it is critical to be proactive and "influence the design of technology early in and throughout the design process" (p. 2). Value sensitive design provides a method and process to help designers create software that reflects and respects key values through a list of criteria for guiding and assessing design work (Friedman et al., 2008). These key values are meant to be selected, shared and discussed across an organization, in the belief that foregrounding values will "generate increased revenue, employee satisfaction, customer loyalty, and other desirable outcomes for their companies" (Friedman et al., 2008, p. 89).

Although value sensitive design is mainly focused on the role that designers play in building technologies, Friedman & Hendry (2019) describe four categories of VSD stakeholders:

1. Project sponsors—managers and/or executives who are focused on the core goals of the project.
2. Designers—product designers employed by the company who apply their personal and professional values to the project
3. Direct stakeholders—anyone else who interacts with the final product or system, typically customers or users of a given technology

4. Indirect stakeholders—people who do not interact with the final product or system but are affected by it. For example, a patient can receive either benefit or harm from the medical record system used by their doctor or hospital.

Another central aspect of value sensitive design is working through tensions and conflicts between key values and stakeholders. As Friedman et al. (2017) write, "Values rarely exist in isolation. Rather, they often sit together in a delicate balance and, at times, come into conflict" (p. 99). For this reason, "value tensions usually should not be conceived of as 'either/or' situations but rather as constraints on the design space" (Friedman et al., 2017, p. 99).

While value sensitive design is a promising way to evaluate accessibility statements in design systems, it is important to keep in mind some limitations. Borning & Muller (2012) argue that rather than selecting values on a per project basis, value sensitive design should commit to core values, in a similar way to participatory design, collaborative ethnography, or action research. These recommended core values are "pluralism or inclusivity (necessary to do the analysis of direct and indirect stakeholders well), plus openness and transparency" (Borning & Muller, 2012, p. 5).

Borning & Muller (2012) also recommend integrating post-colonialism's critique of power into value sensitive design to better consider and understand how "values-based decisions [are] made and enacted when their impact is felt by people who are not recognized as design-makers or analysts" (p. 8). Meanwhile, Friedman & Hendry (2019) suggest that the effectiveness of value sensitive design should be evaluated on a variety of criteria, including actionability: "How readily can value sensitive design be taken up and appropriated by professional designers, engineers, and educators and their communities of practice?" (p. 171).

Friedman & Hendry (2019) also acknowledge the tension between day-to-day work pressures and theory: "Asking 'real-world' designers to consider the longer-term, ethical implications of their designs for the human condition can easily come across as a frivolous, academic expectation" (p. 162). A final limitation of value sensitive design is visibility. Friedman & Hendry (2019) argue that, "Given the constraints of proprietary practices, we do not know a great deal about the extent to which value sensitive design is being adopted and incorporated into professional practice" (p. 171).

Problem statement

Design systems, which grew out of pattern languages, have become a popular way to improve efficiency and maintain visual consistency in digital product design. Design systems also help create a shared language between designers and developers. But centralizing design decisions and values requires careful consideration, especially as it relates to accessibility. By shifting responsibility away from individuals and towards the design system, accessibility shortcomings can be unknowingly propagated across products and features. Similar to a box of defective parts on an assembly line, if a component does not support keyboard-only navigation, the design system might degrade the experience for thousands of users.

It is difficult to determine how companies describe their accessibility responsibilities and commitments since they are often kept private. But many design systems are public and include statements and values about accessibility. This provides an opportunity for researchers to locate, examine, compare, and evaluate accessibility value statements in design systems by using a combination of content analysis and critical discourse analysis.

A relevant theoretical approach for evaluating accessibility guidance in design systems is value sensitive design. For more than 20 years, value sensitive design researchers have created and refined their framework for integrating values into the design process. Evaluating the categories and themes from the content analysis of accessibility statements against value sensitive design will provide opportunities for improving guidance in design systems.

Research question

How can we use content and discourse analysis to critically evaluate accessibility guidance in public design systems through the lens of value sensitive design?

Methodology

This research relies on a combination of content analysis and critical discourse analysis. Content analysis was used to locate accessibility value statements and then develop categories and related themes. Critical discourse analysis was then applied to each category and theme.

This research is focused on how design systems articulate values relating to accessibility through written guidance. It does not assess the accessibility of the components themselves or the products and services created from those components.

Content analysis

Klaus Krippendorff (2019), defines content analysis as "a research technique for making replicable and valid inferences from texts (or other meaningful matter) to the contexts of their use" (p. 24). Drisko & Maschi (2016) offer a similar definition, describing content analysis as "a family of research techniques for making systematic, credible, or valid and replicable inferences from texts and other forms of communication" (p. 7).

Content analysis was used to:

1. Locate keywords and related synonyms across the design system statements
2. Develop categories based on inductive techniques
3. Identify related themes within each category

Content analysis is flexible enough to support a mix of qualitative and quantitative approaches. As Drisko & Maschi (2016) write, "many content analyses actually employ both qualitative and quantitative research techniques. That is, the coding of data often involves qualitative coding techniques while the summarizing of data often involves quantitative techniques" (p. 4). It is also important to note that content analysis depends on context. Krippendorff (2019) argues that, "Every content analysis requires a context within which the available texts are examined. The analyst must, in effect, construct a world in which the texts make sense and can answer the analyst's research questions" (p. 29). That is, the categories and themes identified need to respect and reflect the content being analyzed.

Finally, content analysis was selected for its appropriateness for the object of study. As Drisko & Maschi (2016) write, "An often-unrecognized strength of content analysis is that it may (though does not always) draw upon data that were not created specifically for research purposes" (p. 13). Drisko & Maschi (2016) call this "naturalistic" data, which is an accurate description of the public design system texts analyzed in this research (p. 13).

Critical discourse analysis

Critical discourse analysis (CDA) – with its focus on power, social practice, and ideology – is also compatible with many of the key aims of accessibility and inclusive design. This includes the goal of broader beneficial impact along with identifying exclusion and finding ways to eliminate or minimize it. As Fairclough & Wodak (1997) write, critical discourse analysis "sees itself not as dispassionate and objective social science, but as engaged and committed" (p. 258). Kress (1990) writes that "critical discourse analysts hope to bring about change not only to the discursive practices, but also to the socio-political practices and structures supporting

the discursive practices" (p. 84).

