Building a Culture of Accessibility: From Awareness to Action

Dhara Pattani, Younus Poonawala
dharapattani13@gmail.com, younus@rethinkingweb.com

Abstract

The digital landscape has become an integral part of our daily lives, with individuals relying on a wide range of digital platforms, including websites, mobile applications, and software solutions. However, many people with disabilities continue to face barriers in accessing and using these digital products, limiting their participation and engagement.

Integrating digital accessibility into development and testing organizations yields numerous benefits. It broadens the potential user base, allowing organizations to reach a wider audience and cater to the diverse needs of users with disabilities. By prioritizing accessibility, software engineering teams demonstrate their commitment to inclusivity. Working in concert with Product and Design teams, they help improve the overall user experience while cultivating positive brand reputation and customer loyalty.

Building a framework for accessibility within the organization encourages collaboration among team members, including designers, developers, testers, and user advocates, encouraging an environment where accessibility is a shared responsibility.

In this paper, we have listed practical techniques, tools, and steps to implement a Culture of Accessibility in your workspace.

Biography

Younus Poonawala, Director of Codevelop.us, is a visionary leader with over 15 years of experience in the software industry. Specializing in cloud computing, digital transformation, and ecommerce, he has led projects to improve website accessibility for multinational corporations. With a Bachelor's degree in Information Technology and a Masters in Computer Applications, Younus brings a strong technical foundation to his innovative work.

Dhara Pattani is a highly skilled QA analyst with extensive experience in software testing, encompassing the entire software development and testing life cycle, as well as proficiency in business requirements analysis. Certified as a Scrum Master, ISTQB Agile, and ISTQB Foundation Tester, Dhara brings a strong passion for accessibility testing. With a Bachelor's degree in Business, she combines technical expertise with a keen understanding of business needs.

1. Introduction: Developing a Culture of Accessibility

In today's rapidly advancing world, where technology and innovation have become integral parts of our daily lives, the domain of Accessibility has gained significant importance. Accessibility refers to the affordance provided by products and services so they can be easily accessed, understood, and used by individuals with a

broad range of impairments or disabilities. It encompasses physical, digital, and social aspects, aiming to eliminate barriers and promote inclusivity.

Developing a Culture of Accessibility goes beyond compliance with legal requirements; it entails building an environment where accessibility is prioritized and embedded in every aspect of an organization's operations. By cultivating such a culture, businesses, institutions, and communities can empower individuals with disabilities, enhance user experiences for all, and contribute to a more inclusive society.

This paper explores the significance of developing a Culture of Accessibility and discusses key elements and strategies to promote accessibility in various domains. It highlights the benefits of an inclusive approach and showcases how organizations can take proactive steps to embrace accessibility as a fundamental value.

We'll also emphasize on a few examples from prominent organizations like Microsoft, Apple, IBM, Procter & Gamble, and Salesforce. These examples demonstrate the successful integration of accessibility into product design, workplace practices, and community engagement. Thus, setting a standard for fostering innovation hand in hand with diversity and inclusivity

2. Why Accessibility Matters and Importance

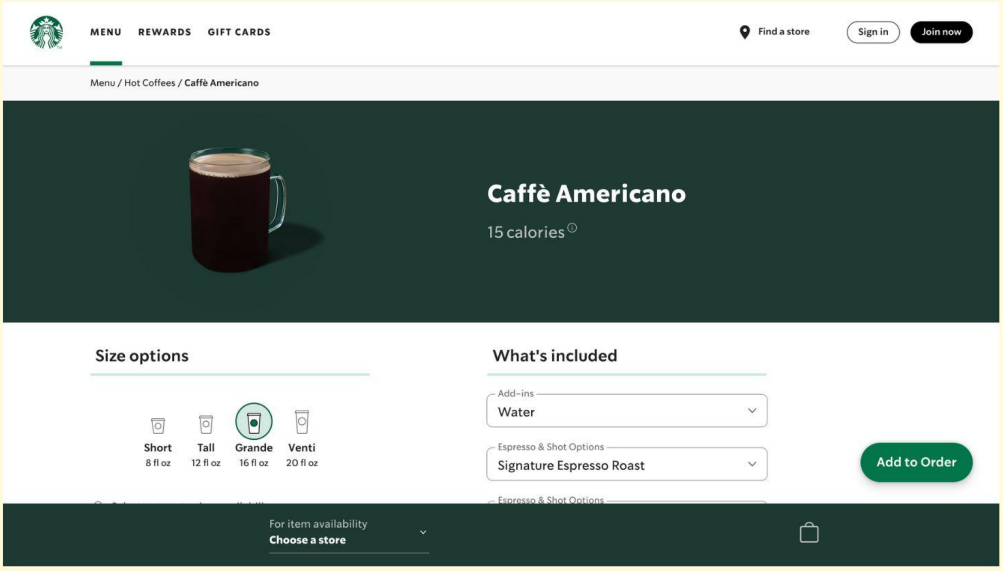
Acknowledging accessibility as a spectrum underscores the understanding that the needs of individuals with disabilities are diverse and distinct. It is our duty to offer adaptable and comprehensive solutions that cater to these varying abilities and requirements, ensuring flexibility and inclusiveness in our approach.

