This article states that we have to continue to the use of WCAG guidelines as the fundamental basis for creating an accessible web interface. Even though every person may have different preferences that can offer valuable insights into creating accessible interfaces, paper suggests combining user experience studies with the Web Content Accessibility Guidelines.

Each and every website has unique requirements and therefore for specific accessibility criteria paper proposes integrating these criteria with user experience studies to ensure a more comprehensive user experience.

(*Examining the Perceptions of People with Disabilities on the Use of Accessibility Standards in Web Interface Design*, n.d.)

*Examining the Perceptions of People with Disabilities on the Use of Accessibility Standards in Web Interface Design*. (n.d.). Ieeexplore.ieee.org. Retrieved October 21, 2023, from <https://ieeexplore.ieee.org/abstract/document/9274056>

Audio is a highly significant accessible medium for individuals who are blind or visually impaired .also people with learning challenges or dyslexia often find it more easy to listen to information rather than reading it. The availability of audio formats presents an alternative for accessing a wide range of written materials.

(*Accessible Formats*, n.d.)

*Accessible formats*. (n.d.). Sight Scotland. <https://sightscotland.org.uk/articles/information-and-advice/accessible-formats>

A black and white logo

Description automatically generated

A group of logos with text

Description automatically generated

Books provides information the list of logos we can use for audio description and guidelines for the audio like

* Tense of the sentence.
* Use simple language don’t use slang of jargons
* Avoid sensorchip
* A close up of a text

  Description automatically generated
* A close-up of a paper

  Description automatically generated

A close up of a paper

Description automatically generated

A close-up of a document

Description automatically generated

(Snyder, 2020)

Snyder, J. (2020). The Visual Made Verbal: A Comprehensive Training Manual and Guide to the History and Applications of Audio Description. In *Google Books*. Æ Academic Publishing. https://books.google.ie/books?id=WHorEAAAQBAJ&lpg=PR9&ots=kI221IhXXU&dq=accessibility%20website%20audio&lr&pg=PR17#v=onepage&q=accessibility%20website%20audio&f=false

‌

To make image memes more accessible, in the paper they offered two key solutions:

1. Research presented an automated method for converting image memes found on the internet into alternative meme formats. And research created an authoring interface that enables users to create accessible memes.

They created test where multiple types of memes are used like text one, text decs for meme and audio description meme and measured how well they understood the meme

In a research study they have involved 10 Twitter users with visual impairments and research have discovered that they have a preference for alternative text memes.

Due to This preference that alternative text memes are essential to those people . and were compatible with screen readers, and offered universal accessibility.

The study also encouraged individuals with visual impairments to share accessible memes, as they view these as important part of online culture and communication.

Based on the feedback paper received from the participants, they have proposed a concise set of structured questions for alternative text authors to answer when describing memes. These questions aim to assist authors using system.

Gleason, C., Pavel, A., Liu, X., Carrington, P., Chilton, L. B., & Bigham, J. P. (2019). Making Memes Accessible. *The 21st International ACM SIGACCESS Conference on Computers and Accessibility*. https://doi.org/10.1145/3308561.3353792

‌

(Gleason et al., 2019)

‌

*7 Ways to Make Your Angular App More Accessible*. (2019, August 20). Telerik Blogs. https://www.telerik.com/blogs/7-ways-to-make-your-angular-app-more-accessible

‌

 (*7 Ways to Make Your Angular App More Accessible*, 2019)

Team should be accountable for making sure that application is equally accessible.

 Accessibility should cover any disability that affects the user’s access to the web, including:

* **Physical** - for example not being able to use a mouse or a keyboard
* **Cognitive, learning, and neurological** - like memory problems or concentration problems ([learn more](https://webaim.org/articles/cognitive/) about the types of cognitive disabilities)
* **Auditory** - hard of hearing and deafness
* **Visual** - for instance, color blindness or low vision
* **Speech** - muteness or stuttering

‌

Khaliq, I., & Torre, I. D. (2019). A Study on Accessibility in Games for the Visually Impaired. *Proceedings of the 5th EAI International Conference on Smart Objects and Technologies for Social Good*. https://doi.org/10.1145/3342428.3342682

‌

(Khaliq & Torre, 2019)

Paper discussed different types of accessibility that needs addressing in game development and ways to overcome some.

Auditory Navigation

Spatial sound technology is a crucial tool for enhancing the gaming experience for blind users. It enables them to navigate through the game's environment and gain a rough sense of the distances between themselves and in-game objects in their current direction. In a related study (reference [16]), an experiment was conducted, which indicated that incorporating feedback and area-specific sound cues into the games would significantly assist participants in accurately navigating through the game world. These auditory cues play a pivotal role in encouraging accurate participation in the navigation process.