Wodak (2014), argues that critical discourse analysis "means making explicit the implicit relationship between discourse, power, and ideology, challenging surface meanings, and not taking anything for granted" (p. 304). Van Dijk (2015), meanwhile, argues that "A central notion in most critical work on discourse is that of power, and more specifically the *social power* of groups or institutions" (p. 469).

Wodak (2001), defines critical as "having distance to the data, embedding the data in the social, taking a political stance explicitly, and a focus on self-reflection as scholars doing research" (p. 9). In terms of approach, Fairclough & Wodak (1997) define critical discourse analysis through eight key elements:

1. Critical discourse analysis addresses social problems
2. Power relations are discursive
3. Discourse constitutes society and culture
4. Discourse does ideological work
5. Discourse is historical
6. The link between text and society is mediated
7. Discourse analysis is interpretive and explanatory
8. Discourse is a form of social action

Mullet (2018), meanwhile, offers a complementary definition of critical discourse analysis that builds on Fairclough & Wodak, but also includes the following:

- Language expression is never neutral
- Analysis should be systematic, interpretative, descriptive and explanatory
- Methodologies can be interdisciplinary and eclectic

This critical discourse analysis relies on a mixture of approaches from Mullet (2018) and Fairclough & Wodak (1997). It also draws inspiration from Mullet's general analytical framework for critical discourse analysis:

1. Select discourse
2. Prepare data sources
3. Explore the background of each text
4. Code text and identify overarching themes
5. Analyze internal relations of the text
6. Analyze external relations of the text
7. Interpret the data

Based on the data and goals of this research, a modified analytical framework was developed. The key elements of this framework are:

1. Language is never neutral
2. Keep power and ideology in the foreground
3. Remain self-reflective
4. Take a systematic approach to analysis

In order to maintain a systematic approach, a set of key questions guided the analysis of internal and external relations of the text. The key questions for internal relations of the text

were:

- What similarities appear across related statements?
- What is omitted from this text?
    - Is this omission related to power or ideology?
- How precise or imprecise is the language used in this text?
    - Is this precision or imprecision related to power or ideology?
- Who is the assumed or intended audience for this text?

The key questions for external relations of the text were:

- Is material from the literature review relevant to this text?
- Is the researcher being self-reflective when linking this text to the literature review or related research and ideas?

Modes of address and framing

As the research developed, it became clear that the semiotic concept of modes of address, along with framing (often used in content analysis), could play a role in shaping the categories in the findings.

In his book on semiotics, Chandler (2007) defines modes of address as "implicit and explicit ways in which aspects of the style, structure and/or content of a text function to position readers as subjects" (p. 254). More specifically, how aspects of the text are meant to address an ideal reader or intended audience. Chandler (2007) writes that, "In order to communicate, a producer of any text must make some assumptions about an intended audience; reflections of such assumptions may be discerned in the text" (p. 186).

Chandler (2007) argues that modes of address can be influenced by:

- Similar publications (in in this case, other design systems)
- Social context (the presence or absence of an author, company policies, and the intended audience)
- Technological constraints (what a given communication medium does or does not allow for)

Roelofs (2019) suggests that one way to better understand the intended audience is by tracking the presence or absence of jargon. Choice of language can serve to both include and exclude, and this is especially true of jargon.

Finally, Chandler (2007) points out that modes of address vary in directness. One example is whether or not "you" is mentioned explicitly. Other related elements of modes of address involve formality, along with the decision to use impersonal or personal language.

Framing, meanwhile, "refers to the process by which people develop a particular conceptualization of an issue or reorient their thinking about an issue" (Chong & Druckman, 2007, p. 104). Entman (1993) goes further, arguing that, "To frame is to select some aspects of a perceived reality and make them more salient in a communicating text, in such a way as to promote a particular problem definition, causal interpretation, moral evaluation, and/or treatment recommendation for the item described" (p. 52).

Framing theory suggests that there are real world consequences to how accessibility is positioned in a design system. As Chong & Druckman (2007) note, framing can meaningfully affect the "attitudes and behaviors of their audiences" (p. 109). Similar to value sensitive design's interactional approach, communication is "a dynamic process that involves frame-building (how frames emerge) and frame-setting (the interplay between media frames and audience predispositions)" (Vreese, 2005, p. 51).

Finally, Entman (1993) argues that "Frames highlight some bits of information about an item that is the subject of a communication, thereby elevating them in salience. The word *salience* itself needs to be defined: It means making pieces of information more noticeable, meaningful, or memorable to audiences" (p. 53). Because of this, Entman (1993) believes that content analysis can benefit from framing theory: "The major task of determining textual meaning should be to identify and describe frames; content analysis informed by a theory of framing would avoid treating all negative or positive terms or utterances as equally salient and influential" (p. 57).

Findings

The 94 design systems included in this content analysis were taken from component.gallery/design-systems/ – a website that maintains a regularly updated list of public design systems. The content analysis took place from February 2023 to December 2023.

Of the 94 design systems listed, 24 were excluded from this analysis. Please see table 1 for exclusion criteria.

Table 1. Reasons for exclusion

Exclusion criteria	**Number excluded**
Design system is a component or pattern library that does not include guidance. (Thus, did not meet the basic definition of a design system).	14
Design system no longer maintained	3
Company no longer exists	2
Design system no longer public	1
Design system is promotional tool for a book	1
Design system is only for marketing materials	1
Design system is not written in English	1
Design system is identical to another system (duplicate of GOV.UK)	1

Of the 70 remaining design systems, 20 did not have a dedicated section for accessibility guidelines. Put another way, over 25 percent of the design systems in this analysis decided that accessibility was not an important enough aspect of digital design to include a discussion of it on their publicly-facing website.

Of the 70 design systems in this analysis, 22 did not have secondary accessibility guidance. The researcher made a distinction between a dedicated section for overarching accessibility guidance and secondary accessibility guidance that appears next to individual components in the design system. The guidance in most dedicated sections tends to be broader and focused on values and process. Secondary guidance, meanwhile, tends to be more specific and focused on implementation.