Key Points:

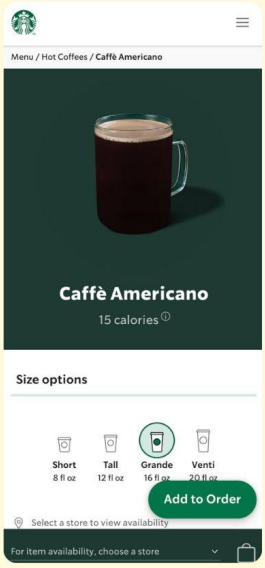
1. **Empowering Individuals:** Accessibility empowers people with disabilities by granting them equal access to information and technology, facilitating their full participation in the digital world. It breaks down barriers and provides opportunities for personal and professional growth.
2. **Enhancing User Experience**: Accessible designs not only benefit individuals with disabilities but also enhance the experience for all users. Clear navigation, structured content, and customizable interfaces contribute to improved user satisfaction, facilitating seamless interactions with digital content.
3. **Meeting Legal Requirements:** Compliance with accessibility laws showcases social responsibility and underscores the commitment to ensuring equal access for individuals with disabilities. By adhering to these regulations, organizations demonstrate their commitment to inclusivity and promote a more inclusive society.
4. **Expanding Market Reach:** Accessible products and services tap into a significant market segment comprised of diverse users. By prioritizing accessibility, organizations can attract a broader user base, expanding their market reach and driving business growth.
5. **Fostering Innovation:** Accessibility stimulates creative problem-solving and fuels innovation within the technology industry. By addressing the unique challenges faced by individuals with disabilities, it encourages the development of innovative solutions that benefit society as a whole.

Prioritizing accessibility is vital for creating a more inclusive digital world, where everyone has the opportunity to thrive. It empowers individuals, enhances user experiences, expands market reach, and fosters innovation within the technology sector. Let us embrace accessibility as a core principle and work towards shaping a future where technology is accessible to all, ensuring a more equitable and inclusive society.

Examples:



Desktop / Laptop



App/Mobile

The Starbucks app is an example of a product that has been designed with inclusive principles. The app includes features such as text-to-speech and keyboard navigation, which make it accessible to people with disabilities. This allows people with disabilities to use the app to order food and drinks, just like everyone else. By designing for inclusivity, Starbucks is creating a more equitable and accessible world for everyone.

The New York City subway system is an example of a public transportation system that has been designed with inclusive principles. The system includes features such as audio announcements and tactile indicators, which make it accessible to people with disabilities. This allows people with disabilities to use the subway system independently, just like everyone else. By designing for inclusivity, the New York City subway system is making it possible for people with disabilities to participate fully in society.

3. Common Misconceptions of Accessibility

There are many misconceptions about accessibility, both among businesses and the general public. Some of the most common misconceptions include:

1. **Accessibility is only for people with disabilities:** This is not true. Accessibility benefits everyone, regardless of their abilities. For example, keyboard navigation can be helpful for people who have difficulty using a mouse due to arthritis. Fonts resizing, dark modes, and high contrast colors can be helpful for people who have common visual impairments. Plus voice and touch controls provide different interaction modalities that all users can choose from.
2. **Accessibility is expensive:** There are many ways to make digital products and services more accessible without spending a lot of money. For example, businesses can use free tools to add text alternatives to images and videos, and they can make small changes to their websites and applications to make them easier to navigate with a keyboard. More importantly, if accessibility is

integrated into the workflow, it can improve the overall development process and reduce rework. Moreover, when organizations ignore accessibility they risk potential legal action, which can exceed the costs of evolving the organization and do serious reputational damage.