One effective approach to spatial navigation for blind users is to leverage binaural hearing. Binaural hearing takes advantage of the fact that humans have two ears, allowing them to perceive the direction and distance of sound sources based on the slight differences in sound arrival time and intensity between the ears. By simulating these cues, game developers can create immersive and accessible experiences that enable blind players to interact with their virtual surroundings more effectively.

A screenshot of a video game

Description automatically generated

Customizable Fonts Style: Custom fonts are commonly used in game development to match a game's theme, but unconventional fonts can negatively affect low-vision gamers. Many stylized fonts are challenging for most gamers with normal vision to read, making it difficult for vision-impaired gamers to access essential information. Allowing low-vision gamers to switch from complex fonts to simpler, more readable fonts can significantly improve on-screen readability. A study [14] indicates that font types have a substantial impact on the readability of on-screen text, with fonts like Helvetica, Courier, Arial, Verdana, and Computer Modern Unicode enhancing readability, while italic fonts decrease reading performance. Using readable fonts not only benefits those with low vision but also aids individuals with dyslexia and hearing impairments.

Customizable Fonts Size: In addition to font style customization, it's also advisable to incorporate customizable font sizes in games, particularly for low-vision gamers. While many video games don't typically provide this option, implementing it can make most games accessible to visually impaired gamers, including those who are legally or almost totally blind. Offering a readable standard font size for the majority of gamers is a good starting point. Research [15] suggests that a font size of up to 18 pt. affects the readability and comprehensibility of on-screen text for both objective and subjective measures. Therefore, a standard readable font size for those without visual impairments is often considered to be 18 pt. An example of poor font size readability is illustrated in Figure 10. On the other hand, the game Everquest is cited as a good example of a game that allows users to customize not only the font size but also the typeface and font color in the chat window.

Customizable HUD: For gamers with visual impairments such as color blindness, low vision, or difficulty in processing rapidly moving information, customizable heads-up displays (HUDs) can significantly enhance their gaming experience. By combining color-blind and font customization features with HUD customization, users can arrange and reallocate each HUD element according to their visual range. This feature can be particularly helpful for those with macular degeneration, allowing them to adjust the UI elements to correspond to their visual range, thus reducing frustration and improving their overall gaming experience. While implementing such customizable HUD features may be costly, it can lead to smoother development processes and better overall game design. While such features are not yet widely available in the market, some games, like Skyrim, have mods created by the community that allow for HUD customization.

*Requirements for Aural Web Sites*. (n.d.). Ieeexplore.ieee.org. Retrieved October 21, 2023, from https://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=4027209

‌

(*Requirements for Aural Web Sites*, n.d.)

This paper addresses the need for aural interactive websites, which primarily rely on auditory input instead of visual content, and highlights their significance for users with visual impairments or those who cannot give their full attention to a screen, including small screens. In contemporary web design and mobile applications, the primary mode of communication is visual, but aural websites offer an alternative approach. However, the current accessibility guidelines tend to focus on basic issues like providing descriptive text for images or technical aspects like layout design without adequately addressing the requirements for aural websites.

The paper discusses the essential requirements for aural websites and their impact on the user experience and the evolution of web design. It draws on linguistic research and real-world experience, including the design and testing of websites for visually impaired users and mobile scenarios. In essence, the paper emphasizes the importance of considering aural interaction in web development and accessibility to better cater to diverse user needs.

In this paper, the authors argue for the significance of designing and implementing "aural applications," which are interactive applications primarily or exclusively reliant on audio, with no dependence on visual elements. Aural applications have the potential to benefit visually impaired users, mobile users, and individuals needing to focus on their surroundings, such as museum visitors or tourists in urban environments.

The authors stress that developing effective aural applications requires more than just technical adaptations to existing applications; it necessitates considering a new set of requirements. They propose a preliminary set of requirements (R1 to R14), which have been employed in projects like the "Munch und Berlin" website and the AURA initiative's three applications, all related to cultural tourism. These requirements have proven to be highly effective in the design and implementation of aural websites, with positive user feedback and satisfaction.

The future work in this area involves expanding the set of requirements to cover additional scenarios, enhancing the collection of design patterns to meet these requirements, and advocating for the incorporation of these requirements and design patterns into guidelines for accessible applications. Furthermore, the authors are working on a new tool, a "page reader," aimed at improving upon the limitations of screen readers by semantically interpreting web pages through a specific reading strategy defined by designers. This tool is currently under testing.