Of the 70 design systems in this analysis, 38 contained a value statement about accessibility. Based on the value sensitive design literature review, an accessibility value statement is defined as a sentence or paragraph that refers to at least one of the following elements:

- Ethics, morality, justice, or human well being

- Prescriptive advice about the design process
- Language that is meant to signal the importance of the value statement
- Recommended actions to support the application of the value statement
- The consequence of not adhering to the value statement

Starting with a focus on repeating phrases and words, and then expanding to synonyms and related phrases, the content analysis identified four categories of accessibility value statements:

1. Framing: how the text highlights certain aspects of accessibility to change how the reader thinks about the topic
2. Modes of address: how a text deploys style, structure and content to speak to their intended audience
3. Responsibilities: direct or indirect references to who and how designs are made accessible
4. Commitments: a clear accounting of how accessibility is implemented

Within each category, content analysis was also used to identify major themes. Emphasis has been added to relevant phrases with *italics* to make it easier to identify keywords within each theme.

The researcher's modified framework for critical discourse analysis was applied to each theme to evaluate related value statements about accessibility.

Framing

Framing involves how the text highlights certain aspects of accessibility to change how someone thinks about the topic. Framing is a dynamic process that can shift attitudes and behaviours in the intended audience.

Two themes within the category of framing were identified:

1. Who benefits from accessibility
2. The role of components in accessibility

Who benefits from accessibility

The first theme is focused on the end user and explains the value of integrating accessibility into design systems and processes. This theme contains nine “everyone” statements, five “for all” statements, two “widest possible audience” statements, and six “inclusive design” statements.

Everyone

The most common framing within the “who benefits” theme is “everyone” value statements.

Table 2. “Everyone” and “everybody” value statements

Statement	Design System	Host Organization
“Providing an accessible and inclusive experience that is usable for *everyone* is the key to support the best user experience.”	AXA Digital Guidelines	AXA
“Accessibility benefits *everyone.*”	Vitamin	Decathlon
“The NHS is for *everyone*, so NHS digital services should be accessible to *everyone* too.”	NHS Digital Service Manual	NHS England
“We want *everyone* who visits our website to have a positive experience, and easily find and use the information they need.”	ONS	Office for National Statistics
“Accessibility is for *everyone*. Accessibility is about ensuring equitable access to our applications for all people.”	Seeds	Sprout Social
“When we consider accessibility from the beginning, we design for *everyone* from the start.”	Primer	GitHub
“We should make our products work for *everyone*, no matter how they interact.”	Backpack	Skyscanner
“We want the things we make to work for the whole audience, because the BBC believes	BBC Global Experience	BBC

everyone deserves the best."	Language	
"At Microsoft, our mission to help *everybody* achieve more means that we acknowledge and account for the experiences of different backgrounds, perspectives, and abilities."	Fluent 2	Microsoft

The meaning of "everyone" in these statements changes significantly based on context. For example, design systems for government agencies (NHS, ONS, and BBC) have a mandate that more closely approaches "everyone." While large host organizations like Microsoft might have a user base that is comparable to some countries, the goals of a for-profit company mean that their definition of "everyone" cannot mean the same thing. For example, the language in Fluent 2 is less precise than many of the government agencies: "help everybody achieve more" and "account for the experiences."

Many of these "everyone" statements appear to be influenced, directly or indirectly, by universal design. One limitation of this framing is that universal design is more applicable to the built environment than digital design. Incorporating accessibility considerations into digital design can make it easier for more users to successfully use a host organization's products and services. But as the IDRC argues, mass solutions have limitations (*Philosophy*, n.d.). While "everyone" might be the eventual goal, in the short term it is important to acknowledge individual differences and find ways to eliminate exclusion.

For all and widest possible audience

Common synonyms for "everyone" in the content analysis were "for all" and "widest possible audience."

Table 3. "For all" value statements

Statement	**Design System**	**Host Organization**
"The Helsinki Design System is designed and built to be accessible *for all*, regardless of ability or situation."	Helsinki Design System	City of Helsinki
"Applications should be usable and accessible *for all users* of differing abilities."	Helios	HashiCorp
"Having an accessible design allows people *of all abilities* to interact with, understand, and navigate our products."	Instructure UI	Instructure
"Shoelace recognizes the need *for all users*, regardless of ability and device, to have undeterred access to the websites and applications that are created with it."	Shoelace	Cory LaViska
"Accessibility is making sure that *all our*	NewsKit	News Corp UK

colleagues and customers have equal access to our digital products and services."		

Table 4. "Widest possible audience" value statements

Statement	Design System	Host Organization
"Spectrum also builds for the *widest audience possible*."	Spectrum	Adobe
"Designing inclusive and accessible experiences may seem daunting. However, proper application of these practices can make your UX faster, more familiar, and available to the *widest possible audience*. It's also, quite simply, the right thing to do."	Paste	Twilio

Seeds, the design system created by Social Media Management software company Sprout Social, uses the phrase "equitable access," while NewsKit—the design system for News Corp UK—uses the phrase "equal access." This small difference in language is significant, given that equality is typically understood to mean that everyone benefits from the same experience. An equitable experience, on the other hand, means that each user gets the support they need.

The "widest possible audience" statements also echo Holmes's definition of universal design as being an environment or object that can be "used in the widest possible range of situations" (2018, p. 55). This example of an "everyone" synonym helps to reinforce the influence of universal design in framing accessibility to the host organization's employees and customers.

Inclusion

While inclusivity is implied by phrases like "everyone," "for all," and "widest possible audience," only a few design systems make explicit reference to "inclusion."