3. **Accessibility is difficult to do:** This is not true. There are many resources available to help businesses make their products and services more accessible. For example, the World Wide Web Consortium (W3C) has a website with accessibility guidelines, and there are many consulting firms that specialize in accessibility. Many developers have learned the skillset to code for accessibility, and more are learning every day. These developers can influence culture and lead accessibility efforts.
4. **We don't need to conform to any Accessibility Standards:** One prevalent misconception regarding accessibility is the notion that conforming to accessibility standards is unnecessary. However, Title III of the Americans with Disabilities Act has been amended to include many websites and apps. It is vital to work toward these guidelines (such as the newly updated WCAG 2.2) to guarantee equal access for individuals with disabilities and to mitigate legal risks. Failure to conform to WCAG guidelines can lead to exclusion of a substantial user base and missed business prospects.

4. Understanding Accessibility and Building an Accessible Mindset

Approximately 1 in 5 adults in the US, accounting for over 60 million people, experience disabilities that pose challenges in accessing digital products**. This includes individuals who are blind, visually impaired, deaf, hard of hearing, or have physical or cognitive disabilities. It's worth noting that temporary disabilities can also impact accessibility. For instance, a person recovering from a temporary injury may require assistive technology.

A website that does not have alt text for images is inaccessible to screen reader users. Screen reader users cannot see images, so they rely on alt text to understand what they are about. Without alt text, screen reader users will not be able to understand the content of the image.

By prioritizing accessibility, we can break down these barriers and cultivate an inclusive digital world that offers equal opportunities for all individuals, regardless of their current abilities.

An illustration of the positive outcomes of prioritizing accessibility can be observed through the case of **Shopify**. Through enhancements in website accessibility, Shopify achieved a notable 10% increase in web traffic from individuals with disabilities. This surge translated into more customers, higher sales figures, and an enhanced reputation. This case serves as evidence that accessibility contributes not only to social responsibility but also to business prosperity.

Another example of a company that has successfully implemented accessibility is **Apple.** Apple has been a leader in accessibility for many years. The company has a long history of adding features to its products that make them more accessible to people with disabilities.

- **Built-In Accessibility Features:** Apple integrates a comprehensive range of accessibility features directly into its operating systems (iOS, macOS, watchOS, etc.) and applications. These features cover a wide spectrum of disabilities, including visual, auditory, cognitive, and motor impairments.
- **VoiceOver:** VoiceOver is a screen reader that allows people who are blind or visually impaired to use Apple devices. It reads aloud the text on the screen, as well as other information, such as labels, buttons, and menus.
- **Zoom and Magnification:** Apple devices offer features like Zoom and Magnifier, which allow users to enlarge text, images, and other content on the screen. This is particularly useful for people with low vision.
- **Dynamic Text and Display Accommodations**: Users can adjust text size, boldness, contrast, and other display settings to make content more readable based on their preferences.
- **Live Captions:** Live Captions automatically generates captions for audio and video content, making it easier for people who are deaf or hard of hearing to understand what is being said.
- **Hearing Loop**: Hearing Loop is a feature that allows people who are hard of hearing to use Apple devices in noisy environments. It transmits sound directly to a hearing aid or cochlear implant.
- **AssistiveTouch:** AssistiveTouch allows users with motor impairments to control their Apple devices with gestures.
- **Switch Control:** Switch Control allows users with motor impairments to control their Apple devices with a switch.
- **Siri:** Siri is a voice assistant that can be used to control Apple devices by voice.

Apple is constantly working to improve its accessibility features. In 2023, Apple released iOS 16, which includes a number of new accessibility features, such as Live Text and Door Detection. Live Text allows users to extract text from images, and Door Detection helps users with visual impairments navigate to doors.

Apple's commitment to accessibility is an example of how technology can be used to make the world a more inclusive place. By making its products and services more accessible, Apple is helping to ensure that everyone can enjoy the benefits of technology.