Table 5. "Inclusive" value statements

Statement	Design System	Host Organization
"*Inclusivity* and accessibility are fundamental. No one should be left out. Ever."	Nucleus	British Gas
"GitHub is a home for all developers. To be *inclusive* means we must consider accessibility at the core of how we design."	Primer	GitHub
"*Inclusive design* is part of Adobe's mission."	Spectrum	Adobe
"The ONS aims to be *inclusive* in all that we do."	ONS	Office for National Statistics

“Providing an accessible and *inclusive* experience that is usable for everyone is the key to support the best user experience.”	AXA Digital Guidelines	AXA
“Designing *inclusive* and accessible experiences may seem daunting.”	Paste	Twilio

As Holmes (2018) argues, a digital design can be accessible but not inclusive. Many of these value statements conflate or conjoin inclusive design and accessibility. For example: “an accessible and inclusive experience” (AXA), “inclusive and accessible experiences” (Paste), and “to be inclusive means we must consider accessibility” (Primer).

While ONS avoids conjoining the two concepts, it does not offer a clear definition or explanation of what “inclusive” means. Nucleus combines the two concepts (“Inclusivity and accessibility are fundamental”) before offering a sharper distinction: “No one should be left out. Ever.” This statement is more compatible with Holmes’ definition of inclusive design, which “draws on the full range of human diversity” (2018, p. 54). It is also one of the few value statements that explicitly refers to exclusion.

Spectrum, meanwhile, is the only system to use the phrase “inclusive design.” One possible explanation for the conflation of different approaches is that inclusive design is still relatively new. The prevalence of “everyone” and “widest possible audience” statements suggest that the influence of universal design remains strong.

The role of components in accessibility

The second theme within the framing category involves the opportunities and limitations of implementing accessibility at the component level. This theme contains four “component level” statements and five “component limitations” statements.

Component-level accessibility

Some design systems situate accessibility efforts at the component level.

Table 6. “Component level” value statements

Statement	**Design System**	**Host Organization**
“Base Web *does the heavy lifting for you*—components are built with accessibility being a first-class citizen.”	Base Web	Uber
“Clarity tries to cover as many best practices for accessibility *out of the box*.”	Clarity	VMware
“Teams that use Paste get *accessibility best practices built in*, so that they can focus on the customer problem without sacrificing inclusion.”	Paste	Twilio

"As Orbit, we try our best to have *accessible components from the get go* and abstract as much as we can for developers."	Orbit	Kiwi.com

These value statements suggest a tension between foregrounding accessibility and relegating its execution to the background. Statements such as "out of the box" (Clarity), "built in" (Paste), and "from the get go" (Orbit) use language that serves to hide the mechanics of accessibility. This can be thought of as an "atomization" of accessibility at the component level.

These statements also appear to reassure the target audience of employees about the effort required to create an accessible experience. This is in contrast with the "widest possible audience" framing, where Paste states that "Designing inclusive and accessible experiences may seem daunting" (Paste). In Paste's "component level" framing, accessibility effort shifts away from the person and towards the component. In a similar way, Base Web "does the heavy lifting for you."

Shifting the responsibility for accessibility to the component reinforces some of the concerns raised by Hupe about industrializing harm through the scale and reach of design systems. These value statements also appear to reflect a technical approach to accessibility, rather than a consideration of the overall, end-to-end user experience.

Component limitations

In contrast to component-level statements, a number of design systems are clear about the limitations of "atomizing" accessibility.

Table 7. "Component limitations" value statements

Statement	**Design System**	**Host Organization**
"Elastic UI *provides a strong start* to building accessibility into your apps. … *How you stitch together these components* in the overall page structure *also plays a large role* in meeting accessibility goals."	Elastic UI	Elastic
"In component guidance, *accessibility standards are both implicit* (built into design and code), *as well as explicit* (considerations are discussed *where judgment is required*.)"	Material 3	Google
"While *the components themselves meet accessibility requirements*, please note that *the implementation does not assure an accessible experience*."	Dell Design System	Dell
"However, *we can't do everything* as making	Orbit	Kiwi.com

products accessible is a team effort."		
"As a principle, the design systems team does not ship a component, primitive, or composition if it does not meet or surpass our target of WCAG 2.1 AA Compliance. …. However, *you must still think about, and regularly audit your product for accessibility*."	Paste	Twilio

These "limitations" statements help shift accessibility responsibility away from the component and towards the designer or developer: "How you stitch together these components" (Elastic UI), "we can't do everything" (Orbit), "judgment is required" (Material 3) and "you must still think about" (Paste). The intended audience for these statements is more explicit, as evidenced by multiple statements that establish a clear division between "you" (the designer or developer) and "we" (the people who built the design system). For example: "we can't do everything" (Orbit) and "the design systems team" (Paste).

These statements also demonstrate a key difference between pattern languages and design systems. Unlike pattern languages, which are generative, components are described and discussed as distinct objects in the system, reflecting the "atomic" design approach of Brad Frost. An example of this can be seen in the Dell Design System statement: "While the components themselves meet accessibility requirements, please note that the implementation does not assure an accessible experience."

Modes of address

As previously mentioned, modes of address involve the implicit and explicit ways that a text deploys style, structure and content to shape or locate an ideal reader or intended audience (Chandler, 2007). This can include the presence or absence of jargon, whether "you" is addressed explicitly, and the use of impersonal or personal language.

Two themes within the modes of address category were identified:

1. "We" statements
2. "Our" statements

We statements

The first theme in the modes of address category consists of "we" statements. This theme contains five "we believe" statements, four "we" statements, and four "our" statements.

We believe

One of the most prominent examples of modes of address are "we believe" value statements.

Table 8. "We believe" value statements

Statement	Design System	Host Organization
"*We believe* that travel should be for everyone."	Backpack	Skyscanner
"At REI *we believe* the outdoors is for all—and our digital experiences should be for everyone too. Our goal is to deliver valuable, inspirational and accessible experiences for all kinds of people, including those with disabilities."	Cedar	REI
"*We believe* in creating inclusive, equitable digital experiences that are accessible for everyone."	Dell Design System	Dell
"*We believe* accessibility is a core requirement and not an optional feature."	Helios	HashiCorp
"We want the things we make to work for the whole audience, because *the BBC believes* everyone deserves the best."	BBC Global Experience Language	BBC

Backpack, a design system created by Skyscanner and Cedar, a design system created by REI, combine their company mandate with their stance on accessibility: "we believe the outdoors is for all" (Cedar) and "we believe that travel should be for everyone" (Backpack). This suggests that accessibility is central to the success of the company, establishing or reinforcing its importance. These types of statements also reinforce the idea that value sensitive design can "generate increased revenues" along with customer loyalty (Friedman et al., 2008, p. 89).

Other design systems talk about accessibility as something that is central but separate from

the company's mandate: "we believe in … equitable digital experiences" (Dell Design System) and "accessibility is a core requirement" (Helios).

Once again, the precision of language varies across value statements. Even if the phrase "we believe" is removed from the Helios statement, the intent remains clear: "accessibility is a core requirement and not an optional feature." But other statements start with an unambiguous phrase like "we believe" only to soften their language: "everyone deserves the best" (BBC) or "all kinds of people" (Cedar).

We

Related to "we believe" are less specific "we" value statements.

Table 9. "We" value statements

Statement	**Design System**	**Host Organization**
"Universality is in the core of the World Wide Web, so *we should embrace it* and build systems that are available to, and accessible by, everyone."	Duet	LocalTapiola
"*We should* make our products work for everyone, no matter how they interact."	Backpack	Skyscanner
"*We want the things we make* to work for the whole audience, because the BBC believes everyone deserves the best."	BBC Global Experience Language	BBC
"Accessibility is a must. *We're here to open the world up*, not shut people out."	Wise Design	Wise

Just as "everyone" in the framing category relies heavily on context, "we" does not have a singular usage and can refer to many different groups of people. In these statements, "we" could refer to: the entire company, the digital design team, or the design system team. In many cases, there is intentional or unintentional slippage between these three groups, which makes it hard to determine who might be responsible or accountable for the statements. As Hupe (2022) points out, it is hard to assess the validity of these statements without knowing who "we" is and how diverse "we" might be. The slippery nature of "we" also reinforces Borning & Muller's (2012) recommendation that postcolonial critiques of power are necessary when creating or choosing value statements.

"We" statements can also be seen as a communicative strategy that allows the design system to speak to both an external and internal audience. Frost (2016) encourages companies to make their design systems public to improve accountability and demonstrate a clear commitment to using the system. But as with "we believe" statements, the clarity and strength of language varies. In some cases, softer language is used: "we should embrace" (Duet) and "we should make our products" (Backpack). And as with the "inclusion" theme in the framing category, exclusion is hinted at but not referred to explicitly: "open the world up, not shut

people out" (Wise Design).

Our statements

The second theme in the modes of address category involves "our" statements. This theme contains five "our" statements.

Table 10. "Our" value statements

Statement	Design System	Host Organization
"*Our system* is designed to be clearly readable, intuitive to use, and mindful of those who use assistive technology."	Spectrum	Adobe
"Integrity requires a consistency of *our thoughts, words, and actions* and a dedication to the truth."	Helios	HashiCorp
"At Microsoft, *our mission* to help everybody achieve more means that we acknowledge and account for the experiences of different backgrounds, perspectives, and abilities."	Fluent 2	Microsoft
"We should make *our products* work for everyone, no matter how they interact."	Backpack	Skyscanner

Unlike the "we" statements, "our" statements are easier to interpret because they are attached to specific nouns: "Our system" (Spectrum), "our thoughts, words, and actions" (Helios), "our mission" (Fluent 2), and "our products" (Backpack). However, the use of "our" appears to encourage the audience to think of the company as person-like, by making the design system seem less formal and more approachable.

Responsibilities

Either by accident or by intention, “everyone” also appears in the responsibilities category. In the framing category, “everyone” was used to refer to the beneficiaries of accessible digital design. Meanwhile, in the responsibilities category, “everyone” is used to refer to the host organization’s employees.

Other themes involved employee responsibilities, when accessibility planning occurs, and the role of UX research in achieving accessibility goals. Four different themes within the responsibilities category were identified:

1. Everyone
2. Specific responsibilities
3. Timing
4. UX research

These themes represent four independent focus areas that emerged from the content analysis of accessibility value statements. These focus areas were not compared against each other.

Everyone

The first theme in the responsibilities category is about who makes sure accessibility is integrated into digital design. This theme contains five “everyone is responsible” statements.

Table 11. “Everyone is responsible” value statements

Statement	Design System	Host Organization
“*Accessible design is everyone's responsibility*, from information and user experience design, through to development, and on into help and support.”	Atlassian Design System	Atlassian
“*Everyone building products* has the responsibility to prioritize inclusion.”	Spectrum	Adobe
“Accessibility is a priority *for every team* within Dell.”	Dell Design System	Dell
“Accessibility enables full participation, and *everyone who works on government websites has a role to play* in making federal resources accessible and inclusive.”	U.S. Web Design System (USWDS)	United States Government
“An inclusive product is a top priority, and *it relies on everyone’s commitment to accessibility*.”	Gestalt	Pinterest

Similar to the framing category, a common approach is to include “everyone.” But in this context “everyone” refers to company employees, not potential customers. An obvious limitation of this approach is that when everyone is responsible, no one is really responsible.

Specific responsibilities

Another theme involves outlining specific accessibilities responsibilities for members of a digital design team. This theme contains seven "specific responsibilities" statements.

Table 12. "Specific responsibilities" value statements

Statement	Design System	Host Organization
"Accessibility *starts at the design phase*!"	Gestalt	Pinterest
"*Design provides the foundations* for accessibility."	NewsKit	News Corp UK
"*Accessible experiences start with designers*."	Primer	GitHub
"*The role of Content Design in creating an accessible experience is vital*."	Backpack	Skyscanner
"Everyone building products has the responsibility to prioritize inclusion. *Writing the language inside products is an extremely powerful way to do so*."	Spectrum	Adobe
"*The role of Engineering in creating an accessible experience is vital*. Engineers need to ensure that the code they make is usable and understandable by everyone."	Backpack	Skyscanner
"*Product Owners should lead, support and facilitate* to ensure we create experiences that are usable by **everyone**." [Emphasis in original]	Backpack	Skyscanner

Until recently, accessibility has been viewed as the responsibility of developers or engineers, not digital designers. To overcome this, some design systems are being more prescriptive about the digital design process as it relates to accessibility. For example: "starts at the design phase" (Gestalt), "design provides the foundations" (NewsKit) and "start with designers" (Primer).