5. Inclusive Design Principles

Accessibility is the design of products, services, and environments to be usable by everyone, regardless of their abilities. The core principles of accessibility are[±]:

- **Perceivable:** Information and user interface components must be presented to users in ways they can perceive. For example, text alternatives should be provided for all non-text content, such as images and videos. This allows people who are blind or visually impaired to understand the content.
    - An image of a product on a website could have a text alternative that describes what the product looks like, its features, and how it is used.
    - A video could have a text transcript that describes the content of the video.
- **Operable:** User interface components and navigation must be operable. For example, keyboard navigation should be supported so that people who cannot use a mouse can still interact with a website or application. This allows people with motor impairments to use a website or application.
    - A website could have keyboard shortcuts for navigating to different pages, opening menus, and selecting options.
    - A website could also have a "skip to main content" link that allows users to jump to the main content of the page without having to scroll through the page.
- **Understandable:** Information and the operation of user interfaces must be understandable. For example, clear and concise language should be used, and complex or technical terms should be explained. This allows people with cognitive impairments to understand the content of a website or application.
    - A website could use plain language instead of jargon, and it could provide definitions for any technical terms that are used.
    - A website could also use a consistent design throughout the site, so that users can easily find their way around.
- **Robust:** Content must be robust enough that it can be interpreted reliably by a wide variety of user agents, including assistive technologies. For example, web pages should be coded correctly so that they can be read by screen readers. This allows people with disabilities to use assistive technologies to access a website or application.
    - Web pages should use semantic markup so that screen readers can properly identify different elements on the page, such as headings, paragraphs, and lists.
    - Web pages should also be coded in a way that makes them accessible to search engines, so that people with disabilities can find them through search results.

By following these principles, businesses can create websites and applications that are more accessible.

6. Integrating Accessibility into Processes

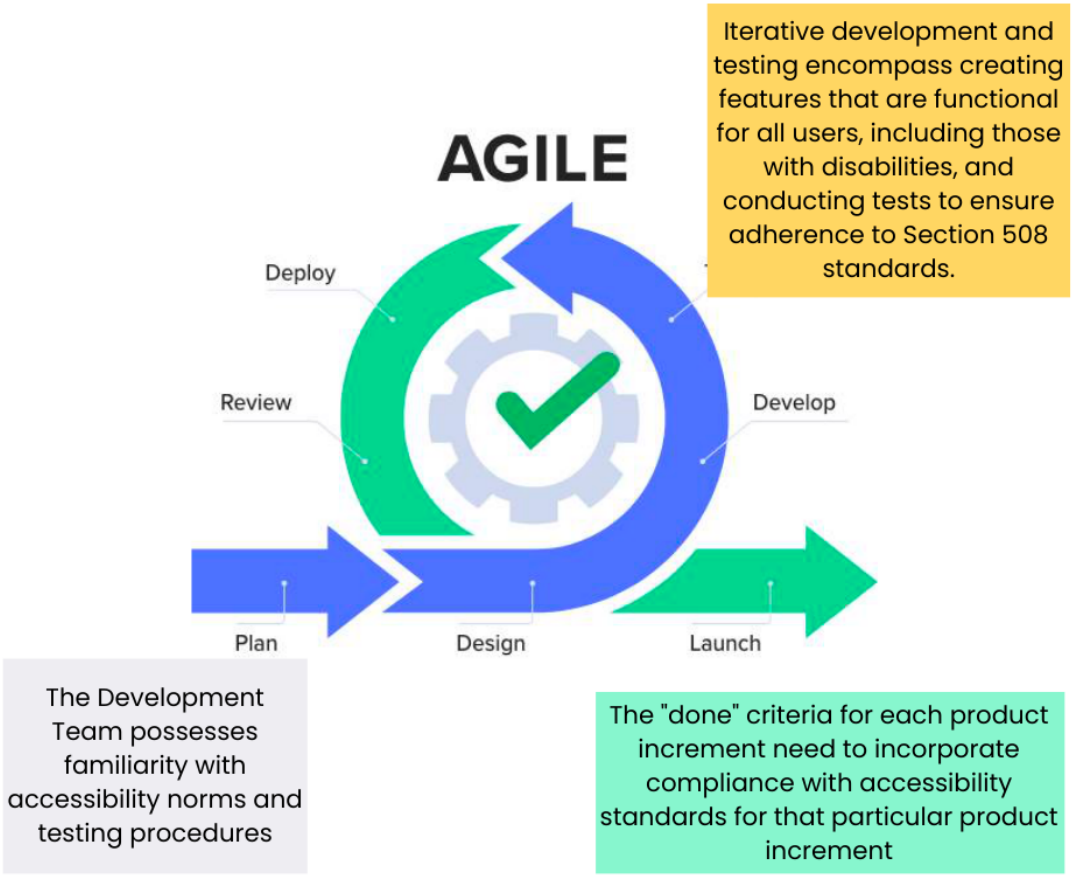
Integrating accessibility as an integral part of the development process is vital for creating inclusive digital experiences. By incorporating accessibility from the outset, we can proactively tackle accessibility issues and deliver products that cater to diverse user needs. Here are key steps to integrate accessibility effectively:

- **Start with accessibility in mind:** When designing a website or application, start by thinking about how people with disabilities will use it. Consider what features they will need to be able to access the content and interact with the interface.
- **Use accessible tools and technologies:** There are a number of tools and technologies that can help you create accessible websites and applications. These tools can help you identify accessibility issues, generate text alternatives for images and videos, and code your website or application in a way that is accessible to screen readers.
- **Get feedback from people with disabilities:** Once you have created your website or application, get feedback from people with disabilities to make sure it is accessible to them. You can do this by

conducting usability testing with people with disabilities or by inviting them to provide feedback on your website or application.

- **Continuously improve:** Accessibility is an ongoing process. Once you have made your website or application accessible, you need to continuously improve it to make sure it remains accessible. This means keeping up with the latest accessibility standards and best practices, and regularly testing your website or application for accessibility issues.
- **Make accessibility a priority:** Accessibility should be a top priority for any business that wants to create websites and applications that are accessible to everyone. This means allocating the necessary resources and time to ensure that accessibility is considered at every stage of the development process.
- **Provide training:** Provide training to all employees on accessibility and how to create accessible websites and applications. This training should cover the basics of accessibility, such as the WCAG 2.2 accessibility standards, as well as specific tips and best practices for creating accessible content and code.
- **Advocate for accessibility:** Advocate for accessibility within your industry and community. This means speaking out about the importance of accessibility and working to raise awareness of accessibility issues.

6.1 Accessibility in the Agile World



Agile development involves building products in constrained time increments called sprints. Accessibility must be ingrained within Agile processes, where all team members accept it as essential. Training is crucial for developers to write accessible code. Accessibility requirements should be included in product backlogs, design, and architecture decisions, and adhered to in "definition of done" for each increment. Testing should follow standard processes, including manual inspections, even with automated tools. Test-Driven Development (TDD) can help ensure accessibility compliance. Section 508 expertise should be consulted when needed.
Agile's benefits include immediate feedback and adaptability, while potential drawbacks include ambiguous timelines and skill dependencies. Success in Agile accessibility requires consistent integration throughout the entire development lifecycle:

- Include accessibility in the "definition of done".
- Integrate accessibility standards into key artifacts.
- Implement standardized accessibility testing.
- Follow Test-Driven Development (TDD) practices.
- Provide Section 508 expertise to the team and ensure accessibility knowledge for all members.

Making accessibility a priority and **cultivating a culture of accessibility within the organization is crucial.** Providing training to employees and advocating for accessibility in the industry and community further enhance accessibility integration efforts.
By integrating accessibility into the development process, we ensure inclusive and accessible products, early identification of accessibility issues, and a more user-friendly digital experience.

7. Training and Education

There are various training and education options available to address accessibility and inclusion. Consider the following examples:

1. **Foundational Accessibility Training:** This training covers the fundamental concepts of accessibility, including an overview of accessibility standards such as WCAG 2.1, and practical guidance on creating accessible digital products.
2. **Specialized Accessibility Training**: This type of training focuses on specific aspects of accessibility, such as designing accessible user interfaces, developing accessible content, or implementing accessibility in coding practices.
3. **Inclusion and Diversity Training**: This training emphasizes the importance of fostering inclusive environments and explores strategies for promoting diversity, equity, and inclusion in workplaces and communities.

The choice of training depends on the organization's objectives, industry, and size. However, it is recommended that all organizations provide some level of training on accessibility and inclusion.
Benefits of providing training and education on accessibility and inclusion include:

- **Enhanced Accessibility:** Training empowers organizations to improve the accessibility of their digital products, services, and physical spaces, enabling people with disabilities to fully participate and benefit.