Spectrum starts broad ("everyone building products") before getting more specific: "language inside products is extremely powerful." Backpack also lists specific responsibilities on a per-discipline basis, including engineering, product owners, and content design. This helps avoid the "no one is responsible" problem of "everyone" statements.

This approach also broadens the definition of stakeholders as described by value sensitive design. In the process, it makes it more likely that accessibility requirements will be agreed upon, understood, and met. It also keeps the entire team accountable to the overall goal while making it easier to determine if a key aspect of accessibility has been overlooked.

Along with making individual responsibilities clear, design system accessibility guidance could also encourage stakeholders to collaborate more closely. For example, most software companies have a handoff process from designers to developers. Through guidelines that encourage mutual responsibilities, a developer would have to go back to a designer when changes are required due to unforeseen complexities. In this way, both designer and developer can work together to ensure that the changes remain accessible from a user experience perspective.

Timing

Another theme in the responsibilities category involves when accessibility planning, research, and problem solving occurs. This theme contains six "at the beginning" statements and five "at the end" statements.

At the beginning

Most of the "at the beginning" value statements include prescriptive advice about the design process.

Table 13. "At the beginning" value statements

Statement	Design System	Host Organization
"**We recommend that you design with an 'Accessibility First' approach, instead of taking accessibility into consideration at a later stage**." [Emphasis in original]	Elisa Design System	Elisa
"When we consider accessibility *from the beginning*, we design for everyone from the start."	Primer	GitHub
"Think about how you are going to *address accessibility at the beginning* and at every stage of your project."	NHS Digital Service Manual	NHS England
"Accessibility and inclusive design *needs to be considered from the start of a project*, because it deeply affects its design, how the product behaves, and how it's built."	Primer	GitHub
"*It is important to plan for accessibility during your initial design and development* because it is much more expensive and painful to address accessibility issues after the product has been released."	Edison Design System	GE HealthCare
"Accessible design processes *anticipate as many potential product or experience outcomes as possible upfront*."	Material 3	Google

A critical aspect of value sensitive design is identifying and integrating key values early in the design process. These values also inform design work throughout the process. In a similar way, some design systems recommend integrating accessibility concerns from the start of a project: “Accessibility First approach” (Elisa Design System), “considered from the start” (Primer), and “plan for accessibility” (Edison Design System). Integrating values early in the process is a way to minimize or eliminate the “bias” that Friedman (1996) describes. While these statements mirror this aspect of value sensitive design, they do not refer to the approach directly.

Accessibility-first design statements also hint at the human values that are central to value sensitive design. Perhaps for that reason, there are a mixture of “we” and “you” statements: “we recommend” (Elisa Design System), “we consider” (Primer), “how you are going” (NHS Digital Service Manual), and “during your initial design” (Edison Design System).

After the fact
The inverse of “at the beginning” value statements are “at the end” statements.

Table 14. “At the end” value statements

Statement	**Design System**	**Host Organization**
“It's much harder to make a service accessible *if you only address it later on*.”	NHS Digital Service Manual	NHS England
“*Tacking on accessibility after a design is implemented costs businesses time and money*, and it muddies the original design, leading to a poor user experience for people with and without disabilities.”	Primer	GitHub
“Understanding and anticipating a wide range of human experiences and disabilities establishes product foundations that *prevent costly redesigns, reduce tech and design debt, and conserve resources upfront*.”	Material 3	Google
“*Solving accessibility bugs and retrofitting solutions is far more costly* than reserving time at the start of a project. Allow team members to research, design, develop and test for accessibility during their standard processes.”	Backpack	Skyscanner
“It is important to plan for accessibility during your initial design and development because *it is much more expensive and painful to address accessibility issues after the product has been released*.”	Edison Design System	GE HealthCare

Some design systems highlight the financial consequences of not integrating accessibility at the start of a project: “time and money” (Primer), “far more costly” (Backpack), and “prevent costly redesigns” (Material 3). These statements shift focus away from human values and towards business needs.

Some design systems also include warnings about additional effort as a consequence of not integrating accessibility early. Primer describes this as “a difficult retrofit” that “muddies the original design” while the NHS Digital Service Manual notes that “It's much harder to make a service accessible if you only address it later on.” These statements also imply financial consequences due to the additional time and effort required to address accessibility shortcomings.

Many of these statements refer to at least three of the four categories of stakeholders described in the value sensitive design approach: project sponsors, designers, and direct stakeholders. This is another example of how accessibility value statements reflect value sensitive design with making direct reference to the approach.

UX research

A final theme in the responsibilities category is the role that research plays in ensuring digital products meet the needs of disabled users. This theme contains four “user research” statements.

Table 15. “User research” value statements

Statement	Design System	Host Organization
“*We strongly recommend testing with users wherever possible*. User testing will help you understand real-world accessibility issues, such as how people with disabilities or people who use assistive technologies understand your product.”	Luna	Sainsbury's
“If you're working to a tight deadline, *you must: consider exclusion as you design your service*, for example, with GOV.UK’s user profiles for understanding disabilities and impairments.”	NHS Digital Service Manual	NHS England
“*Solicit feedback on features and functionality from a diverse range of people*, including those with disabilities.”	Canvas	Workday
“Involve marginalized users. *Include people with diverse ranges of ability in user testing*, and co-design whenever possible. Seek feedback from historically underinvested communities.”	Spectrum	Adobe

Despite the prevalence of “everyone” and “for all” framing, very few design systems make explicit reference to the role of user experience research in creating accessible technology. This omission suggests a gap between accessibility value statements in theory and practice. That is, being inclusive is stated as a goal, but the efforts required to achieve that goal are not made clear. This echoes the criteria of actionability that is seen as an important way to measure the effectiveness of value sensitive design. These omissions also serve to reinforce the observation by Friedman & Hendry (2019) that the “longer-term, ethical implications” of design work can seem “frivolous” (p. 162).

That said, “UX research” value statements are relatively clear and specific about inclusion and accessibility: “real-world accessibility issues” (Luna), “solicit feedback” (Canvas), “consider exclusion as you design” (NHS Digital Service Manual), and “include people with diverse ranges of ability” (Spectrum). And while the participatory aspects of pattern languages are not part of most design system guidance, these statements hint at how that might occur.

Commitments

The final category is about the commitments a host organization makes in relation to accessibility compliance. Unlike the other categories, which often address multiple audiences, commitment statements tend to be the most public-facing.

Three themes within the commitments category were identified:

1. "Committed to" statements
2. "Aim to" and "Strive to" statements
3. Upholding statements

Committed to

The first theme in the commitments category contains six "committed to" statements.

Table 16. "Committed to" value statements

Statement	Design System	Host Organization
"Alaska Airlines is *committed to* ensuring digital accessibility for people with disabilities."	Auro	Alaska Airlines
"Cedar is *committed to* designing and developing components, tokens and styles that help ensure our digital products meet or exceed the World Wide Web Consortium's Web Content Accessibility Guidelines (WCAG) 2.1 Level AA."	Cedar	REI
"The Decathlon Design System is *committed to* following and complying with accessibility best practices (Web Content Accessibility Guidelines)."	Vitamin	Decathlon
"We are *committed to* following Web Content Accessibility Guidelines (WCAG) specifications and are working to ensure digital accessibility for people with disabilities."	Dell Design System	Dell
"Shopify is *committed to* digital equity. We strive to make the internet a more inclusive place by providing an inclusive user experience that allows everyone to maintain their dignity and independence."	Polaris	Shopify
"An inclusive product is a top priority, and *it relies on everyone's commitment to accessibility*."	Gestalt	Pinterest

The clearest accessibility value statements include the word "commitment." For example:

“committed to ensuring digital accessibility for people with disabilities” (Auro) and “committed to digital equity” (Polaris).

One possible explanation for the popularity of the word “commitment” is that it appears in the World Wide Web (W3) Consortium’s guide to developing an accessibility statement. Their sample accessibility statement begins with: “Citylights Inc. is committed to ensuring digital accessibility for people with disabilities. We are continually improving the user experience for everyone, and applying the relevant accessibility standards.” (*Example of minimal accessibility statement*, n.d.).

Also worth noting is that the word “everyone” appears in the sample statement.

Aim to and strive to

A related theme to “committed to” are “aim to” and “strive to” statements. This theme contains six “aim to” statements and three “strive to” statements.

Table 17. “Aim to” value statements

Statement	**Design System**	**Host Organization**
“Contentful *aims to* meet the WCAG 2.1 Level AA success criteria.”	Forma 36	Contentful
“As per Dell’s Accessibility Statement, all DDS components follow the global Web Content Accessibility Guidelines (WCAG) 2.1, Level AA. However, the team *aims to* exceed these guidelines when possible.”	Dell Design System	Dell
“*We aim for* all components to meet the Web Content Accessibility Guidelines (WCAG 2.1 AA) and all design decisions to be inclusive.”	Backpack	Skyscanner
“Pinterest's goal as a company is to meet WCAG 2.1 AA standards, and Gestalt's goal is no different. By creating accessible components, *we aim to* help everyone create an inclusive product.”	Gestalt	Pinterest
“*Helsinki aims to ensure* that all residents can move about and act as effortlessly as possible and that all content and services are accessible to all.”	Helsinki Design System	City of Helsinki
“*We aim to* make our software accessible to everyone, including those with vision, hearing, cognitive, or motor impairments.”	Instructure UI	Instructure

Table 18. "Strive to" value statements

Statement	Design System	Host Organization
"Accessibility compliance goals. For all of Sprout's web applications, *we strive to achieve* the Web Content Accessibility Guidelines 2.1 AA level of compliance. This ensures our products exhibit our core company values"	Seeds	Sprout Social
"Workday *strives to ensure* those principles are included in every step of our design process."	Canvas	Workday
We strive to make the internet a more inclusive place by providing an inclusive user experience that allows everyone to maintain their dignity and independence."	Polaris	Shopify

It is important to note the semantic difference between aim or strive (usually defined as "intend") and commitment (usually defined as "agreement"). In most cases "aim to" is used to reduce the force of the commitment, such as Backpack ("We aim for all components to meet …") and Forma 36 ("Contentful aims to meet…"), but Dell Design System uses the phrase to augment their commitments: "the team aims to exceed these guidelines when possible."

Upholding statements

The final theme involves how the members of the design system team plan to uphold their accessibility commitments. This theme contains five "upholding" statements.

Table 19. "Upholding" value statements

Statement	Design System	Host Organization
"*Each component is tested with Safari + VoiceOver, Firefox + NVDA, and Edge + JAWS*. As the project matures we'll get it audited by WebAIM to ensure that if you pick Reach UI, your app has a solid, accessible foundation."	Reach UI	React Training
"*The city promotes the accessibility of digital services by* streamlining publishing work and *organising accessibility-related training for its staff*."	Helsinki Design System	City of Helsinki
"*The accessibility level of websites is monitored constantly* during their maintenance. Immediate action will be taken if deficiencies are found."	Helsinki Design System	City of Helsinki
"[W]e take practical steps to ensure our outcomes are accessible. This means that *we*	Helios	HashiCorp

integrate accessibility at every step of our creation cycle.		
"[W]e take the following actionable steps: ● Provide education and training for our team. ● Design with accessibility as a core requirement. ● Conduct design reviews specifically focused on accessibility. ● Ensure our code renders to the browser in a conformant way. ● Use available accessibility automation ● Manually test our code with assistive technologies."	Helios	HashiCorp

Similar to UX research, only a few design systems explain how their commitments will be achieved in clear, unambiguous language. This reinforces the relevance of "actionability" as a criteria for assessing value sensitive design and value statements about accessibility.

Helios describes their accessibility process as involving "practical" and "actionable" steps that include training, education, and design reviews focused on accessibility. The Helsinki Design System also provides training and education for staff. As with user experience research, it is difficult to understand how accessibility can be "everyone's" responsibility without providing accessibility training and resources.