- **Mitigated Legal Risk**: By educating employees on accessibility requirements and best practices, organizations can reduce the risk of legal liabilities associated with non-compliance, ensuring compliance with accessibility laws and regulations.
- **Boosted Employee Morale**: Training fosters a culture of inclusivity, demonstrating an organization's commitment to diversity and accessibility. This, in turn, enhances employee morale, engagement, and job satisfaction.
- **Strengthened Reputation**: Organizations that prioritize accessibility and inclusion through training build a positive brand reputation, attracting customers, clients, and stakeholders who value inclusive practices.

To ensure effective training and education on accessibility and inclusion:

- Tailor the training to the audience's needs, focusing on their roles and responsibilities within the organization.
- Utilize diverse teaching methods, such as interactive workshops, practical exercises, and real-life case studies, to engage participants and enhance learning outcomes.
- Provide opportunities for participants to practice and apply their knowledge through hands-on exercises and projects.
- Follow up with participants to gauge their understanding and address any further questions or concerns, promoting continuous learning and improvement.

By implementing these strategies, organizations can effectively integrate accessibility and inclusion principles into their processes, resulting in more inclusive digital experiences and environments.

8. Tools and Technologies

In the pursuit of inclusivity, accessibility testing plays a vital role in identifying and addressing barriers that individuals with disabilities may encounter when engaging with digital products and services. To facilitate accessibility testing and ensure comprehensive evaluations, a wide range of tools and technologies have emerged. This section explores key tools and technologies used for accessibility testing in a professional context.

Automated Testing Tools

Automated testing tools are instrumental in scanning websites, applications, and digital content for accessibility issues. These tools employ algorithms and predefined rules to identify common accessibility violations, such as missing alt text for images, improper heading structures, or insufficient color contrast. Notable examples of automated testing tools include aXe, WAVE, and pa11y. These tools provide developers and testers with expedient feedback, enabling efficient remediation of accessibility barriers.

Manual Testing Tools

While automated tools are valuable, manual testing remains indispensable for detecting intricate accessibility challenges that necessitate human judgment and contextual comprehension. Manual testing involves expert evaluators systematically reviewing and interacting with digital content using assistive technologies like screen readers, keyboard-only navigation, and magnifiers. This approach allows for an in-depth exploration of the user experience, uncovering nuanced accessibility obstacles that automated tools may overlook.

Assistive Technologies

Assistive technologies are tools that can be used to help individuals with disabilities interact with digital content. Examples:

- **Screen Readers:** Software applications that convert text into speech or braille, enabling seamless access to digital content for people with visual impairments.
- **Screen Magnifiers:** Enhancing readability for individuals with visual impairments by enlarging on-screen content. Every pixel becomes a gateway to knowledge and connection.
- **Braille Displays:** Tactile devices that allow people who are blind or have low vision to read and navigate digital content through touch.
- **Alternative Keyboards:** Customized input options for individuals with motor impairments, empowering them to express themselves and explore the digital realm.
- **Switch Access:** Activating computers through external switches, enabling effortless navigation for those with limited mobility or dexterity.
- **Voice Recognition Software:** Control computers and input text using speech, empowering individuals with mobility impairments or typing difficulties.
- **Assistive Listening Devices:** Amplifying sound and improving clarity for individuals with hearing impairments, fostering engagement with audio content.
- **Closed Captioning and Subtitling:** Textual representations of audio content in videos, ensuring accessibility for individuals who are deaf or hard of hearing.
- **Alternative Formats:** Large print, audio books, and e-text, catering to individuals with print disabilities or visual impairments. Accessing knowledge in unique ways.

Expert Evaluators
Expert evaluators are individuals who have specialized knowledge and experience in accessibility testing. They can help to identify and address accessibility issues that may not be obvious to others.

By using a variety of tools and technologies, and by involving expert evaluators, organizations can create more accessible digital products and services that can be used by everyone.

Tools

1. https://accessibe.com
2. WAI Easy Checks https://www.w3.org/WAI/test-evaluate/preliminary/
3. aXe Chrome/Firefox/Selenium tool or WAVE Extension for Chrome or Firefox
4. https://github.com/GoogleChrome/accessibility-developer-tools
5. https://access-works.com/

iOS Accessibility Tools/features

1. Vision Deaf or hard of hearing
2. VoiceOver (screen reader) = FaceTime
3. Siri, Closed Captions
4. Speak Selection Mono Audio
5. Dictation Visible and Vibrating Alerts
6. Zoom Made for iPhone Hearing Aids
7. Font Adjustments Physical or motor challenges
8. Invert Colors = AssistiveTouch
9. Braille display support = Siri
10. Wireless Bluetooth = Switch Control
11. Keyboard support

Android Accessibility features

1. TalkBack (screen reader)
2. Mono audio
3. Captions = Explore by touch
4. Magnification gestures = Change font size
5. BrailleBack support = Support only available in
6. Touch & hold delay recent version of OS

9. Collaboration and User Feedback

By working with people with disabilities and other stakeholders, organizations can ensure that their products are usable by everyone.

There are many ways to collaborate with people with disabilities. One way is to form an **advisory board or committee** made up of people with disabilities. This group can provide valuable feedback on the design and development of products. Another way to collaborate is to conduct user testing with people with disabilities. This allows organizations to see how people with disabilities interact with their products and identify any accessibility issues.

User feedback is also essential for creating accessible and inclusive products. People with disabilities can provide valuable feedback on the usability of products, as well as suggestions for improvements. Organizations should make it easy for people with disabilities to provide feedback, such as by including a feedback form on their website or by creating a user forum.

By collaborating with people with disabilities and gathering user feedback, organizations can create accessible and inclusive digital products and services that everyone can use.

10. Creating a Roadmap

Creating a roadmap for accessibility is an essential step for organizations that want to create accessible and inclusive digital products and services. A roadmap can help organizations to:

- **Identify accessibility goals**: What are the organization's goals for accessibility? Do they want to make all of their products and services accessible? Or do they want to focus on a specific type of product or service?
- **Prioritize accessibility efforts**: Not all accessibility issues are created equal. Some issues are more important than others. A roadmap can help organizations to prioritize their accessibility efforts and focus on the most important issues first.
- **Track progress**: A roadmap can help organizations to track their progress towards their accessibility goals. This can help to ensure that the organization is on track and making progress.
- **Communicate with stakeholders**: A roadmap can be used to communicate with stakeholders about the organization's accessibility goals and progress. This can help to ensure that everyone is on the same page and working towards the same goals.

Here are some steps that organizations can take to create a roadmap for accessibility:

1. **Identify stakeholders**: Who are the key stakeholders who will be involved in creating and implementing the roadmap? This could include people from different departments within the organization, as well as people with disabilities.

2. **Conduct an accessibility audit**: This will help to identify the organization's current accessibility status. This could involve conducting user testing with people with disabilities, reviewing the organization's website and other digital products and services for accessibility issues, and reviewing the organization's accessibility policies and procedures.
3. **Set accessibility goals**: What are the organization's goals for accessibility? These goals should be specific, measurable, achievable, relevant, and time-bound.
4. **Prioritize accessibility efforts**: Not all accessibility issues are created equal. Some issues are more important than others. The organization should prioritize its accessibility efforts and focus on the most important issues first.
5. **Develop a plan to achieve the goals**: This plan should include specific steps that the organization will take to achieve its accessibility goals.
6. **Implement the plan**: This involves putting the plan into action and making the necessary changes to the organization's products, services, and policies.
7. **Track progress**: The organization should track its progress towards its accessibility goals. This can be done by conducting regular audits, reviewing feedback from users with disabilities, and monitoring the organization's accessibility policies and procedures.
8. **Communicate with stakeholders**: The organization should communicate with stakeholders about its progress towards its accessibility goals. This can be done through regular meetings, reports, and other communication channels.

By following these steps, organizations can create a roadmap for accessibility that will help them to create accessible and inclusive digital products and services.

11. Conclusion

In conclusion, accessibility is not just a legal requirement but a moral imperative. It is essential for creating a digital world that is inclusive and equitable, where individuals with disabilities can fully participate and access information, products, and services. By prioritizing accessibility in design and development, organizations can break down barriers and empower individuals of all abilities. It is crucial for businesses, governments, and society as a whole to embrace accessibility as a fundamental principle, ensuring that no one is left behind in the digital age. Let us continue to work together to build a more accessible and inclusive future for everyone.

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