Helios combines commitments with responsibilities when they write that, "we integrate accessibility at every step of our creation cycle." The Helsinki Design System follows a similar approach, explaining that websites are monitored and "immediate action will be taken" to address accessibility shortcomings.

As previously mentioned, some design systems take a component level approach to accessibility. However, only a few provide specifics about what that means. Reach UI, for example, notes that "Each component is tested with Safari + VoiceOver, Firefox + NVDA, and Edge + JAWS."

Discussion

Based on the findings, there are two significant and related research outcomes:

- Identifying key elements of a framework to enhance accessibility statements
- Using value sensitive design to help improve accessibility statements (and vice-versa)

The first outcome involves improving the specificity of language used in accessibility statements. The second outcome is about finding a repeatable approach for evaluating and enhancing how key values are selected and expressed in accessibility statements.

A framework for enhancing accessibility statements

The content analysis and critical discourse analysis findings point to a preliminary framework for enhancing accessibility value statements. The key elements of this framework include:

- Prioritizing the role of UX research in achieving accessibility goals
- Removing “everyone benefits” from value statements and focusing on exclusion instead
- Avoiding atomization of accessibility at the component level and promoting a more holistic approach instead
- Discipline-specific accessibility responsibilities instead of “everyone” being responsible for a nebulous goal
- Examples of clear and specific language, especially in relation to commitments and responsibilities
- Adding a positionality statement in a company’s design system to better situate who “we” is and what “we” means in relation to the host organization’s value statements
- Including clear definitions and/or references to support goals for inclusivity and inclusive design

Increasing the precise of language used in accessibility value statements will encourage stakeholders to debate and discuss the non-negotiable aspects of their digital products. It will also help host organizations better consider how to adhere to those specific commitments with clear responsibilities and upholding techniques and mechanisms. Finally, this type of stakeholder discussion reflects one of the key aims of value sensitive design.

Applying value sensitive design to accessibility statements

There are numerous examples of accessibility value statements that reflect key aspects of value sensitive design. This includes a focus on process (accessibility-first design) and the role that stakeholders play in debating and applying values. However, none of the design systems examined make direct reference to value sensitive design. This suggests that there might be other examples of “accidental” VSD in user experience design.

These findings also indicate that it’s possible to expand and amend the definition and application of value sensitive design. The lack of reference to VSD in design system makes it clear that there is a gap in visibility between academic theory and practical, day-to-day design work. Reducing this gap might require that researchers make it easier for design systems, digital design principles, and user experience design guidelines to adopt and integrate portions of value sensitive design. A hybrid approach could encourage design systems to update their existing value statements, rather than entirely rethink their entire approach.

There are also opportunities to highlight the overlap between inclusive design, accessibility, and value sensitive design. Rather than viewing them as distinct or even competing approaches, it might be more productive to identify their commonalities.

Conclusion

The working title of this MRP ("It's Everyone's Responsibility to be Committed") was meant to serve as a rapidfire but intentionally meaningless summary of the four categories that appear in the findings. Put another way, the specificity of language used to express accessibility responsibilities and commitments is as important as the specificity of actions associated with achieving those responsibilities and commitments. As shown, some companies are committed, while others can only strive or aim.

The frequent use of "everyone" in accessibility value statements indicates the implicit and explicit influence of universal design. However, from an inclusive design perspective, "everyone" can serve to obscure or elide exclusion. In a related way, "everyone" being responsible for accessibility can make it hard to define individual responsibilities. Specific actions assigned on a per-discipline basis is a promising way to avoid the limitations of "everyone."

The findings also indicate a gap between accessibility value statements and UX research. Given that UX research plays a key role in identifying usability shortcomings, it is not clear why this type of research does not figure more prominently in accessibility value statements.

Finally, it is often not clear who "we" might be in accessibility value statements. In most cases, this appears to be an intentional choice on the part of the design system author(s).

Future research opportunities

Based on the findings, literature review, content analysis, and critical discourse analysis, there are two promising areas for future research:

1. Location of accessibility guidance in design systems
2. Interviews with design system employees

Location of accessibility guidance in design systems

It can be argued that the prominence of accessibility guidance is almost as important as the value statements themselves. Thoughtful guidance that no one can find is worse than thoughtless guidance that is easy to find.

The original aim of this research was to not only analyze "what" design systems said about accessibility, but "where" those statements appeared. However, as the analysis progressed, it became clear that the location of accessibility guidance should be treated as a separate stream of research.

As noted in the findings section, many design systems have a dedicated section for accessibility guidance. However, not all design systems put that guidance in a prominent location. Along with dedicated accessibility section, a significant number of design systems include secondary guidance that is specific to a given component. Further research could explore the value of overarching guidance, contextual guidance, and the interrelationship between them.

Interviews with design system employees

A design system might include prominent accessibility guidance that outlines clear responsibilities and commitments. But how are these value statements applied in practice? Is there a gap between theory and reality?

Future research could explore gaps between published value statements and the experiences of employees. Are employees able to confidently and successfully implement accessibility values? What support, encouragement, or incentive does the company provide employees to implement accessibility as described in the design system?

What design systems say when they talk about accessibility has provided a number of research insights into the influence of universal design, gaps in guidance specificity, and the need to link accessibility value statements with UX research. However, there are limitations to taking design systems at their word, and future research should include speaking with employees at host organizations to better understand how accessibility guidance is applied in practice.

It is hoped this research will encourage host organizations that lack accessibility guidance to add it to their design systems. This research also offers a number of ways to improve existing accessibility guidance in design systems by including:

- Unambiguous language when referring to commitments and responsibilities
- Accessibility responsibilities for each stakeholder in the design process
- Clear linkages between accessibility goals and UX research
- Methods to identify and limit exclusion
- A definition of accessibility-first design
- An explanation of who “we” refers to
- The strengths and limitations of accessible components
- Accessibility training and support from the host organization
- An explanation of how accessibility is upheld and how shortcomings are addressed

Being committed is a useful first step. But the host organization of each design system must ensure that their promises and values can be translated into concrete actions that employees can understand, apply, and follow.

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